2022-1954 & 2022-2295

United States Court of Appeals for the Federal Circuit

INLINE PLASTICS CORP.,

Plaintiff-Appellant,

– v. –

LACERTA GROUP, LLC,

Defendant-Cross-Appellant.

On Appeals from the United States District Court for the District of Massachusetts in No. 4:18-cv-11631-TSH, Honorable Timothy S. Hillman, Judge

BRIEF FOR PLAINTIFF-APPELLANT

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NOVEMBER 8, 2022

A PATENT CLAIM AT ISSUE

Claim 1 of U.S. Patent No. 7,118,003:

A tamper-resistant/evident container comprising:

a) a plastic, transparent cover portion including an outwardly extending peripheral flange;

b) a base portion including an upper peripheral edge forming at least in part an upwardly projecting bead extending substantially about the perimeter of the base portion and configured to render the outwardly extending flange of the cover portion relatively inaccessible when the container is closed; and

c) a tamper evident bridge connecting the cover portion to the base portion.

Appx94.

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

CERTIFICATE OF INTEREST

Case Number 22-1954

Short Case Caption Inline Plastics Corp. v. Lacerta Group, LLC

Filing Party/Entity Inline Plastics Corp.

Instructions: Complete each section of the form. In answering items 2 and 3, be specific as to which represented entities the answers apply; lack of specificity may result in non-compliance. **Please enter only one item per box; attach additional pages as needed and check the relevant box**. Counsel must immediately file an amended Certificate of Interest if information changes. Fed. Cir. R. 47.4(b).

I certify the following information and any attached sheets are accurate and complete to the best of my knowledge.

Date: 11/08/2022

Signature: /s/ David J. Silvia

Name: David J. Silvia

1. Represented Entities. Fed. Cir. R. 47.4(a)(1).	**2. Real Party in Interest.** Fed. Cir. R. 47.4(a)(2).	**3. Parent Corporations and Stockholders.** Fed. Cir. R. 47.4(a)(3).
Provide the full names of all entities represented by undersigned counsel in this case.	Provide the full names of all real parties in interest for the entities. Do not list the real parties if they are the same as the entities. ☑ None/Not Applicable	Provide the full names of all parent corporations for the entities and all publicly held companies that own 10% or more stock in the entities. ☑ None/Not Applicable
Inline Plastics Corp.		

☐ Additional pages attached

4. Legal Representatives. List all law firms, partners, and associates that (a) appeared for the entities in the originating court or agency or (b) are expected to appear in this court for the entities. Do not include those who have already entered an appearance in this court. Fed. Cir. R. 47.4(a)(4).

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McCarter & English, LLP	Thomas R. Fulford	Alexander T. Hornat
Leah R. McCoy	Wyley S. Proctor	

5. Related Cases. Provide the case titles and numbers of any case known to be pending in this court or any other court or agency that will directly affect or be directly affected by this court's decision in the pending appeal. Do not include the originating case number(s) for this case. Fed. Cir. R. 47.4(a)(5). See also Fed. Cir. R. 47.5(b).

☑ None/Not Applicable ☐ Additional pages attached

6. Organizational Victims and Bankruptcy Cases. Provide any information required under Fed. R. App. P. 26.1(b) (organizational victims in criminal cases) and 26.1(c) (bankruptcy case debtors and trustees). Fed. Cir. R. 47.4(a)(6).

☑ None/Not Applicable ☐ Additional pages attached

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STATEMENT OF RELATED CASES

There are currently no related pending cases. One of the five patents-in-suit (U.S. Pat. Nos. 7,118,003) was the subject of an appeal to this Court in 2014 and 2015. That appeal resulted in an opinion vacating the District Court's construction of certain claim terms. *See Inline Plastics Corp. v. EasyPak, LLC*, 799 F.3d 1364 (Fed. Cir. 2015). That case was remanded and eventually settled.

JURISDICTIONAL STATEMENT

The District Court had jurisdiction over this patent infringement case under 28 U.S.C. §§ 1331 and 1338(a). This appeal follows a jury verdict of February 18, 2022, finding that the asserted patent claims were not infringed and are invalid. Appx21-26.[1] The District Court entered judgment confirming that verdict on May 25, 2022. Appx29-30. In addition, because the defendant's inequitable conduct defense remained to be tried, the District Court certified judgment under F.R.C.P. 54(b), "having determined that there is no just reason for delay." Appx27-28.

Plaintiff-Appellant Inline Plastics Corp. (Inline) timely filed a notice of appeal on June 23, 2022, Appx78, but also moved for judgment as a matter of law and for a new trial. The District Court denied these post-trial motions on August 31, 2022. A33. On September 9, 2022, the Court reactivated this appeal. Order, Dkt. 7. This

[1] The District Court previously granted summary judgment of infringement as to Claims 1, 2, 3, and 6 of U.S. Patent No. 9,527,640 (the '640 patent). Thus, the jury only decided validity of these claims.

Court has appellate jurisdiction under 28 U.S.C. § 1295(a)(1).

STATEMENT OF THE ISSUES

1. Whether the District Court's jury instructions on Lacerta's written description and indefiniteness defenses under 35 USC § 112 were improper or whether the District Court's instruction on objective indicia of non-obviousness was legally deficient, thus entitling Inline to a new trial on invalidity.

2. Whether the District Court erred in denying Inline's motion for judgment to set aside the jury's obviousness finding because Lacerta failed to establish by clear and convincing evidence that each of the asserted claims was obvious, failed to provide any motivation to combine the asserted prior art, and failed to rebut the objective indicia of non-obviousness.

3. Whether the District Court's claim construction of upwardly projecting "bead," "hinder access," "relatively inaccessible," and "configured to substantially surround…." were improper, entitling Inline to a new trial.

4. Whether the District Court abused its discretion in denying a new trial on obviousness where the jury's verdict was against the great weight of the evidence, and/or after admitting (a) testimony from Lacerta's expert as to the ultimate issue of obviousness; and (b) evidence of Lacerta's patent.

STATEMENT OF THE CASE

I. INLINE'S GROUNDBREAKING TAMPER-EVIDENT/TAMPER-RESISTANT CONTAINERS

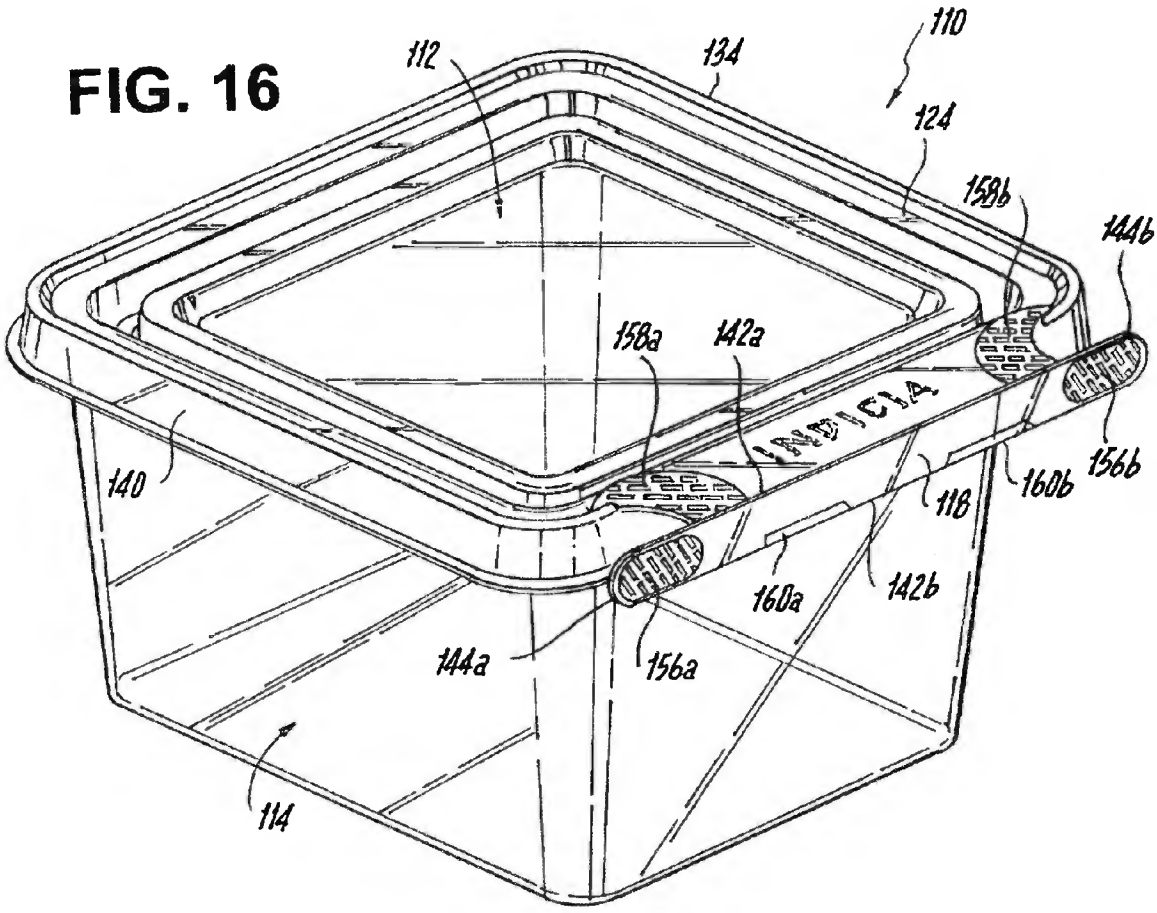
Inline is a Connecticut-based, family-owned company that manufactures thermoformed plastic containers for use in the food service industry. Appx464-467, Appx469. In about 2000, Inline established an R&D department for the purpose of developing innovative container designs to address customer needs and compete with larger competitors. Appx655-656, Appx658-659, Appx447, Appx470-472, Appx489, Appx954-955, Appx987-989, Appx1006-1007.

By about late 2002 or early 2003, the R&D team designed a one-piece, tamper-evident and tamper-resistant (TE/TR) thermoformed container. Appx1007-1008, Appx1013-1014, Appx1678-1679, Appx1684-1685. This design, and various modifications that followed, provided several advantages over prior art containers. For example, the new container design is thermoformed from a single sheet of plastic, thus saving manufacturing steps. Appx492-493, Appx1075. Further, the cover and base include interlocking features that provide both tamper resistance and tamper evidence, meaning that the containers hinder tampering and have a readily visible indication to show whether the container has been compromised. Appx454-455, Appx497, Appx500-501. The unique geometry of the tamper-resistant and tamper-evident features also enable the containers to be leak-resistant and re-sealable, critical features that led to their widespread adoption and sales. Appx455-

456, Appx462-464, Appx679, Appx681, Appx687-688, Appx1678-1679, Appx1721.

Claimed features that contribute to this design include, for example, a strip or frangible section bridging the cover and the container base (*e.g.*, at the hinge of the cover and base) that once severed facilitate the consumer's opening of the cover. Until this strip is severed, the cover remains biased against the upper peripheral rim of the base. In some claimed embodiments, the upper peripheral rim includes a raised edge or "bead" running substantially around the rim of the container base to make opening the lid from the front harder (but not impossibly harder) than opening the conventional containers of the prior art. Appx1080-1082, Appx1089-1091. Below is one of the several container constructions disclosed in Inline's five patents.

FIG. 16



Appx88.

This design and its variations, which Inline markets under its SAFE-T-FRESH® brand, met with almost immediate success in the market. These TE/TR containers are particularly useful for holding and displaying produce (*e.g.*, cut fruit, ready-made salads, grapes, nuts) and other perishable foods. Appx451-454, Appx500-503. One commercial advantage is that these containers deter pilfering. Appx1213-1214. Another is that the consumers are assured that the contents are safe and secure. Appx492-493. Filling and sealing the containers may be done

manually or may be automated. Appx463-464, Appx687-688.

The prior art containers and methods for making containers lacked certain of the above key features and thus were considered inferior. Appx487-488, Appx492-493, Appx687-689, Appx900-902, Appx1077-1079, Appx3749-3753.

Inline's president, Tom Orkisz, explained that the market loved the patented SAFE-T-FRESH® containers because the design was an elegant and economic solution to food security and safety:

> . . . it was important for us to design something that was economically reasonable, it was operationally feasible, that our customers could work with it. We wanted to be able to produce it from a single sheet of plastic. We didn't want to have to add other stuff to it [*e.g.*, shrink bands or labels]. . . .
>
> The culmination of all of that was the SAFE-T-FRESH invention, where we came up with a design which was quite elegant that you just take the finished part that comes out of the [thermoforming] machine and you fill it with whatever food product you want to put in it and you close it and you're done. No labels, no heat tunnels, no ultrasonic welding. It was just a major – the market loved it because it just simplified many people's lives tremendously.

Appx492-493 (emphasis added); *see also* Appx447-448.

The first models of the SAFE-T-FRESH® container embodying these patented features were sold in 2005. Appx457, Appx461-464, Appx492-493, Appx1026-1027.

As a result of the success of the SAFE-T-FRESH® container line, Inline has substantially increased its revenue, increased production, opened new

manufacturing plants, and licensed others to make tamper-evident/tamper-resistant (TE/TR) containers using its patented methods and constructions throughout Europe and Canada. Appx447-448, Appx1238-1240, Appx1339-1340.

A. Inline's Patented Technology

Inline applied for its first patent on these TE/TR containers in 2003 and eventually received five patents directed to various aspects of TE/TR containers: U.S. Patent Nos. 7,118,003 (the '003 Patent), 7,073,680 (the '680 Patent), 9,630,756 (the '756 Patent), 8,795,580 (the '580 Patent), and 9,527,640 (the '640 Patent). Appx81-181.

Claim 1 of the '003 Patent is an exemplary independent claim for a tamper-resistant/evident container comprising:

> a) a plastic, transparent cover portion including an outwardly extending peripheral flange;
>
> b) a base portion including an upper peripheral edge forming at least in part an upwardly projecting bead extending substantially about the perimeter of the base portion and configured to render the outwardly extending flange of the cover portion relatively inaccessible when the container is closed; and
>
> c) a tamper evident bridge connecting the cover portion to the base portion.

Appx94.

Each of the other four patents (all of which are continuations or continuations-in-part) relate to different aspects of Inline's claimed TE/TR container technology. The '003, '680, and '756 Patents are all directed to features of a TE/TR container.

For example, the '680 Patent is directed to TE/TR containers having a secondary lock feature, such as a button lock. Appx112-113. The '756 Patent, like the '003 and '680 Patents, is directed to TR/TE container constructions, but in contrast to the claims of the '003 Patent, which require the base to include an upwardly projecting bead, the claims of the '756 Patent do not require an upwardly projecting bead. *Compare* Appx136 *to* Appx94-95.

The '580 and '640 Patents are each directed to methods of thermoforming TR/TE containers. Appx157-158, Appx181. Like the '756 Patent, these patents also do not require the container to include an upwardly projecting bead. *Id.* Additionally, in contrast to the '003 Patent, the '640 Patent claims are directed to making containers having certain features of the cover and base, without regard to whether the upper peripheral rim of the base "render(s) the outwardly extending flange of the cover portion relatively inaccessible." *Compare* Appx181 *to* Appx94.

B. The Remarkable Success of the Patented Products: Objective Evidence of Non-Obviousness

The unrebutted evidence at trial showed that Inline's patented SAFE-T-FRESH® containers achieved remarkable commercial success, garnered industry praise, were copied by others and satisfied a long-felt, unmet need. Inline's patented containers were "revolutionary" and "transformed the produce packaging that was in the marketplace." Appx506, Appx1209.

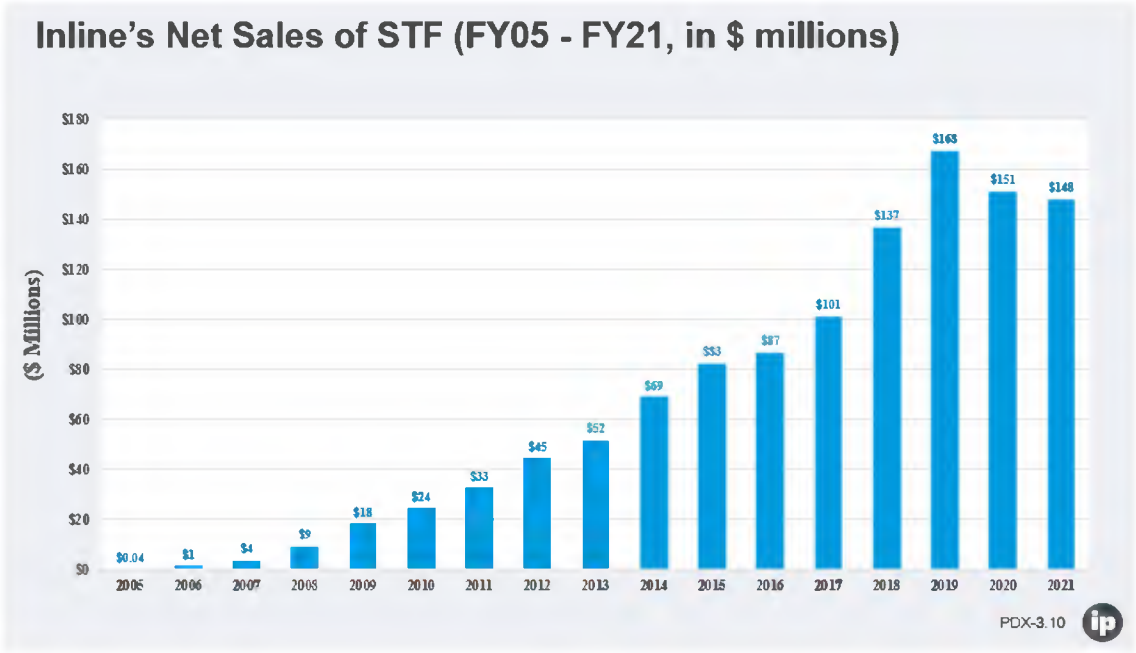
As Inline's president, Mr. Orkisz, testified, the patented SAFE-T-FRESH®

containers met unfulfilled needs:

> So when we started to observe that this fresh cut fruit industry was starting to evolve, we focused on, all right, let's come up with some packaging for this industry. There are some needs that haven't been met, and it looked like a great opportunity to bring some innovative spirit and try to see if we could come up with something that would work well for that emerging new market. . . .
>
> We understood that safety and security was important for food in general, so we knew there was basically not a good solution in the marketplace at that time for doing tamper-evidence and tamper-resistant in a simpler, more effective way.

Appx485 (emphasis added).

Inline's damages and accounting expert, Chris Barry, analyzed Inline's sales and found that, over the first 15 or 16 years of sales, the compound annual growth rate was 37 percent "and in total has amounted to over $1.1 billion of sales since launch." Appx1209. To illustrate the extraordinary success of Inline's patented containers, Mr. Barry presented a chart showing the dramatic increase in sales:



Appx3809 (spreadsheet from which the chart was created).

Mr. Barry concluded that SAFE-T-FRESH was "a revolutionary product" at the time it came on the market. Appx1209.

Mr. Orkisz emphasized that "[t]he market responded very well . . . we really hit a home run with this product." Appx496. In fact, Inline's patented SAFE-T-FRESH® containers won numerous awards and were recognized as transformative products in the industry. Appx502-507, Appx5670, Appx5680-5683. For example, Del Monte, a nationwide produce distributor and early Inline customer, acknowledged that "[t]he introduction of the Safe-T-Fresh line of tamper resistant, tamper evident clamshell containers was an ***unprecedented innovation*** for the fresh-cut industry." Appx5670 (emphasis added). SAFE-T-FRESH® won awards from industry groups like the Produce Marketing Association and Food Packaging

Institute. Appx5680-5683. As one industry customer observed, "Tamper Evidence and Tamper Resistance of the Inline containers is the most important thing. It eliminates shrink bands and heat tunnels. Everything else is far below in importance." Appx3754-3758. Tom Schleicher, Inline's former VP-Sales and Marketing, testified that "[Safe-T-Fresh] was one of the biggest revenue generators for the company over an extended period of time, and it also made Inline very important to retail customers …" Appx873, Appx875-876.

Inline's plastics engineering expert, Professor David Kazmer, testified that the products responded to a long-felt, unmet need and identified the nexus between commercial success and the asserted claims. Appx2029-2030; *see also* Appx1069-1070. The defendant, Lacerta Group LLC, did not rebut that nexus at trial.

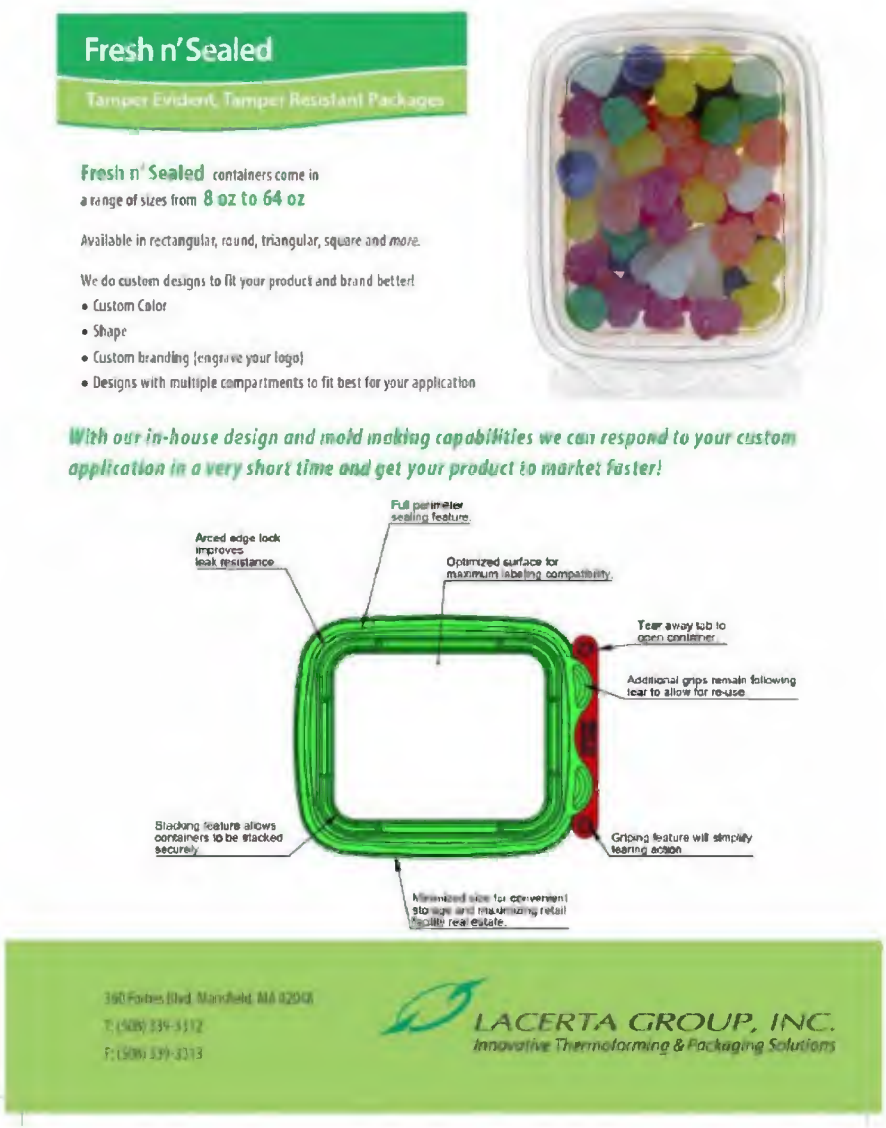
During prosecution of the '003, '680, and '580 Patents, to overcome obviousness rejections, Inline submitted declarations providing evidence of commercial success and long-felt need. Appx4144-4147, Appx4167-4171, Appx4383-4386, Appx4388-4391, Appx5033-5039, Appx5041-5044. Before allowing the '003 Patent, for example, the examiner cited and relied on these declarations. Appx4215-4217.

Inline's patented products were also the subject of copying by several competitors. Appx509-512. Inline confronted these infringers and either sued them or got them to discontinue or change the design of their infringing containers.

Appx535-538. The defendant, Lacerta, also copied Inline's products, as seen below.

C. Lacerta Copies Inline's Patented Products

In early 2015, Lacerta began selling a line of TE/TR containers under the FRESH n' SEALED brand. Appx766. Inline asserted that 18 models of these FRESH n' SEALED containers infringe various claims of the five patents-in-suit (the "Accused Containers"). Below is an advertisement for a typical Lacerta accused container:



Appx3694-3696.

Lacerta's product designers testified at trial that they were familiar with Inline's containers and had examples at hand when they designed the accused FRESH n' SEALED containers. For example, Larry Jewett, one of Lacerta's designers, testified that Inline containers "were everywhere" in stores around 2012 and he saw them there. Appx811. He obtained samples of Inline containers around

2014 and had one on his desk as he was designing the accused Lacerta containers. *Id.* Mr. Jewett further testified that Lacerta was "attempting to accomplish tamper-evident. And our initial idea had failed. A second idea, third idea maybe, multiple of them failed. We began to research all the tamper-evident across the country." Appx812. Larry Murdoch, another Lacerta designer, also testified that he was aware of Inline's containers when he designed Lacerta containers (Appx859) and had Inline containers on his desk at Lacerta. Appx853. Lacerta had been trying for five or six years to design a TE/TR container, but once it studied Inline's patented SAFE-T-FRESH® containers in 2014, Lacerta designed its Accused Containers in two weeks. Appx1513-1514.

II. THE LITIGATION AND TRIAL

Inline filed suit in 2018 and, as prefaced above, accused 18 models of Lacerta's "FRESH n' SEALED" TE/TR containers of infringing Inline's five patents. The parties soon traded infringement and invalidity contentions and engaged in claim construction, fact and expert discovery, and dispositive motion practice. The key developments in the litigation that are relevant to this appeal are highlighted below.

A. Claim Construction

The District Court held a *Markman* hearing in 2019 and issued its claim construction order re-defining nine disputed terms. Appx1-20. The District Court

also found that the terms Lacerta challenged as indefinite–"at least in part," "relatively inaccessible," and "tamper evident bridge"—were not indefinite and denied Lacerta's application to defer the indefinite challenges raised to some later date. Appx2-5. Notably, while Lacerta raised several indefiniteness challenges during claim construction, it failed to present a challenge to the hinge "height" term. *Id.* As seen below, Lacerta's belatedly raising that issue at trial was improper, prejudiced Inline, and tainted the verdict.

The District Court's constructions of the terms at issue at this appeal—upwardly projecting "bead," "hinder access," "relatively inaccessible," and "configured to substantially surround…." were as follows:

DISPUTED CLAIMS	THE COURT'S CONSTRUCTION
"[Upwardly projecting] bead"	Raised portion of the upper peripheral edge that substantially surrounds the outer edge of the outwardly extending peripheral flange
"Relatively inaccessible"	Physically impedes access from fingers or any other object to separate the cover portion from the base portion
"Hinder access"	Physically impedes access from fingers or any other object to separate the cover portion from the base portion
"Configured to substantially surround the outwardly extending peripheral flange of the cover portion"	Configured to physically impede access to the outwardly extending flange of the cover portion when the container is closed
"Configured to substantially surround an edge of the	Configured to physically impede access to an edge of the outwardly extending flange of the

outwardly extending peripheral flange of the cover portion"	cover portion when the container is closed

Appx1-20 at Appx19.

B. Partial Summary Judgment of Infringement

On September 14, 2021, the District Court granted summary judgment that Lacerta infringed Claims 1, 2, 3, and 6 of the '640 Patent. Appx2980-2997 at Appx2995. Claim 1, which was found to be infringed as a matter of law, included the limitation "the vertical height of the hinge correlates with the height of the skirt that depends downwardly from the base portion." Appx181. This judgment effectively resolved the subsequent assertion by Lacerta that the 'hinge height' limitation was indefinite; an issue that Lacerta nevertheless argued to the jury at trial over Inline's objections. *See below*, pp. 28-29.

C. Motion to Preclude Testimony on Ultimate Issue of Obviousness

Before trial, Inline moved to preclude Lacerta's technical expert, Dr. MacLean, from offering an opinion on the ultimate question of obviousness. Appx3009-3010; *see also* Appx1729-1730. Inline argued that Dr. MacLean failed to weigh, or even disclose any opinion on, an essential factor of the obviousness inquiry: secondary considerations of non-obviousness. The Court acknowledged that "Dr. MacLean did not disclose an opinion on secondary considerations of non-obviousness" and held that "Dr. MacLean may not offer an opinion on secondary

considerations of non-obviousness at trial." Appx3193. Nonetheless, the Court permitted Lacerta's expert Dr. MacLean to opine on the ultimate issue of obviousness. *Id.* As argued below, that decision was wrong and improperly altered the outcome of the trial.

D. Evidence of Infringement at Trial

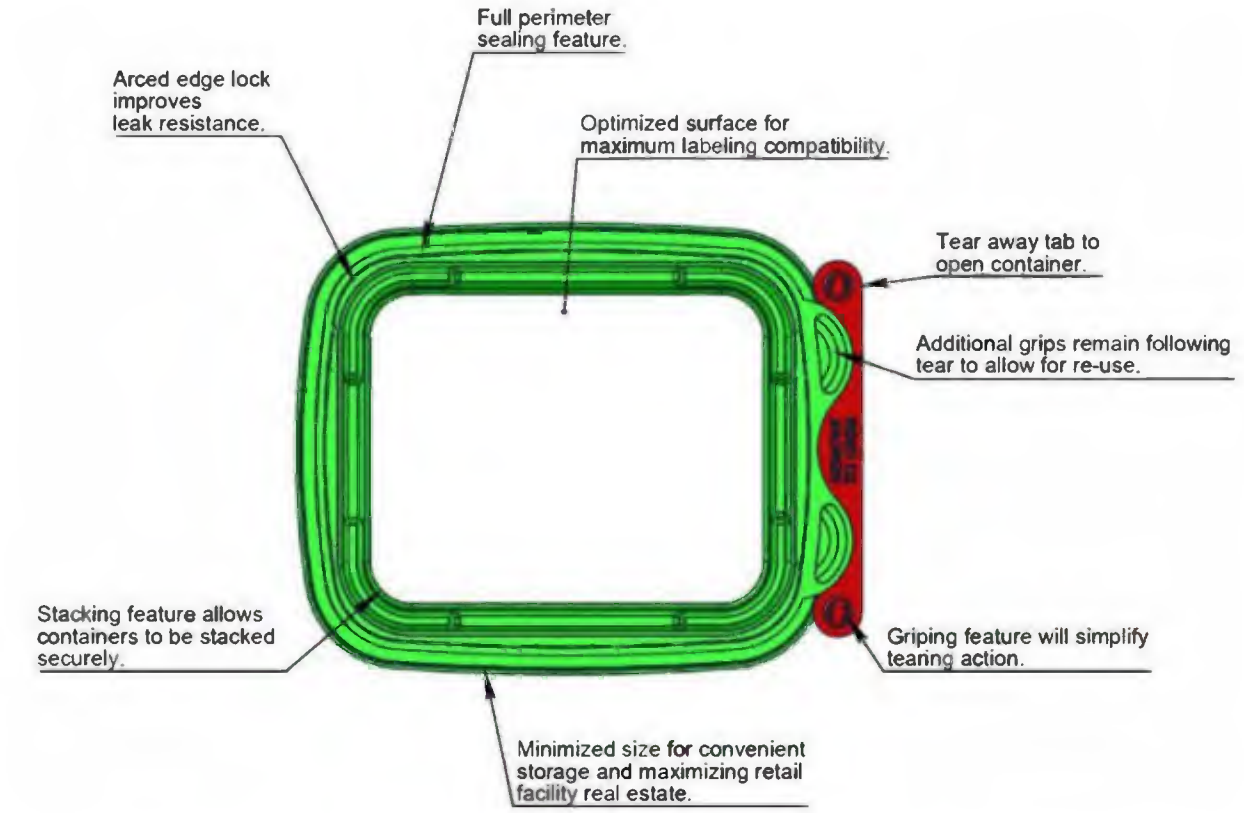
At trial, Lacerta (via Dr. MacLean) did not contest that Lacerta's Accused Containers met most of the limitations of the asserted claims. Rather, Dr. MacLean disputed *only four* claim limitations—namely, whether the Accused Containers have (1) covers that are "relatively inaccessible" (or "hinder access") when closed; (2) an "upwardly projecting bead"; (3) "an upper peripheral edge configured to substantially surround the outwardly extending peripheral flange of the cover portion"; and (4) "a hinge with the required height in some of the claims." Appx1728-1729, Appx1733-1734. As discussed below, Inline proved that the Accused Containers meet all of these claim limitations.

i. covers that are relatively inaccessible when closed

The evidence at trial showed that the outwardly extending flange of the cover portion of the Accused Containers is "relatively inaccessible" when closed. Specifically, Inline's technical expert, Dr. Kazmer, explained that the Accused Containers are "tamper-resistant/evident containers" because they include a cover flange that is relatively inaccessible relative to the rim of the base, and that a tear

strip, once removed, makes it obvious that the container has been opened. Appx1104-1105. Lacerta admitted that "[t]amper resistance" was "the primary goal" in designing the Accused Containers (Appx804, *see also* Appx803-804) and said that Lacerta was "attempting to achieve tamper-evident [sic]" and "attempting to accomplish tamper resistance." Appx804, Appx811-812. Lacerta admitted that several of the Accused Containers constituted tamper-evident/tamper-resistant containers. Appx789, Appx807-810, Appx857. Lacerta further admitted that the Accused Containers are clamshell containers and have a tear strip that, once torn, reveals a tab that facilitates opening the container. Appx860.

Moreover, Lacerta's own documents demonstrate that the Accused Containers are tamper-resistant and tamper-evident and require the user to sever the tear strip in order to access the cover and open the containers. For example, Lacerta told customers in its marketing materials that its Accused Containers have a "full perimeter sealing feature" and that users ***must*** tear the tear strip to open the containers. Appx760-762, Appx3693-3694 (depicting an annotated top view of the container and instructing users to "Tear away tab to open container"), Appx765-767, Appx3704 ("In order to open the package a tab must be removed to gain access to opening the base and lid") and ("Lacerta Group is launching Fresh n' Sealed, a new line of tamper evident, tamper resistant packages for the food industry at Pack Expo") (emphasis added).

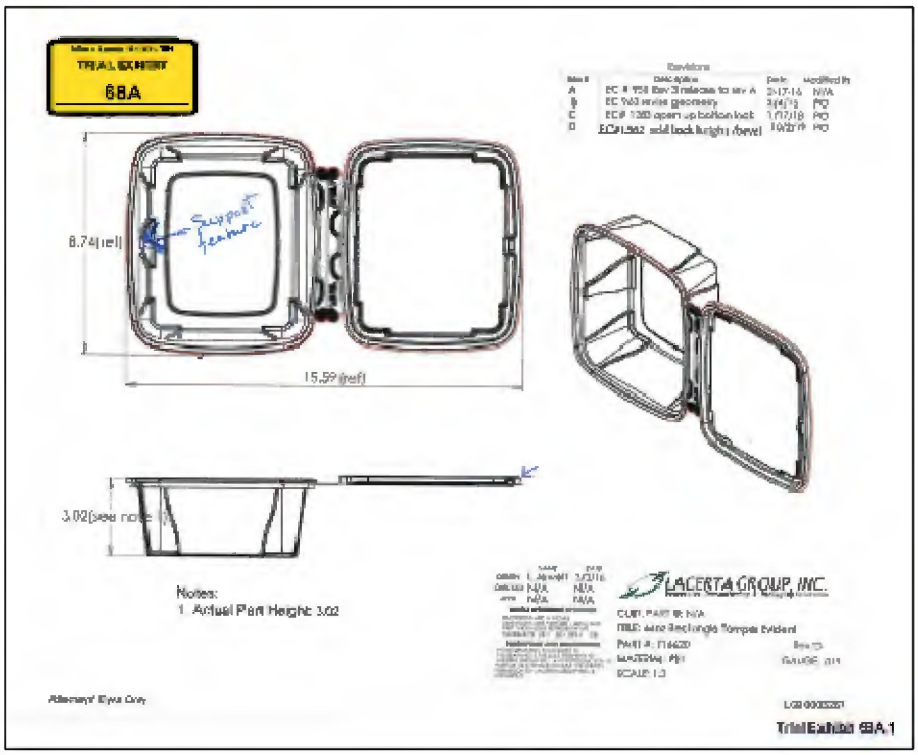


Appx3694 (excerpt).

ii. an upwardly projecting bead

The evidence showed that the Accused Containers have a base portion including an upper peripheral edge forming at least in part an upwardly projecting bead substantially about the perimeter. Appx1107-1108, Appx1110-1119, Appx1116, Appx1136-1138. Specifically, Dr. Kazmer testified that the bead requirement was met in that the base includes a upper peripheral edge that has an "inclined surface that does rise above the outwardly extending flange" that "literally is raised relative to the flange on the cover" and thus "conceals that outer flange" of the cover. Appx1137. In fact, Lacerta's own technical drawings show these features

and Lacerta's own product designers admit that the containers have these features.



Appx3703, *see also* Appx3702, Appx839-841, Appx862-866.

iii. an upper peripheral edge configured to substantially surround the outwardly extending peripheral flange of the cover portion

The evidence showed that the containers are configured to render the outwardly extending cover flange relatively inaccessible when closed, "both visually and tacti[lely]," in that the "outer flange sits within essentially a well of the rim . . . the raised portion of the base." Appx1108, Appx1138. Lacerta admitted that the rim around the base of the Accused Containers is angled so that it is higher on the outside edge than the lower edge, and the edge of the cover flange lands on the sloped

surface of the rim. Appx862-863. As a result, the upper peripheral edge surrounds the outwardly extending peripheral flange of the cover. Appx838-839, Appx1110-1111, Appx1136-1137. Lacerta also admitted that the containers are configured to make it "more difficult than your standard package" to open. Appx724-725, Appx768. Lacerta admitted that modifications were made to the Accused Containers to make the cover and base fit tightly, to lock together, and to improve leak resistance. Appx802-803, Appx814-815, Appx833, Appx838-839, Appx864-865.

iv. a hinge with the required height

The evidence showed that the containers have a hinge height substantially equal to the height of the downwardly depending skirt of the base, as certain claims require. Specifically, while pointing to a technical drawing of an accused Lacerta container, Dr. Kazmer explained that the height of the hinge is substantially equal to the height of the skirt:

> from the side you can see that the skirt has a relatively uniform height, and it's defined by the arrows H, and a person of ordinary skill in the art would understand that the hinge connects with the skirt and the upper peripheral edge; and at that location, it has the same height, and you can see that the height -- the requirement here is that is substantially equal to the height of the downwardly depending skirt.

Appx1144.

III. LACERTA FAILED TO OFFER SUBSTANTIAL EVIDENCE OF OBVIOUSNESS

A. Lacerta Failed to Offer Substantial Evidence of Obviousness and Failed to Rebut Inline's Evidence of Non-Obviousness

Lacerta did not present any anticipation or single-reference obviousness arguments at trial. Appx1875. Moreover, of the six references upon which Lacerta relied, four were considered by the patent office during examination of the patents, and the other two references had similar disclosures or taught away. Appx2033-2035.

Inline's technical expert, Dr. Kazmer, testified that Inline's patents were not obvious over the prior art. Appx2018-2055. First, Dr. Kazmer distinguished each prior art reference from the claimed containers. Appx2036-2041. For example, the Brilliant reference lacked tamper-resistance or tamper-evidence and was designed to break away cleanly, without evidence of tampering. Appx2036-2037. Thompson taught a two-piece container without a seal on the surface. Appx2037-2038. Guillin U.S. lacked tamper-evidence or a frangible hinge. Appx2038-2039. Guillin E.P. is a two-piece container without a hinge. Appx2039. Masuno had a welded hinge and no skirt or bead. Appx2039-2040. Menshen lacked a skirt and included features that could not be thermoformed. Appx2040-2041.

As Dr. Kazmer explained, it was simply not feasible to combine these references involving different numbers of pieces, different manufacturing

techniques, and different design features. Appx2033-2034. For example, Dr. Kazmer explained that Dr. MacLean's combination of Brilliant, Thompson, and Masuno for the '003 patent relied on Brilliant teaching a tamper-evident bridge, even though Brilliant's bridge was not tamper evident, and relied on Masuno teaching a hinge extending from the lower edge of the skirt to the flange even though Masuno lacks a skirt. Appx2043-2045. Finally, as explained below, Lacerta failed to present evidence of motivation to combine these references. Appx2041-2042. He also testified that a person of ordinary skill in the art (POSA) would not have been motivated to combine the prior art and that such combinations would not be successful. Appx2041-2045, Appx2053.

Dr. Kazmer then testified that Inline's products embodying the claimed inventions experienced extraordinary commercial success. Appx2024-2029, Appx2032. Other witnesses also testified to the commercial success of products embodying the asserted claims. *See above*, pp. 9-14. In fact, Inline's witnesses also testified to the other objective indicia of non-obviousness, such as long felt need, industry praise, failure by others, and copying. *Id.*

Lacerta did not offer any evidence—whether from its expert or otherwise—contradicting this commercial success evidence, let alone the evidence of long felt need, copying by others, and industry praise. Indeed, Lacerta could not do so because it failed to cover those issues in its expert reports. Appx3193. Nonetheless,

over Inline's objections, the court permitted Lacerta's expert, Dr. MacLean, to testify as to his ultimate conclusion that the patents were obvious, even though he did not consider secondary considerations of non-obviousness. Appx1791-1792, Appx1796-1797, Appx1825-1826, Appx1839, Appx1841.

B. Lacerta Failed to Show a Motivation to Combine Prior Art

In addition to his failure to review the substantial evidence presented on secondary considerations of non-obviousness, Dr. MacLean also failed to testify how a POSA would have been motivated to combine the prior art or that the combinations would work for their intended purposes. Appx1786-1799, Appx1823-1854. Instead, Dr. MacLean based his obviousness opinion on what he called an "inventory" approach–he generated a list of claim limitations and then purported to match those limitations to portions of prior art that allegedly disclosed each limitation. Appx1785-1786, Appx1788, Appx1792. ("I'm building my complete inventory"; "these are all of the unique claims elements").

As a result, Dr. MacLean did not identify motivations within the references or from any other source. In one instance, for example, Dr. MacLean admitted that the *Brilliant* prior art reference lacked tamper-resistance, then went on to state, strangely, that the *absence* of the claimed features provides motivation to add them:

> I just told you that the Brilliant patent does not have any tamper-resistant features. . . . And so I would look to the – I would be motivated at that point as a POSA to look at the prior art to see if there is some teachings of tamper resistance that I might be able to add to Brilliant to

further my invention.

Appx1789 (emphasis added).

Dr. MacLean used the same hindsight approach again and again—recognizing from the challenged patent claim that a feature was needed and then extracting that feature from a prior art reference without any further motivation. For example:

- "I looked to Thompson, ***because I need tamper resistant*** [sic] from that bead in burying my flange." Appx1791 (emphasis added), *see also* Appx1790-1791.[2]
- "Guillin U.S. combined with Guillin EP is ***because I want to achieve … that one-piece container***." Appx1795 (emphasis added).[3]
- "[I]f I'm a POSA and ***I want to have locking features in the container***, … I would look to Guillin EP because . . . it has these locking features." Appx1795 (emphasis added), *see also* Appx1795.
- "Q. … Why add Brilliant? A. Brilliant is the one that is ***going to give us the one-piece container***." Appx1796 (emphasis added), Appx1796.

[2] Dr. MacLean admitted that the primary reference for this combination, Brilliant, was not tamper-resistant. Appx1788-1789.

[3] Guillin EP is a two-piece container, as Dr. MacLean admitted. Appx1826.

IV. THE COURT PERMITTED LACERTA TO OFFER IMPROPER EVIDENCE AT TRIAL

A. Lacerta's Expert Permitted to Opine on the Ultimate Conclusion of Obviousness Despite Failing to Address Objective Evidence of Non-Obviousness at Trial

Over Inline's objections, and despite the District Court's order precluding Dr. MacLean from testifying about secondary considerations of non-obviousness, Dr. MacLean was permitted to testify to his ultimate conclusion on patentability despite failing to consider objective evidence of non-obviousness. *See, e.g.*, Appx3009, Appx3193, Appx1791-1792, Appx1796-1797, Appx1825-1826, Appx1833, Appx1838-1841.

B. Lacerta Offered Evidence and Argument Conflicting with the Court's Claim Construction

Dr. MacLean tried to argue that certain claim limitations that the District Court held were only in some of the asserted claims were nonetheless present in each asserted claim. Appx1734. Dr. MacLean further interpreted the District Court's construction of "upwardly projecting bead" as requiring "physical structure residing on the base flange." Appx1737-1739. The District Court's *Markman* decision, however, fails to mention a "physical structure" requirement in the construction of the "upwardly projecting bead" limitation. Appx6-10.

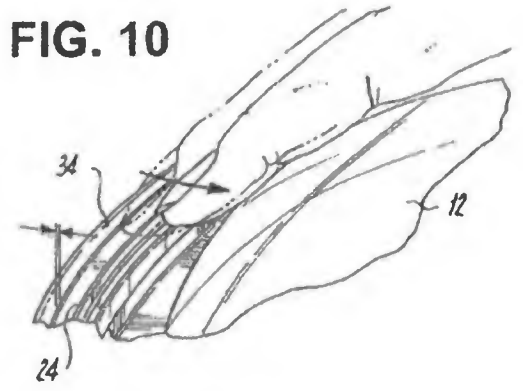
Dr. MacLean continued his improper claim construction by interpreting "relatively inaccessible" and "hindered access" as making the flange completely

inaccessible. Appx1741-1742, Appx1743, Appx1793.

More specifically, Dr. MacLean testified that "the Court has construed 'relatively inaccessible' and 'hindered access' with the same definition, with the same construction: 'Physically impedes access from fingers or any other object to separate the cover portion from the base portion.'" Appx1741. Using Figure 10 from the '003 Patent (reproduced below), he testified that this means that "for the claimed invention" …. "you cannot access the flange…":

> And so when I look at the patents, this is Figure 10 from the '003 patent . . . . And what this figure connotes, when you read it in the content [sic] of the specification, is that – for the – excuse me – ***for the claimed invention,*** if I take my finger and I run it from the outermost edge toward the middle of the container, across that region that I just described, ***you cannot access the flange.*** That's what that figure is connoting.

Appx1741-1742 (emphasis added).



Appx86.

Dr. MacLean further opined that the cover flange must be "bur[ied]" beneath the rim of the base to be "relatively inaccessible." Appx1793 ("We talked about that bead burying that flange, so that is now relatively inaccessible . . . ."). Lacerta's counsel then emphasized this point during closing arguments. Appx2131 (arguing that "[t]he accused products do not have a buried flange").

V. THE FAULTY JURY CHARGE AND GENERAL VERDICT FORM

A. Jury Instructed on Written Description Defense that Lacerta Never Asserted

The District Court instructed the jury that it could find invalidity on the basis of insufficient written description, even though Lacerta did not present any written description evidence at trial. There was no testimony at trial, expert or otherwise, suggesting insufficient written description.

At the charge conference, Inline objected to the Court's proposed invalidity instruction that included an instruction on lack of written description. Appx1810. Lacerta stated that a written description opinion "was proffered yesterday or will be proffered today by Dr. MacLean" (Appx1819), but this never happened. The Court overruled the objection and instructed the jury on written description anyway. Appx2181-2182.

B. The Court Instructed the Jury on Indefiniteness Even Though Lacerta Waived that Theory

Over Inline's objections, the District Court instructed the jury that it could

find invalidity on the basis of indefiniteness—thus requiring the jury to engage in a question of claim construction—even though Lacerta never contended that the terms "height" and "substantially leak resistant" were indefinite at the claim construction stage or in any of its pretrial invalidity contentions. Appx1759, Appx2182-2183, Appx9159.

At trial, Dr. MacLean testified that certain asserted claims were invalid due to indefiniteness. Appx1841-1846. Inline objected to this testimony. Appx1759. Indeed, Inline had previously moved to preclude the indefiniteness testimony because Lacerta had not argued indefiniteness in its invalidity contentions or during *Markman*, when it should have done so. Appx3047.[4]

C. Jury Permitted to Find Invalidity at Odds with Summary Judgment

Claim 1 of the '640 patent includes the limitation "the vertical height of the hinge correlates with the height of the skirt that depends downwardly from the base portion." Appx181. During summary judgment, the District Court held that Claim 1 of the '640 patent was infringed. Appx2993-2995. Notwithstanding this infringement finding, the District Court instructed the jury that it could find claims of the '003, '756, '580, and '640 Patents invalid for indefiniteness on the basis of

[4] Under D. Mass. Local Rule 16.6, defendants must disclose invalidity contentions early in the litigation and waive any invalidity theory not included in those contentions. L.R. 16.6(d)(4)(E)-(F).

terms describing the hinge height, such as "vertical height of the hinge correlates with the height of the skirt that depends downwardly from the base portion." Appx2182-2183.

VI. THE DISTRICT COURT'S DECISIONS ON POST-TRIAL MOTIONS

Inline moved for judgment as a matter of law of validity and infringement. Appx3475, Appx3502. Inline argued that it was entitled to judgment as a matter of law of no invalidity, or in the alternative a new trial, in view of the unrebutted objective evidence of non-obviousness, Lacerta's failure to show motivation to combine the prior art, the District Court's improper written description jury charge and admission of improper prior art testimony and evidence, among other arguments. Appx3477, Appx3481-3500. Inline also argued that a new trial was necessary in view of the general verdict on invalidity failing to identify the basis for the invalidity finding. Appx3500. Inline argued that it was entitled to judgment as a matter of law of infringement because the District Court had already rejected Lacerta's non-infringement defenses that conflicted with the District Court's claim constructions. Inline further argued that it was entitled to a new trial in view of testimony and argument on Lacerta's patent, as well as other evidence, that should have been excluded as prejudicial. Appx3508-3509. The Court denied both motions without opinion. Appx33.

SUMMARY OF ARGUMENT

The District Court issued instructions to the jury that were incomplete, flawed and highly prejudicial, leading the jury to an invalidity verdict based on theories it should not have considered. The District Court amplified this error by ordering a general verdict form that masked the underlying facts and theories applied by the jury in reaching its verdict.

For example, did the jury find the claims invalid based on the phantom written description theory? The court had no legal or factual basis for instructing the jury on a written description defense. Moreover, the District Court's indefiniteness instruction resurrected a defense (indefiniteness of the hinge "height") long since waived. Indeed, the District Court's own summary infringement ruling had already effectively resolved this defense and thus it should not have gone to the jury. These material legal errors infected the jury deliberations resulting in a manifestly unjust invalidity verdict, a verdict potentially biased by multiple improper grounds that should be vacated under First Circuit law and the *Baldwin* Rule. *See Maryland v Baldwin*, 112 U.S. 490 (1884).

In addition, the District Court's jury instructions on obviousness were flawed by providing an incomplete instruction on the objective indicia of non-obviousness evidence, which failed to recite key indicia of non-obviousness including copying, failure of others and industry praise.

To the extent that the jury verdict was premised on Lacerta's allegations that Inline's patents were obvious, the evidence at trial was insufficient, and the verdict should thus be reversed as a matter of law. There was no clear and convincing proofs that various prior art references could be combined to render the claim invention obvious. Impermissible hindsight tainted Lacerta's expert's conclusory analysis of "inventoried" claim limitations, rendering these opinions unsustainable as a matter of law. Critically missing was any rebuttal challenging Inline's compelling objective indicia of non-obviousness. Indeed, Lacerta's expert failed to consider, much less rebut, this evidence. In view of Lacerta's expert's failure to conduct a complete obviousness review, the District Court should not have allowed him to opine on the ultimate issue of obviousness.

Improper claim construction also tainted the jury verdict. The District Court's construction discarded terms having common, well-understood meanings, replacing these terms with limitations improperly imported from the specification. Collectively, these extensive re-definitions of the claims required, in essence, a container that is 100% inaccessible. In reaching its construction, the District Court ruled that Inline had "disclaimed" the ordinary meaning of the claim terms even though, as a matter of law, there was no evidence supporting a disclaimer. The Accused Containers would all infringe if the District Court had applied the proper construction to the disputed claim terms.

ARGUMENT

I. THE DISTRICT COURT'S ERRONEOUS JURY INSTRUCTION AND IMPROPER VERDICT FORM WARRANT A NEW TRIAL ON VALIDITY

Lacerta requested, and the District Court gave, jury instructions on multiple improper invalidity theories that tainted the verdict and mandate a new trial. As detailed below, the District Court gave multiple instructions on legally and/or factually defective invalidity theories. None of these points, however, should be construed as accepting any of Lacerta's theories of invalidity –each of which Inline now challenges on appeal.

A. Standard of Review

In reviewing a district court's jury instructions and verdict form, this Court applies the law of the regional circuit. *XY, LLC v. Trans Ova Genetics, L.C.*, 890 F.3d 1282, 1290 (Fed. Cir. 2018). The First Circuit reviews jury instructions *de novo* and considers challenged instructions "in relation to the charge as a whole, asking whether the charge in its entirety—and in the context of the evidence—presented the relevant issues to the jury fairly and adequately." *AbbVie Deutschland GmbH & Co., KG v. Janssen Biotech, Inc.*, 759 F.3d 1285, 1302 (Fed. Cir. 2014) (quoting *Sony BMG Music Entm't v. Tenenbaum*, 660 F.3d 487, 503 (1st Cir. 2011). *Massachusetts Eye & Ear Infirmary v. QLT Phototherapeutics, Inc.*, 552 F.3d 47, 72 (1st Cir 2009.), *decision clarified on denial of reh'g*, 559 F.3d 1 (1st Cir. 2009) (prejudicial error in

the jury instructions warrant a new trial). The district court's decisions with respect to the verdict form are reviewed for abuse of discretion. *See Transam. Premier Ins. Co. v. Ober*, 107 F.3d 925, 933 (1st Cir. 1997).

B. A General Verdict May Not Be Based on an Improper Invalidity Theory

Supreme Court precedent requires a new trial when the verdict was premised on one of two theories and one of the theories is legally defective. *Maryland v Baldwin*, 112 U.S. 490, 493 (1884), *see also Sunkist Growers v. Winckler & Smith Citrus Products Co.*, 370 U.S. 19, 30 (1961) (holding under the *Baldwin* rule that "[s]ince we hold erroneous one theory of liability upon which the general verdict may have rested … it is unnecessary for us to explore the legality of the other theories"); *Levinsky's, Inc. v. Wal-Mart Stores, Inc.*, 127 F.3d 122, 134 (1st Cir. 1997) (when a general verdict may have been based, in whole or in part, on an "improvidently submitted" claim and "a reviewing court cannot identify which of the two claims … the jury relied upon to reach the general verdict," the verdict must be vacated) (citation omitted). Known as the *Baldwin* Doctrine, this line of authority recognizes the danger and substantial injustice that accrues if there is any risk that the jury applied an improper legal theory in reaching its verdict. This risk mandates a retrial:

> [The] generality [of the verdict] prevents us from perceiving upon which [issue] [the jury] found. If, therefore, upon any one issue error was committed, either in the admission of evidence, or in the charge of

> the court, the verdict cannot be upheld, for it may be that by that evidence the jury were controlled under the instructions given.

Baldwin, 112 U.S. at 493.

In the First Circuit, "a new trial is usually warranted if evidence is insufficient with respect to any one of multiple claims covered by a general verdict." *Gillespie v. Sears, Roebuck & Co.*, 386 F.3d 21, 30 (1st Cir. 2004). The First Circuit has rejected the rule applied in some other circuits that, in civil cases, a general verdict presenting more than one legal theory may be upheld if the evidence adequately supports at least one of the alternative legal theories available to the jury. *See Kerkhof v. MCI WorldCom, Inc.*, 282 F.3d 44, 52 (1st Cir. 2002).

i. The District Court's Improper 'Written Description' Instruction Substantially Raised the Specter of a Tainted Verdict

In this case, Lacerta pursued multiple theories of invalidity but made no written description challenge to the patents. Written description was not part of Lacerta's invalidity contentions, expert reports, or any trial testimony.[5] Appx3494-3496, Appx9156-9159, Appx9039-9041, Appx1841. Lacerta never even raised a written description theory at trial. Appx1841. Notwithstanding its total absence from the case, at the charge conference, Lacerta sought a detailed instruction on written description. Appx1819. Over Inline's objections, the District Court granted

[5] Given no notice, Inline did not prepare evidence to rebut a written description challenge.

Lacerta's written description instruction, and it was the *first of three instructions* on invalidity read to the jury before deliberations. Appx2181-2182.

The written description issue should never have been presented to the jury. The impact of this improper instruction was not harmless. Lacerta pressed the District Court to include an instruction for a charge it knew was unsupported at trial. Confronted with the reality of summary judgment of infringement of the '640 Patent and its inability to rebut Inline's evidence of objective indicia of non-obviousness, Lacerta knowingly sought to insert an improper invalidity instruction. Because nothing in the record suggests any subsequent clarification, this Court cannot conclude that the erroneous instruction did not influence the jury's verdict. *Compare Davis v. Rennie*, 264 F.3d 86, 109-10 (1st Cir. 2001) (finding initial erroneous instruction was harmless when the District Court later provided a clarifying instruction). Harmless error does not apply in a situation when the jury heard instructions involving multiple theories and the District Court never differentiated the support for any proper invalidity theory over legally improper theories. *See Cornwell Ent., Inc. v. Anchin, Block & Anchin, LLP*, 830 F.3d 18, 32–33 (1st Cir. 2016).

ii. The District Court's Improper Indefiniteness Instruction on 'Hinge' Height Raised a Previously Settled Issue to the Jury

At trial, Lacerta argued that the "hinge" height limitations were indefinite.[6] But the issue should never have been presented to the jury. Procedurally, Lacerta failed to raise this contention in its pleadings, in its invalidity contentions, or during the *Markman* claim construction process when the District Court considered Lacerta's other indefiniteness theories and held the terms not indefinite. Appx2-5, Appx2226-2227, Appx3079, Appx1758-1759, *see also* Appx1757-1759. By trial, Lacerta had long since waived any argument that the "hinge" height was indefinite by failing to raise the issue in its contentions. *See* D. Mass. Local Rule 16.6 (d)(4)(F) (accused infringer's disclosures must include "[a]ny asserted grounds of invalidity based on …indefiniteness … or written description"); *O2 Micro Int'l Ltd. v. Monolithic Power Sys., Inc.*, 467 F.3d 1355, 1365–66 (Fed. Cir. 2006) (observing that similar local rule "requir[ed] both the plaintiff and the defendant in patent cases to provide early notice of their infringement and invalidity contentions"); *CardioNet, LLC v. InfoBionic, Inc.*, No. 1:15-CV-11803-IT, 2020 WL 4559934, at *8 (D. Mass. June 22, 2020) (precluding party from relying on infringement theories not timely disclosed in contentions) (vacated on other grounds, 2021 WL 5024388 (Fed. Cir.

[6] The hinge height limitations appear in Claims 1, 2, 3, 5, and 6 of the '640 Patent; Claim 22 of the '003 Patent; Claims 1, 4, 8, 9 of the '580 Patent; and Claims 1, 3, 6, and 7 of the '756 Patent.

Oct. 29, 2021)); Appx10798-10802, Order, *Bio-Rad Labs., Inc. v. 10X Genomics, Inc.*, Action No. 19-cv-12533 (D. Mass. Jun. 18, 2021) (Doc. No. 392) (allowing motion to preclude prior art reference not disclosed pursuant to L.R. 16.6(d)(4)) and Motion (Doc. No. 335); *Silicon Lab'ys, Inc. v. Cresta Tech. Corp.*, No. 14-CV-03227-PSG, 2016 WL 791792, at *3 (N.D. Cal. Mar. 1, 2016) (holding indefiniteness challenges waived by failure to raise in similar local rule invalidity contentions), *Finalrod IP, LLC v. John Crane, Inc.*, No. 7:15-00097, 2019 WL 4061703, at *2 (W.D. Tex. May 30, 2019) (defendant waived indefiniteness by failing to raise it during claim construction).

During the *Markman* process, Lacerta raised multiple indefiniteness arguments, but did not present a concern over the "hinge height" limitation. Moreover, Lacerta sought to continue District Court consideration of its indefiniteness defenses, but the District Court declined, reviewed each, and dismissed them all. Appx2-5. By failing to raise indefiniteness of this term during claim construction, Lacerta waived its belated theories about the "hinge" height. *See, e.g., Cent. Admixture Pharmacy Servs., Inc. v. Advanced Cardiac Sols., P.C.*, 482 F.3d 1347, 1356 (Fed. Cir. 2007) ("[defendant] waived any argument with respect to this term by failing to raise it during the claim construction phase"); *see also Noah Sys., Inc. v. Intuit Inc.*, 675 F.3d 1302, 1311 (Fed. Cir. 2012) ("[w]hether

a claim complies with the definiteness requirement of 35 U.S.C. § 112 ¶ 2 is a matter of claim construction").

Moreover, on the merits, Lacerta's indefiniteness claim on "hinge" height was legally improper. Whether a claim term is indefinite is a question of law for the court. *Encyclopaedia Britannica, Inc. v. Alpine Elecs., Inc.*, 355 F. App'x 389, 392 (Fed. Cir. 2009) ("Indefiniteness is an issue of patent claim construction and a question of law that we review de novo"). A patent is only indefinite "if its claims … fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014). The District Court's infringement finding for claim 1 of the '640 patent, which includes a "hinge" limitation, demonstrates that the claim scope is reasonably certain. Appx2994-2995.

Nevertheless, the District Court allowed Dr. MacLean to testify about the meaning of the "hinge" height limitations and to opine that these limitations were indefinite. Appx1755-1758, Appx1841-1845. That was improper. *See Cordis Corp. v. Bos. Sci. Corp.*, 561 F.3d 1319, 1337 (Fed. Cir. 2009) (barring infringer's attempts to re-litigate claim construction to the jury because "the risk of confusing the jury is high when experts opine on claim construction") (citation omitted),

Lacerta's legally improper indefiniteness theory and lengthy jury instruction regarding this legal determination should never have been presented to the jury.

There was a serious risk that the jury relied on an indefiniteness theory to invalidate claims that included the "hinge" height limitations. The District Court's decision to use a general verdict form over Inline's objections (Appx2201) heightens this risk. Under the *Baldwin* Doctrine, a new trial is warranted.

iii. The District Court's Inadequate Instruction on Objective Indicia Unjustly Influenced the Jury's Review of Obviousness

"A party is entitled to an instruction on a legally available defense if sufficient evidence is present to permit a jury to find in favor of the defense." *Gillespie*, 386 F.3d at 32 (citation omitted). The standard for determining whether a factual issue is sufficiently contested to warrant an instruction is identical to the standard for determining whether a factual controversy prevents the entry of judgment as a matter of law. *Wilson v. Mar. Overseas Corp.*, 150 F.3d 1, 10 (1st Cir. 1998). A court is not permitted to weigh the evidence or make credibility determinations but rather "must determine whether the evidence presented at trial, along with all inferences that may reasonably be drawn therefrom, could plausibly support a finding for either party on any given issue of material fact." *Id*.

Inline is entitled to a new trial because the District Court gave an insufficient instruction related to secondary considerations. The District Court instructed the jury only on evidence of commercial success and long-felt need. Appx2185. This instruction represented a significant departure from either parties' proposed jury instructions. Appx3123, Appx3153-3154, Appx10804, Appx10853. Inline,

however, offered extensive evidence of secondary considerations throughout trial and objected to the court's elimination of several types of secondary considerations from its jury instructions. Appx2201. For example, Inline offered evidence regarding licensing, industry praise, and copying. Appx502-507, Appx5680-5683, Appx5670 (industry praise), Appx1238-1240 (evidence of licensing), Appx508-512, Appx5684-5692 (evidence of copying by others), Appx793-797, Appx811-813, Appx852-854, Appx859-860, Appx865-867 (evidence of copying by Lacerta). The District Court, however, failed to instruct the jury on these indicia of non-obviousness.

Inline sufficiently proffered evidence of these secondary considerations such that it was improper for the District Court to exclude them from the jury's consideration. *See Power-One, Inc. v. Artesyn Technologies, Inc.*, No. 2:05-463, 2008 WL 1746634, *8 (E.D. Tex. Apr 11, 2008), *aff'd*, 599 F.3d 1343, 1352 (Fed. Cir. 2010) ("Copying of the invention by others is considered a secondary consideration courts must take into account when determining obviousness") (emphasis added).

The District Court's refusal to include instructions on all of the secondary considerations effectively serves as an improper weighing of evidence, especially because Lacerta offered no evidence or arguments rebutting these secondary contentions. *See Wilson*, 150 F.3d at 10 (finding District Court erred in refusing to

provide jury instruction where evidence was sufficient to create issue of fact for the jury). Because obviousness was one of the three legal theories on which the District Court instructed the jury when deciding invalidity, the failure to provide the jury with instructions on all evidence of secondary considerations was an erroneous decision that requires the granting of a new trial. *See Allen v. Chance Mfg. Co.*, 873 F.2d 465, 469–70 (1st Cir. 1989) (an erroneous jury instruction requires new trial if the error could have affected the result of the jury's deliberations).

iv. The District Court Abused Its Discretion by Refusing to Provide a Special Verdict Form Addressing Each Separate Invalidity Theory

A new trial is necessary because, over Inline's objection, the District Court gave the jury a general verdict form. Appx1806, Appx2201. A general verdict form was wrong for a case this complex involving five patents, twenty four patent claims, and numerous defenses. In fact, the general verdict opened the door to Lacerta's improper and waived invalidity theories. This Court has long-standing precedent expressing its preference that district courts provide special verdicts when juries are asked to address matters this complicated and to determine questions of law. *See Warner-Jenkinson Co., Inc. v. Hilton Davis Chemical Co.*, 520 U.S. 17, 39 n.8 (1997) (noting that special verdicts in infringement actions are "very useful in facilitating review, uniformity, and possibly post verdict judgments as a matter of law"): *see also R.R. Dynamics, Inc. v. A. Stucki Co.*, 727 F.2d 1506, 1517 (Fed. Cir.

1984) (noting that providing detailed fact interrogatories is "strongly recommended as an appropriate means of guiding a jury, increasing the reliability of its verdict, and facilitating the judicial role following a jury trial"): *Structural Rubber Products Co. v. Park Rubber Co.*, 749 F.2d 707, 724 (Fed. Cir. 1984) (remanding due to erroneous obviousness instruction and noting that "[u]se of the special verdict eliminates the necessity for and use of complicated instructions on the law, which are a normal concomitant of the general verdict") (citation omitted).

Moreover, the result was not harmless. There is no basis to know what theory led the jury to its verdict. As a direct result of the general verdict form, the Court and the parties do not know whether the jury based its verdict on, *e.g.*, written description or indefiniteness, theories that should not have gone to the jury. A new trial is warranted.

II. NO REASONABLE JURY COULD FIND OBVIOUSNESS BECAUSE LACERTA FAILED TO OFFER EVIDENCE TO SUPPORT THE PROPOSED COMBINATIONS OF PRIOR ART AND TO REBUT THE COMPELLING EVIDENCE OF OBJECTIVE INDICIA OF NON-OBVIOUSNESS

The evidence does not support the jury's verdict of invalidity because (1) the prior art references and expert testimony on obviousness offered by Lacerta were deficient; (2) Lacerta never offered any evidence on a motivation to combine the prior art references used in support of its obviousness claim; and (3) Lacerta failed to rebut substantial testimony and evidence relating to objective indicia of non-

obviousness. Accordingly, judgment as a matter of law should have been entered for Inline.

A. Standard of Review

This Court reviews a denial of a motion for judgment as a matter of law *de novo*. *Gonzalez-Bermudez v. Abbott Lab'ys P.R. Inc.*, 990 F.3d 37, 43 (1st Cir. 2021). Decisions on a motion for judgment as a matter of law or for a new trial are reviewed under the law of the regional circuit. *Roche Diagnostics Corp. v. Meso Scale Diagnostics, LLC*, 30 F.4th 1109, 1114 (Fed. Cir. 2022). The District Court's denial of Inline's motion for judgment as a matter of law of validity is appropriately reversed if "based on the evidence in the record, 'reasonable persons could not have reached the conclusion that the jury embraced.'" *Gonzalez-Bermudez*, 990 F.3d at 43 (citation omitted). In other words, the denial is appropriately reversed "if the jury would not have a legally sufficient evidentiary basis for its verdict." *Rinsky v. Cushman & Wakefield, Inc.*, 918 F.3d 8, 26 (1st Cir. 2019). The patent challenger has the burden of proving invalidity by clear and convincing evidence. *See Microsoft Corp. v. I4I Ltd. P'ship,* 564 U.S. 91, 97 (2011).

B. Lacerta's Prior Art References and Expert Testimony on Obviousness Were Deficient

Lacerta did not present any anticipation or single-reference obviousness arguments at trial and relied on six references, four of which were considered by the Patent Office during examination of the patents. The other two references had

disclosures that were cumulative to patents already considered by the patent examiner or taught away. *See above*, pp. 22-24.

The references differed from the claimed technology in critical ways, such as lacking tamper-resistance or tamper-evidence or having a two-piece construction, lacking a frangible hinge, or having a welded hinge and no skirt or bead. It was simply not feasible to combine these references involving containers having different numbers of pieces, made using different manufacturing techniques, and including different design features. Appx2033-2034; *see also above*, pp. 22-24.

C. Lacerta Failed to Show Motivation to Combine

"[A] patent composed of several elements is *not* proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (emphasis added). On the contrary, "it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." *Id*. "[S]ome kind of motivation must be shown from some source." *Innogenetics, N.V. v. Abbott Lab'ys*, 512 F.3d 1363, 1374 (Fed. Cir. 2008) (citation omitted) (emphasis added).

"[C]onclusory expert testimony is inadequate to support an obviousness determination on substantial evidence review." *TQ Delta, LLC v. CISCO Sys., Inc.*, 942 F.3d 1352, 1359 (Fed. Cir. 2019). In particular, conclusory combinations may

be susceptible to hindsight bias. *Id.* at 1360-61. Expert testimony about a modification that is "generic" and "bears no relation to any specific combination of prior art elements" is insufficient. *See ActiveVideo Networks, Inc. v. Verizon Commc'ns, Inc.*, 694 F.3d 1312, 1328 (Fed. Cir. 2012) (affirming JMOL for patentee). Where an expert "opined that all of the elements of the claims disparately existed in the prior art, but failed to provide the glue to combine those references[,]" the testimony failed to prove invalidity. *InTouch Techs. v. VGO Commc'ns, Inc.*, 751 F.3d 1327, 1348-49 (Fed. Cir. 2014).

Lacerta's obviousness case was fatally flawed because the testimony of its expert, Dr. MacLean, lacked any meaningful support regarding reasons or motivations for combining the selected prior art Lacerta asserted. To the contrary, as noted above, Dr. MacLean based his testimony on an "inventory" – essentially a laundry list of the limitations culled from each challenged claim. In lieu of identifying any support for combining elements taken from the prior art from any source, Dr. MacLean simply used these claim limitations as a roadmap to construct his prior art combinations. *See above*, pp. 24-25. Dr. MacLean's testimony is textbook—and impermissible—hindsight. *See, e.g., Insite Vision Inc. v. Sandoz, Inc.*, 783 F.3d 853, 859 (Fed. Cir. 2015) ("Defining the problem in terms of its solution reveals improper hindsight in the selection of the prior art relevant to obviousness.").

More specifically, Dr. MacLean's testimony suggesting that disparate elements in the prior art can be assembled from an inventory fails to provide the metaphorical glue needed to support an expert's opinion of obviousness. *See InTouch Techs*., 751 F.3d at 1348-49. This Court has discouraged the notion that claim elements are "modular" (*ActiveVide*o, 694 F.3d at 1327-28) and can be fitted together as if pieces of a "puzzle" to prove obviousness. *InTouch Techs.*, 751 F.3d at 1351.

Lacerta's failure to show motivation is compounded by the fact that Dr. MacLean never discussed whether the combinations would be operable for their intended purposes. Where a proposed modification to a prior art reference would render the reference "inoperable for its intended purpose,' … a person of ordinary skill would … not have been motivated to pursue the combination." *Plas-Pak Indus., Inc. v. Sulzer Mixpac AG*, 600 F. App'x 755, 760 (Fed. Cir. 2015) (quoting *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984)). As Inline's expert, Dr. Kazmer explained it would **not** be feasible to combine references involving different manufacturing methods (Appx2040-2042, Appx2048-2049) and features that conflict with each other and could not readily be combined. Appx2042, Appx2045, Appx2047-2049, Appx2050-2052.

Lacerta was required to show "motivation ***to combine particular references to reach the particular claimed [utility]***" not merely "motivation to solve" an

existing problem. *Innogenetics*, 512 F.3d at 1373 (emphasis added); Appx2041-2042. Lacerta's failure to present probative, non-conclusory evidence satisfying its clear and convincing burden undermines its entire obviousness defense, which fails as a matter of law.

In view of Lacerta's failure to show motivation to combine the prior art, judgment as a matter of law should have entered for Inline.

D. Lacerta Failed to Rebut Evidence of Non-Obviousness

"Objective indicia of nonobviousness must be considered in every case where present." *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1048 (Fed. Cir. 2016). "[E]vidence of secondary considerations may often be the most probative and cogent evidence in the record." *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538 (Fed. Cir. 1983); *see also InTouch Techs.*, 751 F.3d at 1353 (Fed. Cir. 2014) (reversing judgment of invalidity where defendant failed to rebut evidence of secondary considerations).

Inline presented substantial evidence of secondary considerations that Lacerta did not and could not refute, including massive sales growth of the product, long felt needs, failure of others, industry praise and awards, and copying by the accused infringer and others. *See above*, pp. 9-12.

Lacerta did not rebut Inline's evidence of objective indicia of non-obviousness. Lacerta did not contest the magnitude of the commercial success, nor

the nexus to the claims. Moreover, Lacerta did not provide any expert testimony concerning secondary considerations or nexus. Indeed, Lacerta could not do so because it failed to cover that issue in its expert reports. Appx3193.

By failing to account for Inline's evidence of secondary considerations, Lacerta's obviousness analysis fell short of that required by a reasonable jury to find obviousness. *See InTouch Techs.*, 751 F.3d at 1352 ("By failing to account for objective evidence of nonobviousness, [defendant's expert's] analysis was incomplete, and ultimately insufficient to establish obviousness by clear and convincing evidence."), *Pro-Mold and Tool Co., Inc. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573 (Fed. Cir. 1996) (reversing summary judgment of obviousness because District Court failed to consider patentee's commercial success). In view of Lacerta's failure to rebut substantial evidence of non-obviousness, judgment as a matter of law should have entered for Inline.

III. THE DISTRICT COURT'S CLAIM CONSTRUCTION REQUIRING A COVER FLANGE THAT IS "PHYSICALLY" BLOCKED RENDERING IT INACCESSIBLE IS REVERSIBLE ERROR

The District Court's constructions of upwardly projecting "bead," "hinder access," "relatively inaccessible," and "configured to surround…." instructed the jury, in effect, that only a container system with a completely physically inaccessible cover flange could infringe. Lacerta capitalized on these improper constructions

when arguing non-infringement to the jury. Appx2127, Appx2130. These constructions were improper and materially tilted the scales against Inline at trial.

In its *Markman* order, the District Court recognized that the claim wording "does not mean" that access to the cover flange is "impossible" Appx4 at n.5. This untethered and confusing passage, found only in a footnote, however, was lost within the wording selected and used by the District Court to displace the actual claim terms. In particular, the District Court's constructions imported structural features of the preferred embodiment. To emphasize these features, the District Court required multiple claim terms to repetitively recite "physically impede[s] access" to the cover flange. Appx19. For all practical purposes, the combination of "constructions" permitted the jury to conclude "100 % inaccessible" was actually required. *Id*.

This was precisely how Lacerta argued these claim terms at trial. Lacerta's expert, Dr. MacLean, testified that "the Court has construed 'relatively inaccessible' and 'hindered access' with the same definition, with the same construction: 'Physically impedes access from fingers or any other object to separate the cover portion from the base portion.'" Appx1741; *see above*, pp. 26-28.

Replacing the easily understood "hinder access" with the more restrictive "physically impedes access" from "*fingers or any other object*" (emphasis added) sent an unmistakable message to the jury. Such instructions, coupled with Lacerta's

additional definitional restrictions improperly derived from embodiments in the specification led the jury to conclude the flange must be inaccessible for infringement.

A. Standard of Review – Legal Framework

The proper construction for claim terms is a question of law for the court. Review is *de novo.*[7] *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 574 U.S. 318, 332-33 (2015). There is a heavy presumption that claim terms should be given their ordinary meaning. *See, e.g., Epistar Corp. v. Int'l Trade Comm'n*, 566 F.3d 1321, 1334 (Fed. Cir. 2009).

B. Upward Projecting Bead Should Have Been Given its Plain and Ordinary Meaning

The ***upwardly projecting bead*** is a structural limitation, a feature of the base rim–that is, a portion of the base that extends upward. These three words are neither complex, confusing, nor terms of art necessitating court re-interpretation. Indeed, the District Court acknowledged that the words themselves provided the meaning of the disputed term: "The claims do not describe a bead as a molding; *they only describe the bead as part of upper peripheral edge of the base*." Appx7 (emphasis added). Furthermore, the actual meaning was not disputed, and the parties agreed

[7] Factual findings by the court or reviewed for "clear error." *Teva Pharms.*, 574 U.S. at 322. Here, the district court did not make specific factual findings.

on terminology useful for defining the "upward projecting bead" as the "raised portion of the upper peripheral edge" of the base. Appx2415-2416. That should have been the end of it.

Lacerta, however, argued that the simple term *bead* required a bead that "surrounds the outer edge of the outwardly extending peripheral flange" of the cover. This terminology is taken directly from the preferred embodiment in the specification but renders superfluous the remaining–and broader–claim wording that specifies the bead location on the base as "extending substantially about the perimeter of the base portion…."

The District Court's sole rationale for departing from the common meaning of "bead" was that the specification recites this specific location in a preferred embodiment. Appx7-8. But the District Court only considered the preferred embodiment in isolation and erred by requiring it as part of the claims. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1323 (Fed. Cir. 2005).

At trial, Lacerta leveraged the specification-derived claim limitation during expert testimony by repeatedly comparing figures of the preferred embodiment bead structure with the court's construction. Appx1734-1736, Appx1741-1744. This repeated comparison to preferred embodiments improperly influenced the jury to think that that the bead limitation should be confined to the preferred embodiment.

Claim 5 of the '640 Patent provides a clear illustration of how the construction

created confusion. Here, this dependent claim includes the exact definitional language rendering the inclusion in the definition of bead redundant.[8] Coupled with the improper jury instructions on "written description" and "indefiniteness," the flawed claim construction distorted both infringement and validity considerations by the jury.

C. The District Court Construction of "Hinder Access" and "Relatively Inaccessible" Improperly Restricted the Claims to a Cover that was in Essence Completely Inaccessible

The ordinary meaning of the claim terms "hinder access" and "relatively inaccessible" were commonly understood terms of degree. The District Court treated these two terms as synonyms. Each term recites the claimed functional relationship between the cover flange and upper peripheral rim of the base. Specifically, these two parts—the cover flange and base upper rim—are arranged to *resist tampering* by making access to the flange "difficult." Appx178. The level of difficulty in accessing the flange was required to be just greater than the "relatively easy method of removing a cover from conventional containers….." *Id*. Said differently, these limitations require that access to the flange was not easy; it must be relatively difficult enough to deter and resist tampering, but no more (that is, not

[8] The District Court recognized the problem but dismissed it as a variant of claim differentiation–again, an incorrect conclusion. *See Apple, Inc. v. Ameranth, Inc.*, 842 F.3d 1229, 1237 (Fed. Cir. 2016) ("Construing a claim term to include features of that term already recited in the claims would make those expressly recited features redundant"); Appx8-9.

impossible).

In a prior litigation concerning the '003 Patent, the District Court construed tamper-resistant/evident to mean "a container incorporating structural elements designed to deter, indicate, or deter and indicate, unauthorized tampering or opening prior to consumption." *Inline Plastics Corp. v. EasyPak, LLC,* No. 11-CV-11470-TSH, 2013 WL 2395998, at *9 (D. Mass. Jan. 22, 2013). In the present litigation, the District Court through its construction of "hinder access" and "relatively inaccessible" seemingly imposed a new and more restrictive construction on the term tamper-resistant than simply deterring access. The District Court effectively redrafted tamper-resistant as not simply deterring access, but as physically impeding access (*i.e.*, being "tamper-proof").

To hinder is to inhibit but not to deny access. Appx4 at n.5. There was nothing within the intrinsic record to replace this plain meaning and nothing to justify narrowing "hinder" to mean to exclude access. The specification made clear that "hinder" was not synonymous with prevent but as a measure of degree—to make more difficult the "relatively easy" access of conventional containers:

> The position and upward extension of bead 34 is configured to hinder the relatively easy method of removing a cover from conventional containers that may resemble or have characteristics in common with container 10.

Appx93 at 6:5-8.

Notwithstanding this clear meaning, Lacerta implored the District Court to modify each term to mean completely inaccessible (*i.e.*, "100% impediment") arguing that the illustrative embodiment in the specification demands such restrictive language. Appx2419-2421.

Ruling that the patentee had "disclaimed" the ordinary meaning, the District Court accepted Lacerta's construction requiring that the bead "physically impedes access" from "fingers or any other object" and discarded the actual claim limitation "hinder access"—again taking these unclaimed features directly from the specification. Appx6-13.

The District Court's disclaimer ruling was unwarranted. Settled authority of this Court on disclaimers mandates more than a specification that merely "describes" one embodiment. A disclaimer that narrows the claim term's ordinary meaning must be a "clear and unmistakable disavowal" of claim scope by words of "manifest exclusion." *Thorner v. Sony Computer Ent. Am. LLC*, 669 F.3d 1362, 1366-67 (Fed. Cir. 2012). The intrinsic record reveals nothing that remotely reaches this high bar. To the contrary, the specification describes its inventions in broader terms. Appx91-92. The patentee further confirmed that the claims–and not the specification–formed the boundaries of its invention:

> Although exemplary and preferred aspects and embodiments of the present invention and forming methods have been described with a full set of features, it is to be understood that the disclosed container and

> method of manufacture may be practiced successfully without the incorporation of each of those features. . . .

Appx94.

This Court has held that such statements broaden the claims rather than confining them to the preferred embodiments. *See Aventis Pharma S.A. v. Hospira, Inc.*, 675 F.3d 1324, 1331 (Fed. Cir. 2012).

D. The District Court Erred by Construing "Configured To Surround…" to Mean "Configured to Physically Impede…," Unjustifiably Altering a Location to a Functional Recitation

This final disputed term specifies the bead location relative to the cover flange. The term, however was construed by the District Court converting this location to functional terms by adding "physically impeding access" – language again taken from the specification that acted to reinforce the concept of a cover flange that is completely inaccessible. The District Court justified this shift in definitional focus solely because the specifications state "that surrounding the outwardly extending peripheral [cover] flange "hinders," "physically impedes," or "physically blocks" "access ….. from fingers or other objects that might normally be used for leverage to pry cover portion 12 from base portion 14." Appx16 (citations omitted).

This specification language neither supports nor justifies such a fundamental re-definition of an otherwise clearly understood term. *See Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1371 (Fed. Cir. 2014) ("We depart from the plain and

ordinary meaning of claim terms based on the specification in only two instances: lexicography and disavowal."). Taken together with the other cover flange claim terms above, the message to the jury was unmistakable – the flange of the accused cover had to be completely inaccessible for infringement. To the extent any doubt remained from the terms themselves, this was driven from the jury's mind by Lacerta's repeated presentations linking and equating this redefined claim language to the features of the preferred embodiment while arguing that a 100% inaccessible cover was required to prove infringement. Appx1734-1736, Appx1741-1744, Appx1793-1794, Appx2131. Collectively, this distorted the jury verdict.

E. The District Court Violated this Court's *O2 Micro* Rule by Allowing Lacerta to Argue Claim Construction of the Disputed "Hinge" Height Limitation to the Jury

The parties did not raise any issue regarding the "hinge" height claim terms before the *Markman* process. Notwithstanding that the Court had already found infringement of a claim including the height limitation at summary judgment, as trial approached, Lacerta challenged the term as "indefinite" and a basis for non-infringement. Lacerta's expert was allowed to offer an opinion on its meaning based on a convoluted misinterpretation of Dr. Kazmer's report somehow leading to indefiniteness (Appx1755-1758, Appx1843-1844) and another opinion that

understood height for obviousness purposes. Appx1857.[9] Inline's expert provided an alternative meaning to the term. Appx2021-2022. Allowing this conflicting testimony was improper: once the District Court decided to entertain Lacerta's tardy invalidity arguments over Inline's objection, it was obliged to construe "hinge" height. *See O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1360 (Fed. Cir. 2008) ("When the parties raise an actual dispute regarding the proper scope of these claims, the court, not the jury, must resolve that dispute.").

IV. THE DISTRICT COURT'S EVIDENTIARY ERRORS MATERIALLY PREJUDICED INLINE AND REQUIRE A NEW TRIAL ON OBVIOUSNESS

In determining motions for a new trial, the Federal Circuit applies regional circuit law. *AbbVie*, 759 F.3d at 1295. The First Circuit reviews the denial of a motion for a new trial for an abuse of discretion. *Granfield v. CSX Transp., Inc.*, 597 F.3d 474, 488 (1st Cir. 2010). Challenges to a district court's evidentiary rulings are also reviewed for abuse of discretion. *Lynch v. City of Boston*, 180 F.3d 1, 15 (1st Cir. 1999). "In the event we discern error, we must determine whether the error was harmless." *Id*. The focus of the inquiry is "whether exclusion or admission of

[9] Dr. MacLean also got the law wrong, alleging that the Inline patent needed to teach him how "I can design a product that wouldn't infringe" (Appx1856), when "[t]he test for indefiniteness does not depend on a potential infringer's ability to ascertain the nature of its own accused product to determine infringement, but instead on whether the claim delineates to a skilled artisan the bounds of the invention." *Star Sci., Inc. v. R.J. Reynolds Tobacco Co.*, 537 F.3d 1357, 1373 (Fed. Cir. 2008).

the evidence affected plaintiff's substantial rights." *AbbVie*, 759 F.3d at 1302 (quoting *Lynch*, 180 F.3d at 15).

A. The District Court Committed Legal Error and Abused Its Discretion in Admitting Testimony from Lacerta's Expert on Ultimate Issue of Obviousness

The admissibility of expert opinions is reviewed for abuse of discretion. *Ruiz-Troche v. Pepsi Cola of Puerto Rico Bottling Co.*, 161 F.3d 77, 83 (1st Cir. 1998). The Federal Circuit reviews the ultimate determination of obviousness de novo. *See Weatherchem Corp. v. J.L. Clark, Inc.*, 163 F.3d 1326, 1331 (Fed. Cir. 1998).

The District Court abused its discretion in denying a new trial on obviousness after permitting Lacerta's expert to testify as to the ultimate question of obviousness. Appx1825-1826, Appx1839, Appx1841. "[W]here, as here, an expert purports to testify, not just to certain factual components underlying the obviousness inquiry, but to the ultimate question of obviousness, the expert must consider all factors relevant to that ultimate question." *InTouch Techs., Inc.,* 751 F.3d at 1352 n.8.

The District Court interpreted this footnote to mean that, while an expert could be precluded from testifying regarding secondary considerations, the expert would nevertheless be permitted to opine on the ultimate question of obviousness because, curiously, the expert **considered** secondary considerations as part of his obviousness analysis. Appx3193 (emphasis added). That does not make sense, because Dr.

MacLean had not actually opined on any secondary considerations and did not discuss them in his expert report.

The District Court thus erred in interpreting *InTouch*. Had the District Court believed that Dr. MacLean properly considered evidence of secondary considerations, there would be no reason to bar Dr. MacLean from testifying as to secondary considerations. As a result, at trial, Lacerta did not fulfill its burden to demonstrate obviousness by providing testimony as to all four *Graham* Factors. *See WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1328 (Fed. Cir. 2016) ("the ultimate question of obviousness is one of law which must consider all four Graham factors including objective indicia"); *see also Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1360 (Fed. Cir. 2012) (same); *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d at 1048 ("Objective indicia of nonobviousness must be considered in every case where present") (emphasis added).

Such admissions were far from harmless. The Federal Circuit has long held that "[e]nroute to a conclusion on obviousness, a court must not stop until **all** pieces of evidence on that issue have been fully considered and each has been given its appropriate weight." *Stratoflex*, 713 F.2d at 1539 (emphasis in original); *see also Kinetic Concepts*, 688 F.3d at 1370 (noting that "[s]econdary considerations 'can be the most probative evidence of non-obviousness in the record . . . .'") (quoting *Crocs, Inc. v. ITC*, 598 F.3d 1294, 1310 (Fed. Cir. 2010)). Because there is no

evidence to suggest that Dr. MacLean considered a necessary component of the obviousness inquiry, it is unclear whether the jury properly considered evidence that could have affected the outcome of the case. *See Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 668 (Fed. Cir. 2000) (vacating and remanding a district court's judgment on invalidity where it was impossible to determine whether the fact-finder considered any evidence of secondary considerations before determining that the asserted claims were invalid). For the foregoing reasons, this Court should reverse the jury's verdict of invalidity and remand for a new trial on the question of validity.

B. The District Court Abused Its Discretion in Admitting Evidence about Lacerta's Patent

The District Court abused its discretion in denying a new trial on infringement after admitting evidence of Lacerta's patent. The District Court admitted this evidence based on an erroneous representation made by opposing counsel.

The District Court had originally sustained Inline's objection to any mention of Lacerta's own patent. Appx1404. But after Inline's objection was sustained, Lacerta's counsel then asked Lacerta's president, Mr. Lotfi, about Lacerta's patents three more times. Appx1404-1405; *see also* Appx1370-1371. Inline objected each time, and the District Court sustained the objection each time. Appx1404-1405.

Lacerta had previously attempted to introduce evidence that it filed a patent after the priority dates of Inline's asserted patents and that it had marked its products as patent pending. *Id*. The Court denied this attempt. *Id*. Lacerta also attempted to

introduce evidence of its own later-filed patent as part of its *Georgia-Pacific* factor analysis, which the District Court at first denied. Appx1343. Lacerta moved to reconsider exclusion of its patent, arguing that it was relevant to the questions of reasonable royalty and willful infringement, and not "as a defense to liability." Appx1448-1449, Appx1452. Based on these representations, the District Court admitted Lacerta's patent with a clear limiting instruction. Appx1474-1476 ("[T]his patent is … admitted into evidence by me for a limited purpose. It is not offered on the issue of infringement, and you may not consider it for that purpose; however, you may consider it on the issue of reasonable royalty damages, and you may consider it on the issue of whether any alleged infringement by Lacerta was willful.").[10] Despite this limiting instruction, Lacerta's president, Mr. Lotfi, nonetheless implied that Lacerta's patent application gave Lacerta freedom to operate because Lacerta's filed the patent application "before we launch [sic] any product into the market." Appx1477, *see also* Appx1476-1477.

[10] Inline properly objected to the inclusion of Lacerta's patent, even for the purposes of the District Court's limited instruction. Appx2201. Inline's supplemental jury instructions noted that an accused infringer's patent is not relevant to a defense against willful infringement. Appx3260; *see also Advanced Cardiovascular Sys., Inc. v. Medtronic, Inc.*, 265 F.3d 1294, 1309 (Fed. Cir. 2001) ("The fact that [accused infringer's] patent might read on the [accused device] is totally irrelevant to the question of whether [the accused infringer] willfully infringed another patent."). Moreover, Lacerta's patent is irrelevant to willfulness because it was issued after Lacerta allegedly started infringing. *See Rolls-Royce Ltd. v. GTE Valeron Corp.*, 800 F.2d 1101, 1110 n.9 (Fed. Cir. 1986) (holding that a defendant's patent, issued after the alleged infringement began, was irrelevant to willfulness).

Lacerta continued to present improper arguments that its patent somehow showed that Lacerta did not infringe. In his closing, Lacerta's counsel argued that "[Lacerta] looked at what was available in the market, and it tried to make a better product. And it did. And it patented one." Appx2147. He continued, "I want to show you what this patent claims to cover … [W]hat Lacerta patented was something different. It was in the hinge area. It was something different, because it doesn't have an outwardly projecting bead." Appx2147-2148. These statements to the jury disregarded the District Court's limiting instruction.

The existence of Lacerta's own patent, however, is irrelevant to the issue of literal infringement and whether Lacerta's containers have an upwardly projecting bead, so it was entirely improper and prejudicial for Lacerta's counsel to provide arguments stating otherwise. *See Vaupel Textilmaschinen KG v. Meccanica Euro Italia S.P.A.*, 944 F.2d 870, 879 n.4 (Fed. Cir. 1991) ("it is well-established that the existence of one's own patent does not constitute a defense to infringement").

Because the inclusion of such evidence has a tendency to confuse the jury, the Federal Circuit has previously excluded an accused infringer's patent on an accused product as evidence because it "risks injecting frolics and detours that will increase the likelihood of side issues that have potential to unduly distract the jury from the main issues." *Glaros v. H.H. Robertson Co.*, 797 F.2d 1564, 1572-73 (Fed. Cir. 1986) (internal quotations omitted).

V. THE COURT SHOULD ORDER REMAND FOR NEW TRIAL WITH CORRECT CONSTRUCTION

For the reasons explained above in Section IV, the claim constructions should be reversed. A new trial is appropriate when the district court has construed the claims incorrectly and "the party seeking a new trial shows that they were prejudiced by the error." *ArcelorMittal France v. AK Steel Corp.*, 700 F.3d 1314, 1325 (Fed. Cir. 2012). To be entitled to a new trial, a party need not show infringement under every possible construction. *Exxon Chem. Pats., Inc. v. Lubrizol Corp.*, 137 F.3d 1475, 1482 (Fed. Cir. 1998).

Inline's infringement case was prejudiced by the incorrect claim constructions because Lacerta exploited the opportunities presented by the incorrect constructions to improperly limit the claim scope to preferred embodiments and thus avoid an infringement finding. In a new trial, Inline would be able to show infringement of each asserted patent for the following reasons.

A. Infringement of the '003 and '680 Patents

With respect to the '003 Patent and '680 Patent, Lacerta disputed only whether the Accused Containers have (1) lids that are "relatively inaccessible" and (2) an "upwardly projecting bead." Appx1747-1753 ('003 patent); Appx1753-1754 ('680 patent). Under a proper construction, none of these arguments could prevail.

i. "relatively inaccessible"

Lacerta's arguments for "relatively inaccessible" could not prevail under a

correct construction. Dr. MacLean testified that the Court's "relatively inaccessible" limitation means that "you **cannot** access the flange." Appx1741-1742 (emphasis added). He also relied on impermissibly limiting the claimed invention to the embodiment of Figure 10. Appx1741-1742, *see also Catalina Lighting, Inc. v. Lamps Plus, Inc.*, 295 F.3d 1277, 1286 (Fed. Cir. 2002) ("[I]nfringement is to be determined by comparing the asserted claim to the accused device, not by comparing the accused device to the figures of the asserted patent").

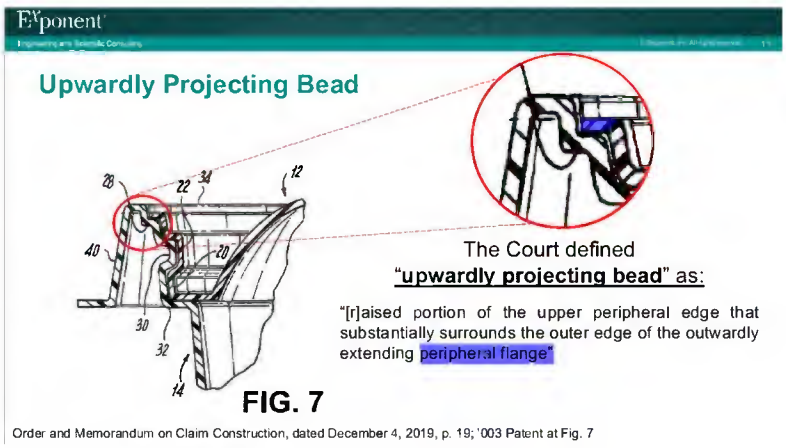
ii. **"Upwardly Projecting Bead"**

Similarly, Lacerta's arguments for "upwardly projecting bead" could not prevail under a correct construction. Inline submitted evidence, including from Lacerta's own witnesses, that the upwardly projecting bead limitation was met by the angled peripheral edges of the base of the Accused Containers which, due to their upward angle, rise above the level of the outer edge of the cover flange substantially all the way around the cover. Appx1107-1108, Appx1110-1111, Appx1116, Appx1136-1137, Appx862-863.

Lacerta argued that there was no upwardly projecting bead because there was no separate "physical structure" on the rim of the base. Appx1738-1739. (Dr. MacLean: ". . . Correct. There's no **physical structure** on that base flange.") (emphasis added). Lacerta reiterated this improper point in closing, repeatedly arguing that "there is no structure that physically blocks access to the cover flange."

Appx2128, Appx2130-2131.

Lacerta also improperly relied on embodiments from the specification to limit the scope of upwardly projecting bead. Specifically, Lacerta displayed the following version of Figure 7 of the '003 Patent:



Dr. MacLean testified that: "Figure 7 is a figure taken from the '003 patent, and it's showing the cross-section of **the embodiment** of the claimed invention." Appx1734-1736 (emphasis added).[11] Requiring a separate "physical structure," as Lacerta argued at trial, is inconsistent with its own prior arguments and could not prevail with a proper construction.

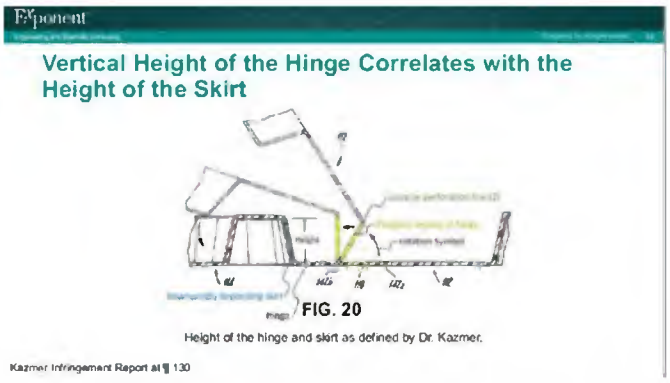
B. Infringement of the '756 Patent

With respect to the '756 Patent, Lacerta contested infringement based on two limitations: 1) "relatively inaccessible" and 2) a hinge, the "vertical height" of which

[11] Inline objected to Lacerta's use of the patent drawings to construe "[upwardly] projecting bead" but was overruled. *See* Appx1735-1736; *see also* Appx1734-1736.

"correlates with the height of the skirt." Appx1754-1760. For the "relatively inaccessible" limitation, Lacerta and Dr. MacLean merely referred back to the analysis discussed above for the '003 and '680 Patents. Appx1754-1755. Accordingly, this defense fails for the same reasons.

Lacerta's 'hinge height' defense fares no better. Lacerta again improperly confined the limitation to an embodiment. Lacerta displayed the below slide, misapplied Dr. Kazmer's opinion regarding the hinge height (Appx1757-1758) and, relying on the embodiment in Fig. 20, argued that hinge height must be defined by the space between two hinge pivot points as depicted in FIG. 20. Appx1756.



These arguments could not prevail with correct constructions.

C. Infringement of the '640 Patent

With respect to the '640 Patent, the Court granted Inline summary judgment of infringement of Claims 1, 2, 3 and 6 of the '640 Patent. *See* Appx2993-2995. The only claim at issue at trial, Claim 5, depends from Claim 1 and further requires an upwardly projecting bead. In defense, Lacerta merely referred to its improper

analysis regarding the "[upwardly projecting] bead" and "substantially surrounds" limitations it applied to the '003 Patent and '640 Patent. Appx1760-1761. Under correct constructions, those positions fail for the reasons above.

D. Infringement of the '580 Patent

With respect to the '580 Patent, Lacerta merely referred to "one of those claim terms that we talked about at the beginning of my presentation," referring to the "substantially surround" limitation, and the "hinge height" arguments from the '756 patent. Appx1763-1764. Under correct constructions, those positions fail for the reasons above.

Accordingly, a new trial on infringement would be necessary with correct claim constructions.

CONCLUSION AND STATEMENT OF RELIEF

Inline respectfully requests that the Court reverse the judgment of invalidity of Inline's patents or, alternatively, vacate the invalidity verdict and remand for a new trial on validity; reverse the District Court's claim construction of upwardly projecting "bead," "hinder access," "relatively inaccessible," and "configured to surround…."; and vacate the verdict of no infringement and remand for a new trial on infringement.

Dated: November 8, 2022

Respectfully submitted,

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Addendum

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ADDENDUM

Document/ Exhibit No.	Document Description	Filed	Appendix Pages
Doc. 53	Order and Memorandum on Claim Construction	12/04/2019	Appx1
Doc. 350	Jury Verdict	02/18/2022	Appx21
Doc. 389	Order for Certification of a Rule 54(b) Judgment	05/25/2022	Appx27
Doc. 390	Order entered re Judgment	05/25/2022	Appx29
Doc. 422	Electronic Order on Motions for Judgment as a Matter of Law	08/31/2022	Appx33
Tr.Ex.001	U.S. Patent 7,118,003		Appx81
Tr.Ex.002	U.S. Patent 7,073,680		Appx96
Tr.Ex.003	U.S. Patent 9,630,756		Appx114
Tr.Ex.004	U.S. Patent 8,795,580		Appx137
Tr.Ex.005	U.S. Patent 9,527,640		Appx159

UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

INLINE PLASTICS CORP., **Plaintiff,**	**CIVIL ACTION NO. 4:18-11631-TSH**
LACERTA GROUP, INC., **Defendant.**	

ORDER AND MEMORANDUM ON CLAIM CONSTRUCTION (Docket Nos. 39 & 40)

December 4, 2019

HILLMAN, D.J.

This is a patent infringement suit involving tamper-resistant/tamper-evident containers. Inline Plastics Corp. ("Inline") seeks a judgment that Lacerta Group, Inc. ("Lacerta"), a competing manufacturer, infringes upon one or more claims of its patents: U.S. Patent No. 7,118,003 (the "'003 Patent"), U.S. Patent No. 7,073,680 (the "'680 Patent"), U.S. Patent No. 9,630,756 (the "'756 Patent"), U.S. Patent No. 8,795,580 (the "'580 Patent"), and U.S. Patent No. 9,527,640 (the "'640 Patent") (collectively, the "Inline Patents"). Lacerta seeks declaratory judgment that its product does not infringe the Inline Patents and/or that the Inline Patents are invalid under 35 U.S.C. §§ 102–03, 112.[1] On November 6, 2019, the Court held a *Markman* hearing and listened to the parties' proposed constructions for the following disputed terms: (1)

[1] Section 102 pertains to the requirement of novelty, i.e., whether an invention is new. Section 103 pertains to the requirement of non-obviousness, i.e., whether an invention would have been obvious to a person of ordinary skill in the art. Section 112 pertains to the requirement that a patent specification "contain a written description of the invention, . . . , [in] clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, . . ., to make and use the same, and shall set forth the best mode contemplated by the inventor . . . of carrying out the invention."

"[upwardly projecting] bead;" (2) "at least in part;" (3) "relatively inaccessible;" (4) "hinder access;" (5) "tamper evident bridge;" (6) "projection" or "arm;" (7) "configured to substantially surround the outwardly extending peripheral flange of the cover portion;" (8) "configured to substantially surround an edge of the outwardly extending peripheral flange of the cover portion;" and (9) "the outwardly extending peripheral flange abuts the upper peripheral rim of the base portion."

Background

The Inline Patents are variously entitled "Tamper Resistant Container with Tamper-Evident Feature and Method of Forming the Same," "Methods of Manufacturing Tamper-Resistant and Tamper Evident Containers," and "Tamper-Resistant and Tamper Evident Containers." They share similar specifications and figures and are all directed to "containers and packaging that incorporate tamper-resistant and tamper-evident features." '003 Patent col.1 l.16–19; '680 Patent col.1 l.18–21; '756 Patent col.1 l.25–28; '580 Patent col.1 l.21–23; '640 Patent col.1 l.23–26. Specifically, they describe a container incorporating a non-replaceable strip that a consumer must sever before they can remove the cover portion from the base portion. '003 Patent col.6 l.55–67; '680 Patent col.7 l.18–30; '756 Patent col.6 l.23–35; '580 Patent col.6 l.12–23; '640 Patent col.6 l.23–35.

Indefiniteness

1. Legal Standard

Indefiniteness is a question of law which implicates underlying factual findings. *See Green Edge Enters., LLC v. Rubber Mulch Etc., LLC*, 620 F.3d 1287, 1299 (Fed. Cir. 2010). "[A] patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in

the art about the scope of the invention." *Nautilus, Inc. v. Biosig Instruments, Inc*., 572 U.S. 898, 901 (2014). Terms of degree are not inherently indefinite. *Interval Licensing LLC v. AOL, Inc*., 766 F.3d 1364, 1370 (Fed. Cir. 2014). A claim may employ terms of degree if it "provide[s] enough certainty to one of skill in the art when read in the context of the invention" for a skilled artisan to identify the metes and bounds of the claim. *Id.*

2. Discussion

Lacerta contends that the terms "at least in part," "relatively inaccessible," and "tamper evident bridge" are indefinite.[2] First, as to "at least in part," Lacerta argues that a skilled artisan would not understand the metes and bounds of this term because the patent fails to explain what *else* may form the relevant structures aside from the specified components (i.e., what else may form the upper peripheral edge aside from the upwardly projecting bead, the cover portion aside from a sheet of plastic material, or the circumferential engagement sealing interface aside from a plurality of arcurate segments and rounded corner portions). (Docket No. 39 at 10–11). The Court disagrees that the lack of information as to what else may form these structures renders the terms indefinite. A skilled artisan would recognize that the claims cover *any* structure incorporating the specified components.[3]

[2] The Court declines Lacerta's invitation to postpone ruling on indefiniteness until summary judgment. The parties have fully briefed the issue, and although Lacerta contends that Inline has failed to produce documents relevant to the indefiniteness inquiry, the Court disagrees. Inline provided evidence that it has produced every record of a foreign patent prosecution in its control, and in any event, as explained in more detail below, the Court would not find the decision of foreign patent offices sufficiently persuasive to overcome the clear guidance of the claim language and specification as to the scope of the challenged terms.

[3] Lacerta cites to *Amgen, Inc. v. Chugai Pharm. Co.*, 927 F.2d 1200 (Fed. Cir. 1991). In *Amgen*, the Federal Circuit considered the term "at least about" and found it indefinite because "nothing in the specification, prosecution history, or prior art provides any indication as to what range of specific activity is covered by the term 'about.'" *Id.* at 1218. Here, in contrast, "at least in part" covers any upper peripheral edge containing an upwardly projecting bead, any cover

Second, as to "relatively inaccessible," Lacerta argues that this Court should find the term indefinite because the Canadian Patent Office found the same language indefinite in the prosecution of a related Canadian patent application. (Docket No. 39 at 17–18). The decision of the Canadian Patent Office does not bind this Court, *see, e.g., Aia Eng'g Ltd. v. Magotteaux Int'l S/A*, 657 F.3d 1264, 1279 (Fed. Cir. 2011), and this Court disagrees with the result reached.[4] The patents provide sufficient guidance for a skilled artisan to understand the scope of the term. They only use "relatively inaccessible" in the context of the upwardly projecting bead, and the specification explains that the upwardly projecting bead makes the outwardly extending peripheral flange of the cover portion relatively inaccessible by surrounding it and physically blocking[5] access to it. *See, e.g.*, '003 Patent col.5 l.67; '680 Patent col.6 l.32; '756 Patent col.5 l.37. A skilled artisan would understand the metes and bounds of "relatively inaccessible" based on this description.

Finally, as to "tamper evident bridge," Lacerta argues that the term is indefinite because it has no antecedent basis in the '003 Patent and was only added during prosecution to differentiate prior art references. The Court disagrees. The claim language sufficiently delineates the scope of the term. Claim 1 describes the tamper evident bridge as connecting the cover portion to the base portion. '003 Patent col.8 ll.64–65. Claim 2 adds the limitation that the tamper evident bridge includes a hinge with a frangible section that joins the outwardly extending flange of the cover portion to the base portion and forms a projection when severed. '003 Patent col.8 l.66–

portion containing a sheet of plastic material, and any circumferential engagement sealing interface containing a plurality of arcurate segments and rounded corner portions.

[4] The Court also notes that the Examiner for the '756 Patent allowed claims using the term "relatively inaccessible" despite having been informed of the Canadian rejection.

[5] The Court rejects the suggestion that physically blocking access to something makes it 100% inaccessible. (Docket No. 39 at 19). That the upwardly projecting bead physically blocks access to the outwardly extending peripheral flange does not mean that access is impossible.

col.9 l.7. And Claim 24 focuses on making the container leak-proof after the tamper evident bridge is removed. '003 Patent col.10 ll.56–59. As Inline's expert testified, a skilled artisan would understand what a "tamper evident bridge" is based on this language. (Docket No. 40-6 at 10–16). The claim language, moreover, is consistent with the figures and description in the specification of the '003 Patent, which, despite not explicitly defining a "tamper evident bridge," does describe how it operates, e.g., how the cover and base are connected and how that relates to frangible section of the hinge. Thus, the Court declines to find "tamper evident bridge" invalid for indefiniteness.

Claim Construction

1. Legal Standard

Claim construction is a question of law decided by the court. *See Markman v. Westview Instruments, Inc*., 517 U.S. 370, 372 (1996). It "requires a determination as to how a person of ordinary skill in the art would understand a claim term 'in the context of the entire patent, including the specification.'" *Trustees of Columbia Univ. in City of New York v. Symantec Corp*., 811 F.3d 1359, 1362 (Fed. Cir. 2016) (quoting *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc)). Courts begin the analysis by looking to the language of the claims themselves. *Id.* In many instances, how a term is expressly used "within the claim provides a firm basis for construing the term." *Phillips*, 415 F.3d at 1314.

After assessing the language of the claims, courts turn to the specification, "of which [the claims] are a part." *Markman*, 52 F.3d at 979. The specification describes the invention to which the claims are directed. *Netword, LLC v. Centraal Corp.*, 242 F.3d 1347, 1352 (Fed. Cir. 2001) ("The claims are directed to the invention that is described in the specification; they do not have meaning removed from the context from which they arose."). It "is the 'single best guide to

the meaning of a disputed term' and 'is, thus, the primary basis for construing the claims.'" *Symantec*, 811 F.3d at 1362 (quoting first *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996), then *Phillips*, 415 F.3d at 1315)).

Courts also consider the patent's prosecution history. *Symantec*, 811 F.3d at 1362–63. "The prosecution history . . . consists of the complete record of the proceedings before the PTO and includes the prior art cited during the examination of the patent." *Philips*, 415 F.3d at 1317. It "inform[s] the meaning of the claim language by demonstrating how the inventor understood the invention." *Id*.

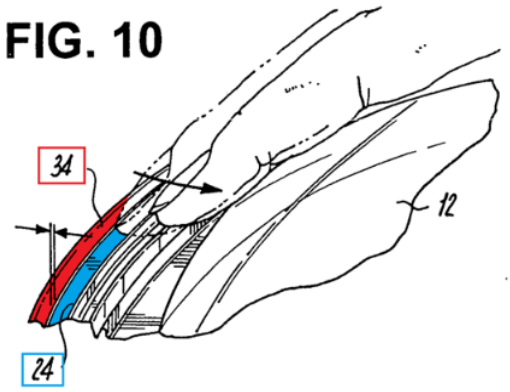
Finally, a court may consult extrinsic evidence, which is "all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." *Id*. Extrinsic evidence guides the analysis of how "a person of ordinary skill in the art would understand claim terms." *Id.* at 1319. But because extrinsic evidence is subject to bias and may not reflect the knowledge of a person of ordinary skill in the art at the time of the invention, courts "view[] extrinsic evidence in general as less reliable than the patent and its prosecution history in determining how to read claim terms." *Id.* at 1318.

2. Discussion

A. <u>"[Upwardly projecting] bead"</u>

Inline argues that the term "upwardly projecting" is self-explanatory and that the Court need only construe "bead." (Docket No. 40 at 11). Lacerta argues that the Court should construe the term "upwardly projecting bead" in its entirety. The parties agree that the Court can consider these terms together. (Docket No. 38 at 3). The proposed constructions of the disputed claims are as follows:

CLAIMS	INLINE'S CONSTRUCTION	LACERTA'S CONSTRUCTION
'003 Patent, Claims 1, 2, 17, 19-21 '680 Patent, Claims 1, 2, 17 '640 Patent, Claim 5	An [upwardly projecting] raised molding formed on the upper peripheral edge of the base portion.	Raised portion of the upper peripheral edge that surrounds the outer edge of the outwardly extending peripheral flange.



There is no support for Inline's construction in the language of the claims.[6] The claims do not describe the bead as a molding; they only describe the bead as part of the upper peripheral edge of the base.

There is some support in the claim language for Lacerta's construction. The claims of the '640 Patent describe the upwardly projecting bead as "extending substantially about the perimeter of the base portion and configured to substantially surround an edge of the outwardly extending peripheral flange of the cover portion to hinder access to the container when the container is closed." '640 Patent col.12 l.24–29. The claims of the '003 and '680 Patents, however, do not mention surrounding the outer edge of the outwardly extending peripheral

[6] There is also no support for Inline's construction in the specifications. They only mention "molding" in reference to manufacturing containers. *See, e.g.*, '003 Patent col.7 ll.38–40, ll. 45–46.

flange. They describe the upwardly projecting bead as "extending substantially about the perimeter of the base portion and configured to render the outwardly extending flange of the cover portion relatively inaccessible when the container is closed." '003 Patent col.8 ll.59–63, col.10 l.5–9; '680 Patent col.10 ll.17–18, col.11 ll.54–55. Thus, some discrepancies exist within the claim language defining the "upwardly projecting bead."

The specifications provide guidance on how to resolve any ambiguity. All three refer to the upwardly projecting bead as "extend[ing] substantially about the perimeter of peripheral rim 22 and . . . positioned to surround the outer edge of flange 24 of cover portion 12 when container 10 is closed." '003 Patent col.6 ll.1–5; '680 Patent col.6 ll.33–37; '640 Patent col.5 ll.38–42. Each specification also explains that this position "hinders," "physically impedes," or "physically blocks" "access . . . from fingers or any other object that might normally be used for leverage to pry cover portion 12 from base portion 14." '003 Patent col.6 ll.5–13; '680 Patent col.6 ll.37–44; *see also* '003 Patent col.6 ll.55–57 ("The presence of bead 34 prevents unauthorized access to the contents of container 10 by making it difficult to pull cover portion 12 from base portion 14."); '680 Patent col.7 ll.18–20 (same); '640 Patent col.5 ll.42–49 (same). In other words, consistent with Lacerta's proposed construction, only by surrounding the outwardly extending peripheral edge of the cover with the raised portion of the upper peripheral edge of the base does the container achieve what both parties agree is the functional purpose of the upwardly projecting bead. (Docket Nos. 39 at 14, 40 at 12).

Inline contends that, under the doctrine of claim differentiation, Claim 5 of the '640 Patent would be superfluous if the relevant limitation (wherein the upwardly projecting bead is "configured to substantially surround an edge of the outwardly extending peripheral flange of the cover portion to hinder access to the container when the container is closed") inherently applied

to the upwardly projecting bead. But no other claim in the '640 Patent mentions the upwardly projecting bead, and Inline cites no law suggesting that the claims of a different patent can render Claim 5 of the '640 Patent superfluous, so it is not clear the doctrine of claim differentiation is relevant. And in any event, the doctrine of claim construction is not a "hard and fast rule of construction," *Kraft Foods v. Int'l Trading Co.*, 203 F.3d 1362, 1368 (Fed. Cir. 2000), and it "can not broaden claims beyond their correct scope, determined in light of the specification and the prosecution history and any relevant extrinsic evidence." *Multiform Desiccants Inc. v. Medzam, Ltd.*, 133 F.3d 1473, 1480 (Fed. Cir. 1998).

Inline more persuasively argues that Lacerta's construction improperly limits the upwardly projecting bead to a single configuration. (Docket No. 40 at 12). Courts are generally reluctant to narrow a term to the preferred embodiment. *See, e.g.*, *Curtiss-Wright Flow Control Corp. v. Velan, Inc*., 438 F.3d 1374, 1379 (Fed. Cir. 2006); *see also Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1326 (Fed. Cir. 2002). But "[t]he specification provides . . . context and substantial guidance on the meaning of" disputed terms. *Id.* Here, the specification indicates that the upwardly projecting bead hinders access to or renders inaccessible the contents of the container because the bead surrounds the edge of the cover portion. Moreover, every drawing in the specification—including Figure 10, which "illustrat[es] in particular the manner in which the upwardly projecting bead on the base portion physically prevents access to the outer edge of the cover portion"—shows the upwardly projecting bead surrounding the edge of the outwardly extending peripheral flange of the cover portion.

In sum, the Court finds Lacerta's construction more persuasive. Accordingly, the Court construes "upwardly projecting bead" to mean "raised portion of the upper peripheral edge that substantially[7] surrounds the outer edge of the outwardly extending peripheral flange."

B. "At least in part"

The proposed constructions of the disputed claims are as follows:

CLAIMS	INLINE'S CONSTRUCTION	LACERTA'S CONSTRUCTION
'003 Patent, Claims 1, 17 '680 Patent, Claims 1, 17 '580 Patent, Claim 15	Plain and ordinary meaning. In the alternative: Partially or entirely.	Indefinite.

The language of the claims and their specifications refer to an "upper peripheral edge forming at least in part an upwardly projecting bead." Inline proposes that the ordinary meaning of "at least in part" applies. Lacerta provides no alternative definition. Accordingly, the Court construes "at least in part" to have its plain and ordinary meaning.

C. "Relatively inaccessible"

The proposed constructions of the disputed claims are as follows:

CLAIMS	INLINE'S CONSTRUCTION	LACERTA'S CONSTRUCTION
'003 Patent, Claims 1, 17 '680 Patent, Claims 1, 17 '756 Patent, Claim 1	Plain and ordinary meaning. In the alternative: More difficult to access than in conventional containers.	Indefinite. In the alternative: Physically impedes access from fingers or any other object to separate the cover portion from the base portion.

[7] Lacerta's proposed construction does not include the word "substantially," but the claims and specification speak of "substantially surround[ing]" the outwardly extending peripheral flange.

The claims of the ’003 Patent, the ’680 Patent, and ’756 Patent only use “relatively inaccessible” in connection with the upwardly projecting bead. And the specifications note that the upwardly projecting bead is designed to “hinder the relatively easy method of removing a cover from conventional containers that may resemble or have characteristics in common with container 10” and “physically blocks access to the edge of peripheral flange 24 on cover portion 12 from fingers or any other object that might normally be used for leverage to pry cover portion 12 from base portion 14.” ’003 Patent col.6 ll.5–13; ’680 Patent col.6 ll.37–44; ’756 Patent col.5 ll.42–49.

Inline offers evidence of the ordinary meaning of “relatively inaccessible.” “[C]laim terms take on their ordinary and accustomed meanings unless the patentee demonstrated an intent to deviate from the ordinary and accustomed meaning of a claim term by redefining the term or by characterizing the invention in the intrinsic record using words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.” *Teleflex*, 299 F.3d at 1327 (Fed. Cir. 2002). “Relatively” means “to a relative degree or extent.” Docket No. 39-10 at 2; *Relatively Definition*, Merriam-Webster.com, http://www.merriam-webster.com/dictionary/relatively (last visited December 4, 2019). Inaccessible means not accessible. Inline argues that it did not disavow this ordinary meaning and that Lacerta’s construction improperly limits the term to one example in the specification. The Court disagrees. The claims only use “relatively inaccessible” in the context of the upwardly projecting bead, and the specification explains that the upwardly projecting bead makes the outwardly extending peripheral flange of the cover portion relatively inaccessible by surrounding it and physically blocking access to it. ’003 Patent col.5 l.67; ’680 Patent col.6 l.32; ’756 Patent col.5 l.37.

Accordingly, the Court construes "relatively inaccessible" to mean "physically impedes access from fingers or any other object to separate the cover portion from the base portion."

D. "Hinder access"

The proposed constructions of the disputed claims are as follows:

CLAIMS	INLINE'S CONSTRUCTION	LACERTA'S CONSTRUCTION
'580 Patent, Claims 1, 15 '640 Patent, Claim 5	Plain and ordinary meaning. In the alternative: Makes more difficult to access than in conventional containers.	Physically impedes access from fingers or any other object to separate the cover portion from the base portion.

The claims of the '580 and '640 Patents only use "hinder access" in connection with the upwardly projecting bead. And the specifications note that the upwardly projecting bead is designed to "hinder the relatively easy method of removing a cover from conventional containers that may resemble or have characteristics in common with container 10." '580 Patent col.5 ll.32–35; '640 Patent col.5 ll.42–45. The specifications further describe that, as is best seen in Figure 10, the bead "physically blocks access to the edge of peripheral flange 24 on cover portion 12 from fingers or any other object that might normally be used for leverage to pry cover portion 12 from base portion 14." '580 Patent col.5 ll.35–39; '640 Patent col.5 ll.45–49.

Inline offers evidence of the ordinary meaning of "hinder." As noted above, "claim terms take on their ordinary and accustomed meanings unless the patentee demonstrated an intent to deviate from the ordinary and accustomed meaning of a claim term by redefining the term or by characterizing the invention in the intrinsic record using words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope." *Teleflex*, 299 F.3d at 1327. To "hinder" means to "make slow or difficult the progress of," "to hold back," or "to delay, impede, or prevent action." Docket No.44-3 at 2; *Hinder Definition*, Merriam-

Webster.com, http://www.merriam-webster.com/dictionary/hinder (last visited December 4, 2019). Inline argues that did not disavow this ordinary meaning and that Lacerta's construction improperly limits the term to one example in the specification. The Court disagrees. The claims only use "hinder access" in the context of the upwardly projecting bead, and the specification explains that the upwardly projecting bead hinders access to the outwardly extending peripheral flange of the cover portion by surrounding it and physically blocking access to it. Accordingly, the Court construes "hinder access" to mean "physically impedes access from fingers or any other object to separate the cover portion from the base portion."

E. "Tamper evident bridge"

The proposed constructions of the disputed claims are as follows:

CLAIMS	INLINE'S CONSTRUCTION	LACERTA'S CONSTRUCTION
'003 Patent, Claims 1, 2, 24	Structure that includes at least one severable score line or perforation line, which once severed provides evidence that tampering has occurred.	Indefinite.

The Federal Circuit has already construed the term "tamper evident bridge" to mean "a structure that connects the lid and base portions of the container and also contains a removable tear strip, delimited by at least one severable score line, which once removed provides evidence that tampering has occurred." Under the principles of stare decisis, this Court is bound by that construction and thus adopts it here. *See Amgen, Inc. v. F. Hoffmann-La Roche Ltd.*, 494 F. Supp. 2d 54, 60–61 (D. Mass. 2007); *see also Exergen Corp. v. Kids-Med, Inc*., 189 F. Supp. 3d 237, 244 (D. Mass. 2016).

F. "Projection" or "arm"

The proposed constructions of the disputed claims are as follows:

CLAIMS	INLINE'S CONSTRUCTION	LACERTA'S CONSTRUCTION
'003 Patent, Claims 2, 17, 19–21 '680 Patent, Claims 2, 17 '756 Patent, Claim 1, 7, 8 '580 Patent, Claims 1, 15 '640 Patent, Claim 6	Plain and ordinary meaning. In the alternative: Outwardly extending material or structure.	Structure that extends out from the [cover / base] portion that has substantially the same length as the portion of the outwardly extending flange not surrounded by the [upwardly projecting bead / upper peripheral rim].

Inline contends that this Court should construe the terms according to their plain and ordinary meanings. *See Teleflex*, 299 F.3d at 1327. To "project" means "to jut out." Docket No. 44-2 at 2; *Project Definition*, Merriam-Webster.com, http://www.merriam-webster.com/dictionary/project (last visited December 4, 2019). A "projection" or an "arm" is thus something that juts out.

There is no indication that Inline disclaimed the ordinary meaning of "projection" or "arm" in the claim language or specifications of its patents. The claims describe the arm or projection as "extend[ing] out beyond the upwardly projecting bead of the upper peripheral edge of the base portion, for facilitating removal of the cover portion from the base portion to open the container." '003 Patent col.9 ll.3–7, col.10 ll.13–15, col.10 ll.22–48; '680 col.10 ll.35–40, col.12 ll.1–6; '756 Patent col.12 ll.1–6, col.12 ll.25–30; '580 col.11 ll.18–27, col.12 ll.42–49; '640 col.12 ll.30–36. And the specifications reference "an upper outwardly projecting arm 36 connected to base portion 14, and a similar lower outwardly projecting arm 38, which is connected to cover portion 12." '003 Patent col.6 ll.14–16; '680 Patent col.6 ll.45–47; '756 Patent col.5 ll.50–52; '580 Patent col.5 ll.40–42; '640 Patent col.5 ll.50–52. The "[u]pper and lower arms 36 and 38 are joined together by a common attachment to frangible strip 18 to form hinge 16." '003 Patent col.6 ll.20–22; '680 Patent col.6 ll.51–53; '756 Patent col.6 ll.56–58;

'580 Patent col.5 ll.46–48; '640 Patent col.5 ll.56–58. When a consumer removes the frangible strip, the arms "can be used to facilitate removal of the cover portion 12 from base portion 14 . . . ." '003 Patent col.6 ll.49–54; '680 Patent col.7 ll.12–17; '756 Patent col.6 ll.17–22; '580 Patent col.6 ll.6–11; '640 Patent col.6 ll.17–22.

Lacerta asserts that the prosecution history of the '580 Patent supports its more limited construction. Inline added the limitation that the frangible strip is formed along at least one edge of the area proximate to where the cover and base portions meet and severing the frangible strip creates "a projection forming one of two opposed and spaced apart arms . . . extending from the base portion and cover portion for facilitation removal of the cover portion from the base portion to open the container." (Docket No. 39-12 at 2). But even assuming that this amendment, which was deleted in the final version, could help define the term "projection" or "arm," it in no way suggests that the projection must be the same length as the portion of the outwardly extending flange not surrounded by the upwardly projecting bead or upper peripheral rim. It thus cannot constitute clear disavowal of the ordinary meaning of the terms.

Accordingly, the Court construes "projection" or "arm" in line with the plain and ordinary meaning of the terms.

G. <u>"Configured to substantially surround the outwardly extending peripheral flange of the cover portion"</u>

The proposed constructions of the disputed claims are as follows:

CLAIMS	INLINE'S CONSTRUCTION	LACERTA'S CONSTRUCTION
'756 Patent, Claim 1 '580 Patent, Claims 1, 15	Arranged to extend beyond the perimeter of the outwardly extending peripheral flange of the cover portion when the container is closed and hinder access thereto.	For inner edge of the upper peripheral rim to physically block access to the edge of the outwardly extending flange by being in close proximity to and extending at least the height of the outwardly extending flange.

The claims describe an "upper peripheral rim extending substantially about the perimeter of the container and configured to substantially surround the outwardly extending peripheral flange of the cover portion" to either "render the outwardly extending peripheral flange of the cover portion relatively inaccessible when the container is closed" or "hinder access to the container when the container is closed." '756 Patent col.11l.24–30; '580 Patent col.11 ll.6–11; *see also* '580 Patent col.12 ll.31–34. The specifications mention substantially surrounding the outwardly extending peripheral flange of the cover portion in the context of the upwardly projecting bead, which is part of the upper peripheral rim. *See, e.g.*, '756 Patent col.9 ll.29–34; '580 Patent col.5 ll.28–31. They explain that surrounding the outwardly extending peripheral flange "hinders," "physically impedes," or "physically blocks" "access . . . from fingers or any other object that might normally be used for leverage to pry cover portion 12 from base portion 14." '756 Patent col.5 ll.42–49; '580 Patent col.5 ll.32–30; *see also* '756 Patent col.9 ll.45–51; '580 Patent col.9 ll.29–34.

The Court finds that neither party's proposed construction is entirely accurate. While the Court agrees with Lacerta that it should interpret "configured to substantially surround the outwardly extending peripheral flange of the cover portion" consistently with the upwardly projecting bead,[8] Lacerta offers no support in the intrinsic or extrinsic evidence for including height and proximity limitations to any construction of this term. And besides pointing to two figures in the patents consistent with its definition, Inline does not explain the basis for inclusion

[8] The specification, after all, provides for the bead to surround the outwardly extending peripheral flange. But the Court notes that, although the specification only refers to the upwardly projecting bead as surrounding the outwardly extending peripheral flange, Lacerta has submitted no evidence that Inline disclaimed a configuration in which other portions of the upper peripheral rim also surround the outwardly extending flange.

of the limitation of "extending beyond the perimeter." The patents only describe the upper peripheral rim as extending "substantially *about* the perimeter," not beyond it. '756 Patent col.5 ll.37–42; '580 Patent col.5 ll.27–31.

Accordingly, the Court construes the term to mean "configured to physically impede access to the outwardly extending flange of the cover portion when the container is closed."

H. "Configured to substantially surround an edge of the outwardly extending peripheral flange of the cover portion"

The proposed constructions of the disputed claims are as follows:

CLAIMS	INLINE'S CONSTRUCTION	LACERTA'S CONSTRUCTION
'640 Patent, Claim 5	Arranged to extend beyond an edge of the outwardly extending peripheral flange of the cover portion when the container is closed and hinder access thereto.	For inner edge of the upwardly projecting bead to physically block access to the edge of the outwardly extending flange by being in close proximity to and extending at least the height of the outwardly extending flange.

The only relevant difference between this term and the previously construed term is in the addition of "an edge of."[9] For the same reasons explained above, the Court construes "configured to substantially surround an edge of the outwardly extending peripheral flange of the cover portion" to mean "configured to physically impede access to an edge of the outwardly extending flange of the cover portion when the container is closed."

I. "The outwardly extending peripheral flange abuts the upper peripheral rim of the base portion"

The proposed constructions of the disputed claims are as follows:

[9] The Court notes, however, that Claim 5 specifically refers to the upwardly projecting bead surrounding an edge of the outwardly extending peripheral flange rather than the upper peripheral rim generally.

CLAIMS	INLINE'S CONSTRUCTION	LACERTA'S CONSTRUCTION
'640 Patent, Claim 1	Plain and ordinary meaning. In the alternative: The outwardly extending peripheral flange is adjacent to the upper peripheral rim of the base portion.	Access to the external edge of the outwardly extending flange is physically blocked by being in close proximity to and extending vertically in height at least a portion of the height of the inner edge of the upper peripheral rim.

Inline contends that this Court should construe the terms according to their plain and ordinary meanings. *See Teleflex*, 299 F.3d at 1327. Inline alleges, without support, that the plain and ordinary meaning of the term is "adjacent" to. The Court disagrees. To "abut" means to "border on" or "touch along an edge." Docket No. 39-13 at 2; *Abut Definition*, Merriam-Webster.com, http://www.merriam-webster.com/dictionary/abut (last visited December 4, 2019).

There is no indication that Inline disclaimed this ordinary meaning in the claim language or specification of the '640 Patent. Claim 1 describes that, "when the container is closed, the outwardly extending peripheral flange of the cover portion abuts the upper peripheral rim of the base portion and the upper peripheral rim of the base portion extends beyond an outer edge of the outwardly extending peripheral flange of the cover portion substantially about the perimeter of the container." '640 Patent col.11 ll.29–35. And the specification notes that, "[w]hen cover portion 12 is closed on base portion 14," the "outwardly extending peripheral flange 24 on cover portion 12 abuts upper peripheral rim 28 on base portion 14." '640 Patent col.5 ll.29–34. Neither reference is inconsistent with "to border on" or "to touch along an edge."

Accordingly, the Court construes "the outwardly extending peripheral flange abuts the upper peripheral rim of the base portion" to have its plain and ordinary meaning. In other words, the outwardly extending peripheral flange borders upon or touches the upper peripheral rim of the base portion.

Conclusion

For the reasons set forth above, this Court construes the disputed claims as follows:

DISPUTED CLAIMS	THE COURT'S CONSTRUCTION
"[Upwardly projecting] bead"	Raised portion of the upper peripheral edge that substantially surrounds the outer edge of the outwardly extending peripheral flange
"At least in part"	Plain and ordinary meaning
"Relatively inaccessible"	Physically impedes access from fingers or any other object to separate the cover portion from the base portion
"Hinder access"	Physically impedes access from fingers or any other object to separate the cover portion from the base portion
"Tamper evident bridge"	A structure that connects the lid and base portions of the container and also contains a removable tear strip, delimited by at least one severable score line, which once removed provides evidence that tampering has occurred
"Projection" or "arm"	Plain and ordinary meaning
"Configured to substantially surround the outwardly extending peripheral flange of the cover portion"	Configured to physically impede access to the outwardly extending flange of the cover portion when the container is closed
"Configured to substantially surround an edge of the outwardly extending peripheral flange of the cover portion"	Configured to physically impede access to an edge of the outwardly extending flange of the cover portion when the container is closed
"The outwardly extending peripheral flange abuts the upper peripheral rim of the base portion"	Plain and ordinary meaning

SO ORDERED

/s/ Timothy S. Hillman
TIMOTHY S. HILLMAN
DISTRICT JUDGE

Original

UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

INLINE PLASTICS CORP., **Plaintiff,** **v.** **LACERTA GROUP INC.,** **Defendant.**	**CIVIL ACTION NO. 4:18-11631-TSH**

VERDICT FORM

INFRINGEMENT

1. Has Inline proven by a preponderance of the evidence that Lacerta infringed any of the following claims of **the '003 Patent**?

Claim 1	Yes_____	No ✓
Claim 2	Yes_____	No ✓
Claim 3	Yes_____	No ✓
Claim 21	Yes_____	No ✓
Claim 22	Yes_____	No ✓
Claim 24	Yes_____	No ✓

2. Has Inline proven by a preponderance of the evidence that Lacerta infringed any of the following claims of **the '680 Patent**?

Claim 1	Yes_____	No ✓
Claim 2	Yes_____	No ✓

	Claim 3	Yes_____	No_✓_____
	Claim 6	Yes_____	No_✓_____
	Claim 8	Yes_____	No_✓_____
✈	Claim 17	Yes_____	No_✓_____
	Claim 20	Yes_____	No_✓_____
	Claim 25	Yes_____	No_✓_____
	Claim 27	Yes_____	No_✓_____

3. Has Inline proven by a preponderance of the evidence that Lacerta infringed any of the following claims of **the '756 Patent**?

Claim 1	Yes_____	No_✓_____
Claim 3	Yes_____	No_✓_____
Claim 6	Yes_____	No_✓_____
Claim 7	Yes_____	No_✓_____

4. Has Inline proven by a preponderance of the evidence that Lacerta infringed any of the following claims of **the '580 Patent**?

Claim 1	Yes_____	No_✓_____
Claim 4	Yes_____	No_✓_____
Claim 8	Yes_____	No_✓_____
Claim 9	Yes_____	No_✓_____

5. Has Inline proven by a preponderance of the evidence that Lacerta infringed any of the following claims of **the '640 Patent**?

Claim 5	Yes_____	No_✓_____

INVALIDITY

6. Has Lacerta proven by clear and convincing that any of the following claims of **the '003 Patent** are invalid?

Claim 1	Yes ✓	No
Claim 2	Yes ✓	No
Claim 3	Yes ✓	No
Claim 21	Yes ✓	No
Claim 22	Yes ✓	No
Claim 24	Yes ✓	No

7. Has Lacerta proven by clear and convincing evidence that any of the following claims of **the '680 Patent** are invalid?

Claim 1	Yes ✓	No
Claim 2	Yes ✓	No
Claim 3	Yes ✓	No
Claim 6	Yes ✓	No
Claim 8	Yes ✓	No
Claim 17	Yes ✓	No
Claim 20	Yes ✓	No
Claim 25	Yes ✓	No
Claim 27	Yes ✓	No

8. Has Lacerta proven by clear and convincing evidence that any of the following claims of **the '756 Patent** are invalid?

Claim 1	Yes ✓	No
Claim 3	Yes ✓	No

Claim 6	Yes ✓	No
Claim 7	Yes ✓	No

9. Has Inline proven by clear and convincing evidence that any of the following claims of **the '580 Patent** are invalid?

Claim 1	Yes ✓	No
Claim 4	Yes ✓	No
Claim 8	Yes ✓	No
Claim 9	Yes ✓	No

10. Has Lacerta proven by clear and convincing evidence that any of the following claims of **the '640 Patent** are invalid?

Claim 1	Yes ✓	No
Claim 2	Yes ✓	No
Claim 3	Yes ✓	No
Claim 5	Yes ✓	No
Claim 6	Yes ✓	No

WILLFULNESS

Please answer Question 11 only if you have found that at least one claim of the Asserted Claims is infringed and not invalid, or if you have found that claim 1, 2, 3, or 6 of the '640 Patent is not invalid.

If you have not found that at least one claim of the Asserted Claims is infringed and not invalid, and if you have not found that claim 1, 2, 3, or 6 of the '640 Patent is not invalid, please STOP and inform the Court Officer that you have reached a verdict.

11. Has Inline proven by a preponderance of the evidence that Lacerta willfully infringed any valid asserted claim?

Yes_____ No_____

DAMAGES

Please answer Question 12 and Question 13 only if you have found that at least one claim of the Asserted Claims is infringed and not invalid, or if you have found that claim 1, 2, 3, or 6 of the '640 Patent is not invalid.

If you have not found that at least one claim of the Asserted Claims is infringed and not invalid, and if you have not found that claim 1, 2, 3, or 6 of the '640 Patent is not invalid, please STOP and inform the Court Officer that you have reached a verdict.

12. What lost profits, if any, did Inline show it more likely than not suffered as a result of sales that it would with reasonable probability have made but for Lacerta's infringement?

$_____ (write out figure) $_____ (write out in words)

13. For those infringing sales for which Inline has not proved its entitled to lost profits, what has it proved it is entitled to as a reasonable royalty?

$_____ (write out figure) $_____ (write out in words)

The foreperson should sign and date the verdict slip and inform the Court Officer that a verdict has been reached.

The above findings represent the unanimous verdict of the eight members of the jury.

Lisa Bu
JURY FOREPERSON

Signed this 18th day of February, 2022

2/18/22
3:54 pm

UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

INLINE PLASTICS CORP., **Plaintiff,** **v.** **LACERTA GROUP, INC.,** **Defendant.**	**CIVIL ACTION** **NO. 4:18-11631-TSH**

ORDER FOR CERTIFICATION OF A RULE 54(B) JUDGMENT AND TO STAY FURTHER PROCEEDINGS PENDING APPEAL

Upon consideration of the Parties' Motion for Entry of Judgment Pursuant to Rule 54(b), and for good cause shown, the Court will enter judgment pursuant to Rule 54(b) and makes the findings set forth below.

Accordingly, it is hereby ORDERED as follows:

1. In this action, Inline alleged infringement by Lacerta of U.S. Patent Nos. 7,118,003 (the '003 patent), 7,073,680 (the '680 patent), 9,630,756 (the '756 patent), 8,795,580 (the '580 patent), and 9,527,640 (the '640 patent). See Amended Complaint, Doc. 33. Lacerta asserted defenses and counterclaims including non-infringement, invalidity, and unenforceability due to inequitable conduct. See Amended Answer to Amended Complaint and Amended Counterclaim, Doc. 87.

2. On September 14, 2021, the Court granted, in part, Inline's motion for partial summary judgment of infringement as to claims 1, 2, 3, and 6 of the '640 patent. Memorandum and Order, Doc. 177.

3. At the February 17, 2022 charge conference, conducted after Inline rested as to its case-in-chief and after Lacerta filed its motion for judgment as a matter of law, Inline withdrew asserted Claims 6, 7, 9, 17, 18, 19, 20 and 25 of the '003 patent, Claims 4, 5, 7, 9, 18, 19, 21 and

23 of the '680 patent, Claims 5 and 8 of the '756 patent and Claims 2, 3, and 15 of the '580 Patent. Because Lacerta stated that it had no objection to the withdrawal, these claims are dismissed without prejudice.

4. On February 18, 2022, the jury returned a verdict in favor of Lacerta, finding that:

Claims 1, 2, 3, 21, 22, and 24 of the '003 patent are not infringed and are invalid;

Claims 1, 2, 3, 6, 8, 17, 20, 25, and 27 of the '680 patent are not infringed and are invalid;

Claims 1, 3, 6, and 7 of the '756 patent are not infringed and are invalid;

Claims 1, 4, 8, and 9 of the '580 patent are not infringed and are invalid;

Claim 5 of the '640 patent is not infringed; and

Claims 1, 2, 3, 5, and 6 of the '640 patent are invalid.

5. Accordingly, the Court finds that, pursuant to Fed. R. Civ. P. 54(b), the judgment of non-infringement and invalidity against Inline and in favor of Lacerta is a final adjudication and there is no just reason to delay an appeal of that judgment. The judgment fully and finally disposes of Inline's claims for infringement and Lacerta's counterclaims for invalidity. In addition, an immediate appeal will not result in unnecessary or piecemeal review and, indeed, will materially advance the litigation. Judgment pursuant to Rule 54(b) advances judicial economy because, depending upon the outcome of post-trial briefing and appeals, trial on inequitable conduct may be avoidable.

6. The trial on Lacerta's affirmative defense of unenforceability due to inequitable conduct shall be stayed pending appeal.

SO ORDERED

/s/ Timothy S. Hillman
TIMOTHY S. HILLMAN
DISTRICT JUDGE

UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

INLINE PLASTICS CORP., **Plaintiff,** **v.** **LACERTA GROUP, INC.,** **Defendant.**	**CIVIL ACTION** **NO. 4:18-11631-TSH**

JUDGMENT

It is hereby ORDERED, ADJUDGED, AND DECREED that, in accordance with the jury's verdict of February 18, 2022, the Court's Memorandum and Order of September 14, 2021, and the Court's Order for Certification of a Rule 54(b) Judgment, and having determined that there is no just reason for delay, judgment is entered in favor of Defendant Lacerta Group, Inc. on Plaintiff Inline Plastic Corp.'s claims of infringement of Claims 1, 2, 3, 21, 22, and 24 of U.S. Patent No. 7,118,003 (the '003 patent), Claims 1, 2, 3, 6, 8, 17, 20, 25, and 27 of U.S. Patent No. 7,073,680 (the '680 patent), Claims 1, 3, 6, and 7 of U.S. Patent No. 9,630,756 (the '756 patent), Claims 1, 4, 8, and 9 of U.S. Patent No. 8,795,580 (the '580 patent), and Claim 5 of U.S. Patent No. 9,527,640 (the '640 patent); in favor of Inline on Inline's claims of infringement of Claims 1, 2, 3, and 6 of the '640 patent; and in favor of Lacerta on Lacerta's counterclaims for invalidity as to Claims 1, 2, 3, 21, 22, and 24 of the '003 patent; Claims 1, 2, 3, 6, 8, 17, 20, 25, and 27 of the '680 patent; Claims 1, 3, 6, and 7 of the '756 patent; Claims 1, 4, 8, and 9 of the '580 patent, and Claims 1, 2, 3, 5, and 6 of the '640 patent.

Claims 6, 7, 9, 17, 18, 19, 20 and 25 of the '003 patent, Claims 4, 5, 7, 9, 18, 19, 21 and 23 of the '680 patent, Claims 5 and 8 of the '756 patent and Claims 2, 3, and 15 of the '580 patent are dismissed without prejudice.

This judgment is entered pursuant to Fed. R. Civ. P. 54(b).

SO ORDERED

/s/ Timothy S. Hillman
TIMOTHY S. HILLMAN
DISTRICT JUDGE

08/31/2022	422	District Judge Timothy S. Hillman: ELECTRONIC ORDER entered denying 400 Motion for Judgment as a Matter of Law; denying 402 Motion for Judgment as a Matter of Law; finding as moot 419 Motion for Leave to File Document; and granting 420 Motion for Leave to File Document; Counsel using the Electronic Case Filing System should now file the document for which leave to file has been granted in accordance with the CM/ECF Administrative Procedures. (Castles, Martin) (Entered: 08/31/2022)

Inline v. Lacerta 18-11631-TSH
TRIAL EXHIBIT
1

TP 7706939

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office

January 10, 2019

THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THIS OFFICE OF:

U.S. PATENT: *7,118,003*
ISSUE DATE: *October 06, 2006*

By Authority of the
Under Secretary of Commerce for Intellectual Property
and Director of the United States Patent and Trademark Office

Sylvia Holley
Certifying Officer

IP0000222

Trial Exhibit 1.1

US007118003B2

(12) **United States Patent**
Sellari et al.

(10) **Patent No.: US 7,118,003 B2**
(45) **Date of Patent: Oct. 10, 2006**

(54) **TAMPER RESISTANT CONTAINER WITH TAMPER-EVIDENT FEATURE AND METHOD OF FORMING THE SAME**

(75) Inventors: **Robert Sellari**, Shelton, CT (US); **Peter Boback**, Stratford, CT (US); **Bruce Stein**, Easton, CT (US)

(73) Assignee: **Inline Plastics Corp.**, Shelton, CT (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **10/895,687**

(22) Filed: **Jul. 21, 2004**

(65) **Prior Publication Data**

US 2005/0017007 A1 Jan. 27, 2005

Related U.S. Application Data

(60) Provisional application No. 60/489,093, filed on Jul. 21, 2003.

(51) **Int. Cl.**
B65D 41/32 (2006.01)

(52) **U.S. Cl.** **220/266**; 220/4.21; 220/780

(58) **Field of Classification Search** 220/266, 220/270, 4.23, 4.25, 4.21, 835, 784, 780–783; 215/901

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,433,793	A *	2/1984	Ingemann	220/276
4,535,889	A *	8/1985	Ternuds	206/527
5,040,695	A *	8/1991	Adams et al.	220/270
5,219,087	A *	6/1993	Christensson	220/270
5,507,406	A *	4/1996	Urciuoli et al.	220/269
5,573,134	A *	11/1996	Chenault et al.	220/276
5,897,011	A *	4/1999	Brilliant et al.	220/4.23
5,931,332	A *	8/1999	Mygatt et al.	220/270
2003/0052133	A1		3/2003	Hayes et al.

FOREIGN PATENT DOCUMENTS

DE	78 16 353 U1	11/1978	
DE	4418935	* 12/1995	220/270
DE	1999-083197	* 8/1999	220/270
EP	0 752 374 A1	1/1997	
GB	2257118 A	1/1993	

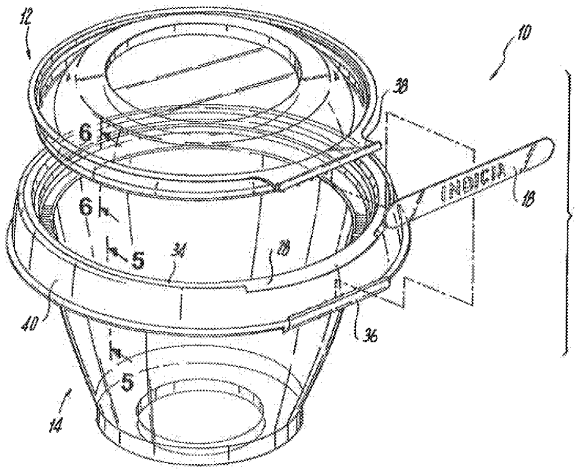
* cited by examiner

Primary Examiner—Lien M. Ngo
(74) *Attorney, Agent, or Firm*—Edwards Angell Palmer & Dodge LLP

(57) **ABSTRACT**

A tamper-resistant container with tamper evident feature which includes a cover portion defining a outwardly extending peripheral flange, a base portion defining an upper peripheral edge, and a hinge joining the outwardly extending peripheral flange with the base portion. The upper peripheral edge includes an upwardly projecting bead extending substantially about the perimeter of the base portion that is configured to render the outwardly extending flange of the cover portion relatively inaccessible when the container is closed. The hinge includes a frangible section, which upon severing, provides a projection that extends out beyond the upwardly projecting bead of the upper peripheral edge of the base portion, for facilitating removal of the cover portion from the base portion to open the container.

26 Claims, 8 Drawing Sheets



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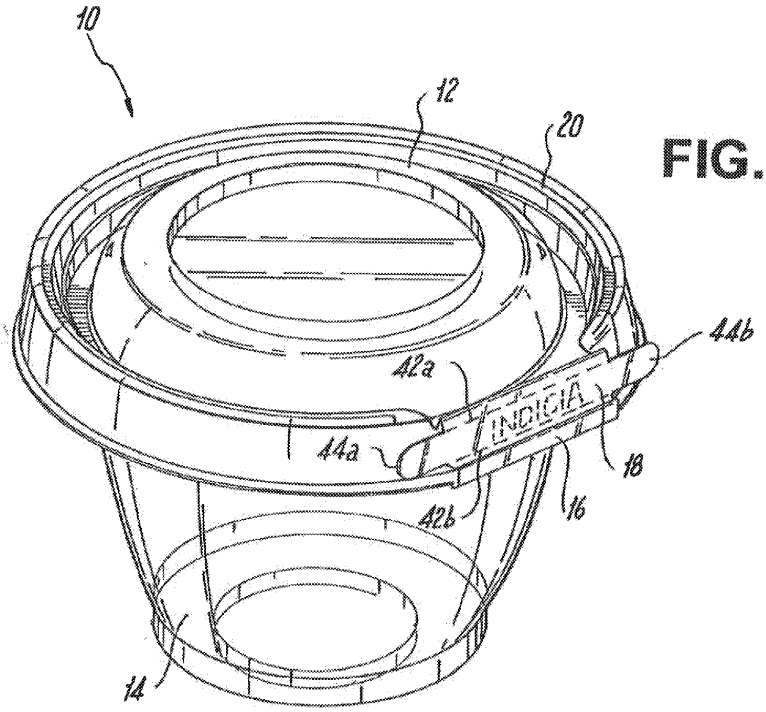


FIG. 1

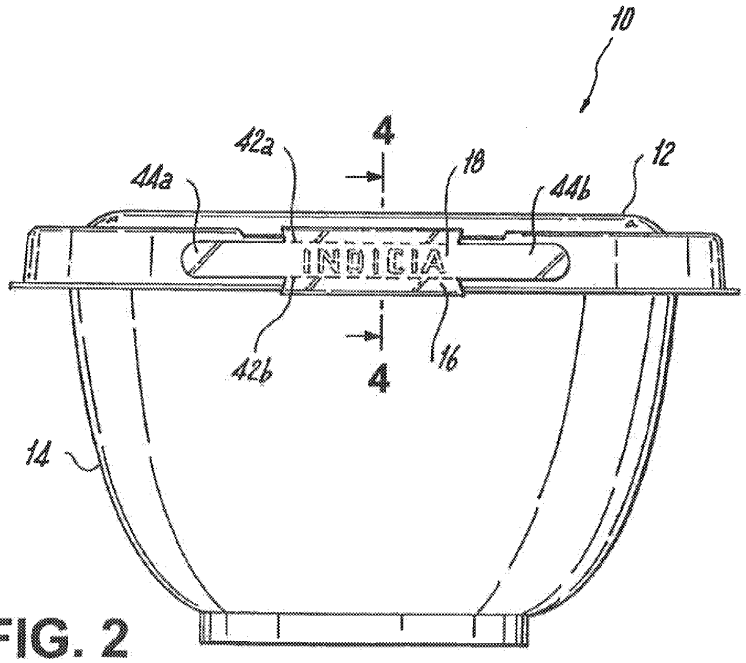


FIG. 2

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FIG. 3

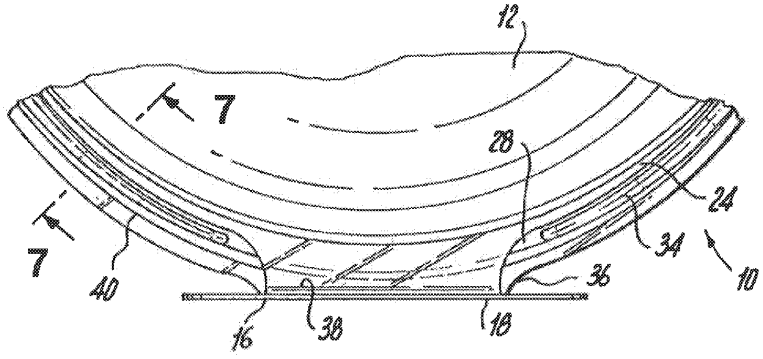
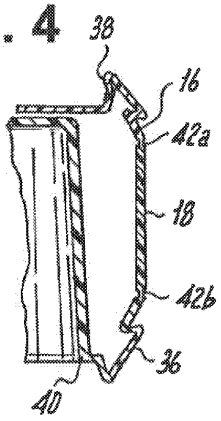


FIG. 4



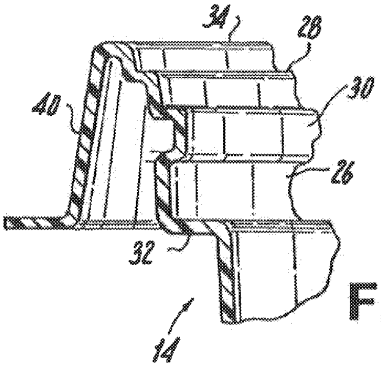


FIG. 5

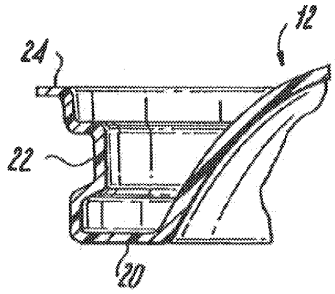


FIG. 6

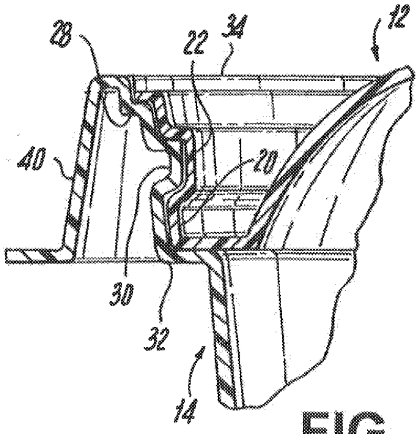


FIG. 7

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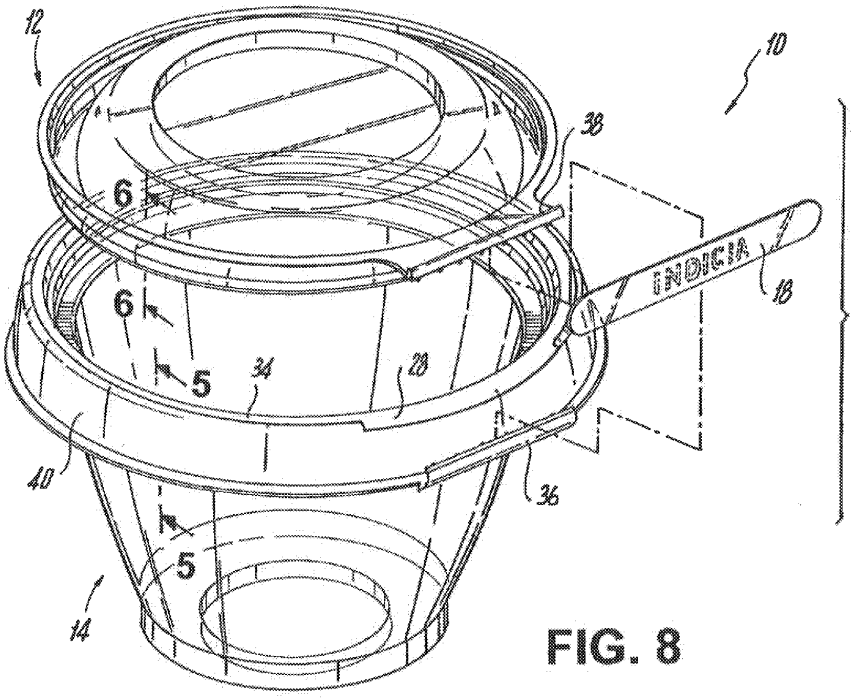


FIG. 8

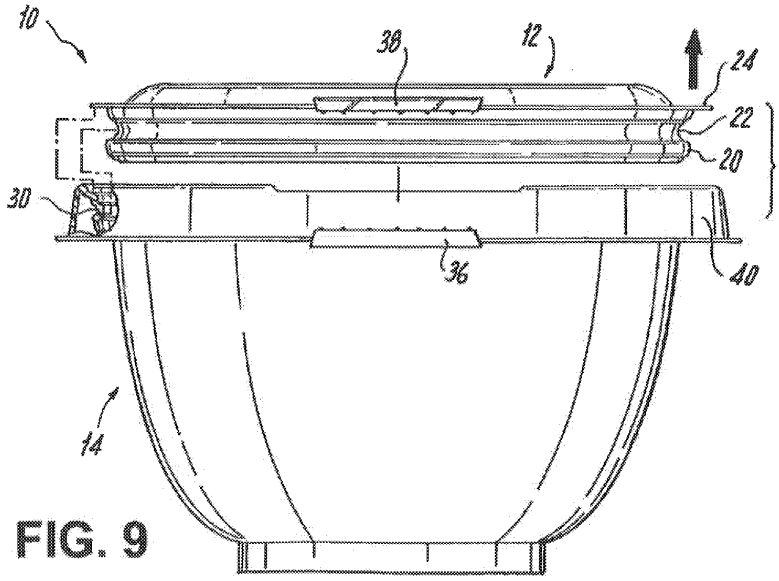


FIG. 9

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FIG. 10

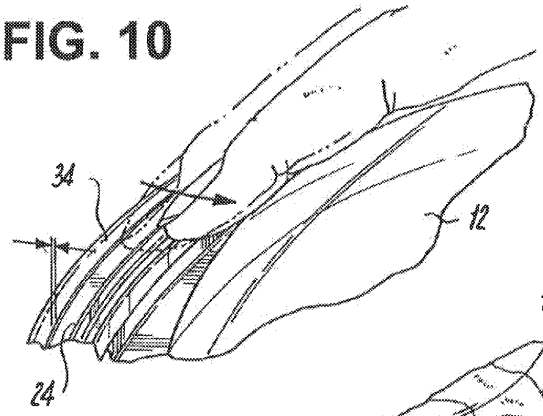
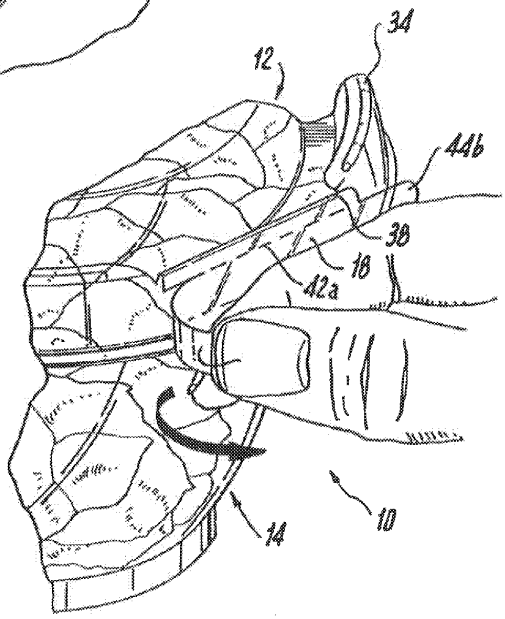


FIG. 11



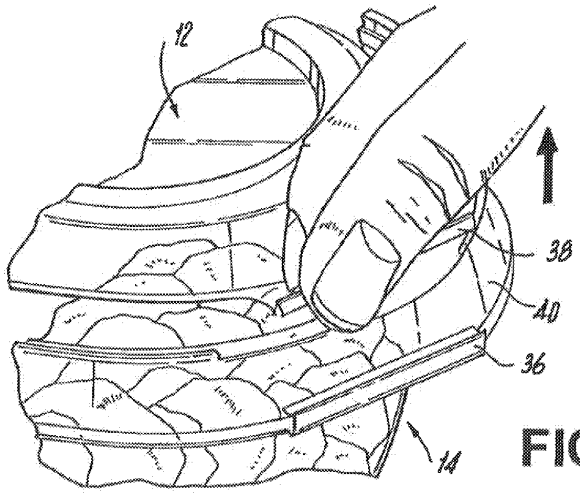


FIG. 12

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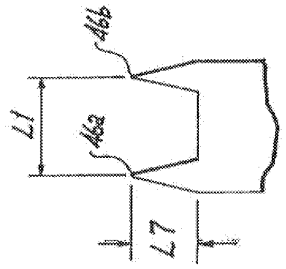


FIG. 13

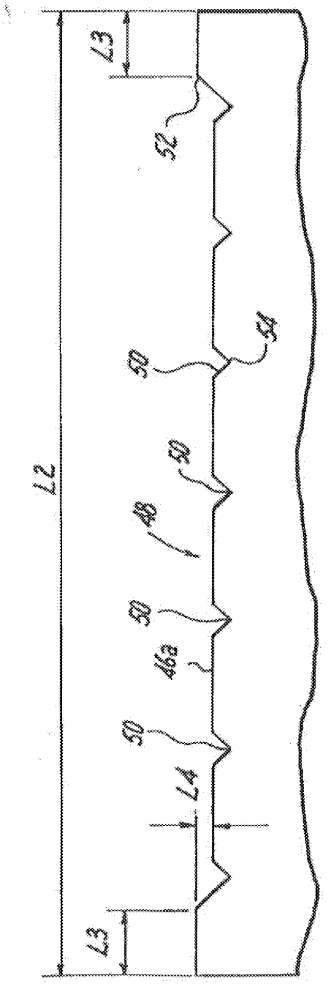


FIG. 15

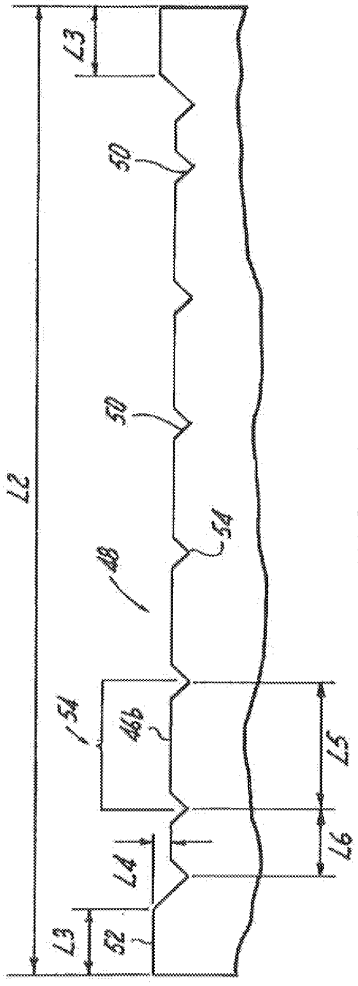
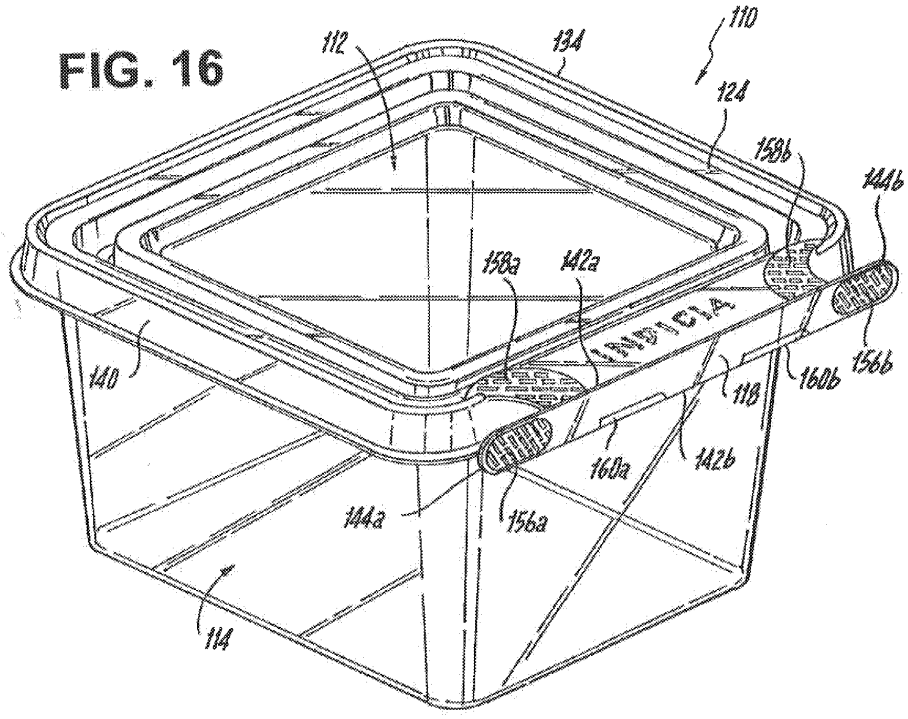


FIG. 14

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FIG. 16



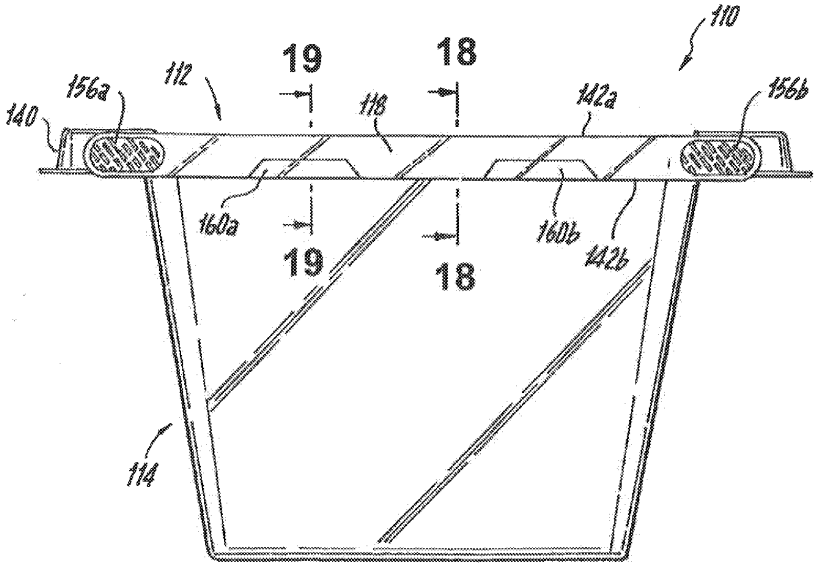


FIG. 17

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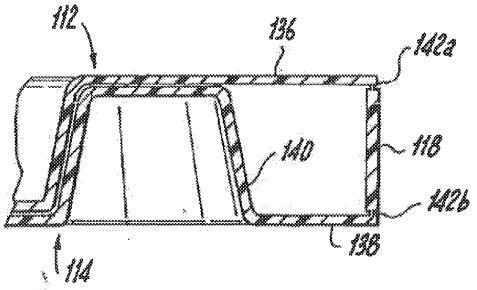


FIG. 18

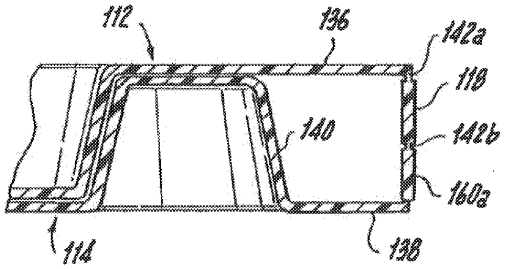


FIG. 19

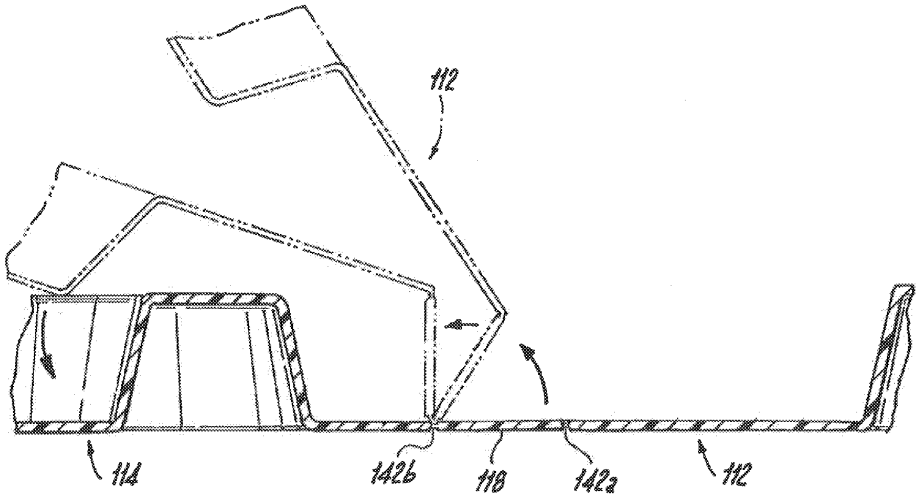


FIG. 20

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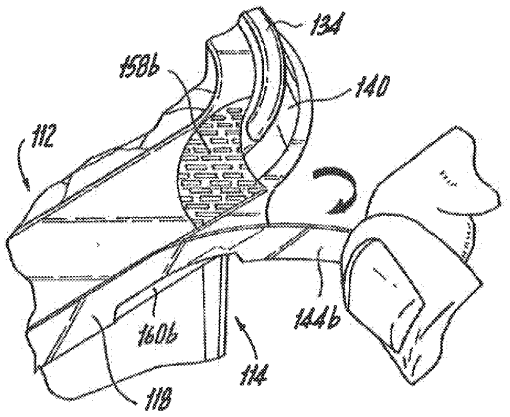


FIG. 21

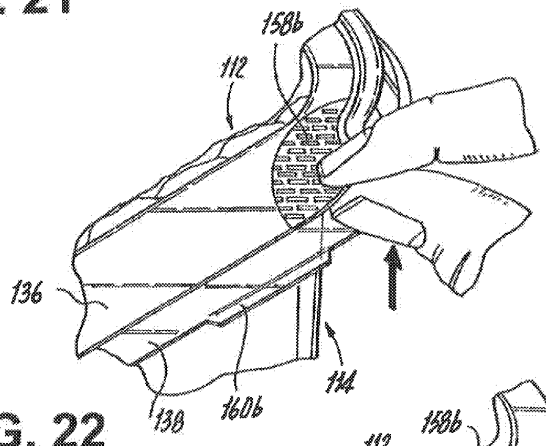


FIG. 22

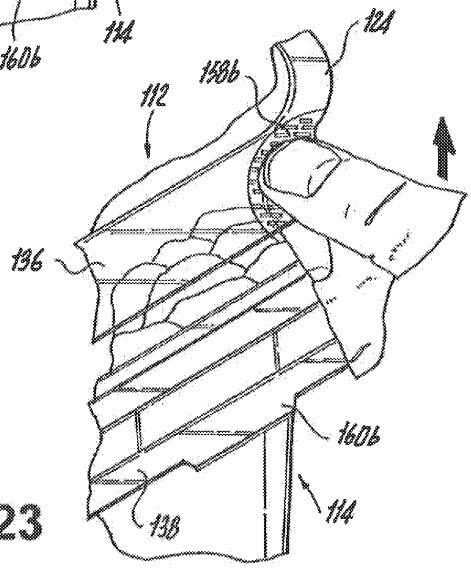


FIG. 23

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TAMPER RESISTANT CONTAINER WITH TAMPER-EVIDENT FEATURE AND METHOD OF FORMING THE SAME

CROSS-REFERENCE TO RELATED APPLICATION(S)

The subject application claims the benefit of priority to U.S. Provisional Patent Application No. 60/489,093 filed Jul. 21, 2003, the disclosure of which is herein incorporated by reference in its entirety.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The subject invention is directed to containers and packaging, and more particularly, to containers and packaging that incorporate tamper-resistant and tamper-evident features.

2. Background of the Related Art

Disposable containers for packaging, distributing, displaying or otherwise housing consumer items, especially perishable foods, are becoming increasingly important. Historically, perishable products had to be brought to market and sold quickly before exposure to the atmosphere caused the products to lose their freshness.

The advent of plastics resulted in many products being wrapped or packaged in plastic, both in the form of flexible plastic bags and solid plastic containers. The use of plastics in the modern-day convenience food industry has significantly improved the "shelf life" of perishable products, allowing both merchants and their customers to store the products for longer periods of time, resulting in substantial savings.

It has been found that consumers like recloseable packages, particularly for comestible products, especially in circumstances where more than one serving of a comestible product is contained therein, in order to reduce drying out or other deterioration of the comestible food product. In addition, consumers prefer to visually inspect the food product within such containers prior to purchase. Thus, fabricating containers from clear see-through plastics is desirable. For example, packaging provided for bakery goods or agriculture products has often been in the form of clear, plastic clamshell packaging, because, among other things, such clear, plastic clamshell packaging, provides a homegrown, baked-on-the-premises image which grocery retailers have found to be especially appealing to consumers.

Typically, plastic containers will include a fairly rigid lid and base, although they may be subject to some amount of flexure. The lid provided must be capable of properly and effectively sealing the container, yet the container must be constructed so that the lid is relatively easy to remove, and even replace, since it is expected that the container and lid would normally be reused.

In addition to the aforementioned consumer design preferences, it is desirable to fabricate containers that include features which either deter unauthorized tampering or clearly indicate whether unauthorized tampering has occurred, or both. These tamper-resistant/evident features typically include structural elements which, when the container is tampered with or opened without authorization, enable the consumer to easily visually recognize such tampering so that the product can then be rejected. Such tamper-resistant/evident elements are important for, among other things, deterring theft and preventing the loss of product and income for the seller, as well as instilling consumer confidence in the integrity of the contents within the container and confidence in the ability of the seller and/or manufacturer to provide and maintain quality goods.

Thus, there is a compelling interest in the development of containers having consumer-preferable design elements, such as recloseability features which are reliable and easy to operate, along with tamper-resistant/evident features that deter tampering and clearly indicate whether tampering has occurred, and which are also reliable without being burdensome to the legitimate consumer. Accordingly, the present invention is directed to a container that meets these needs.

SUMMARY OF THE DISCLOSURE

The present invention meets the aforementioned needs, while also improving upon and solving problems associated with previous containers by providing, among other things, a tamper-resistant container with tamper evident features (also referred to hereinafter as a "tamper-resistant/evident" container) that includes a cover portion defining a outwardly extending peripheral flange and a base portion defining an upper peripheral edge. The upper peripheral edge of the base portion includes, at least in part, an upwardly projecting bead extending substantially about the perimeter of the base portion. This bead is configured and dimensioned to render the outwardly extending flange of the cover portion relatively inaccessible when the container is closed.

The container can further include a hinge joining the outwardly extending flange of the cover portion with the base portion. The hinge preferably includes a frangible section, which upon severing, provides a projection that extends out beyond the upwardly projecting bead of the upper peripheral edge of the base portion to facilitate removal of the cover portion from the base portion. Preferably, the frangible section of the hinge is delimited at least in part by a pair of substantially parallel score lines, and more preferably, is further delimited by a plurality of spaced apart notches, depressions or nicks associated with the score lines.

In another embodiment, the container includes a skirt which depends downwardly from the upper peripheral rim of the base portion. Preferably, the hinge extends from the lower edge of the skirt to the outwardly extending flange of the cover portion.

The present invention is also directed to a tamper-resistant/evident container that includes a cover portion defining a outwardly extending peripheral flange, a base portion defining an upper peripheral edge and a hinge joining the outwardly extending flange of the cover portion with the base portion. This hinge also defines a frangible section, which upon severing, provides a projection that extends out beyond the upwardly projecting bead of the upper peripheral edge of the base portion, for facilitating removal of the cover portion from the base portion to open the container.

In another embodiment of the aforementioned tamper-resistant/evident container, the upper peripheral edge of the base portion includes an upwardly projecting bead extending substantially about the perimeter of the base portion which is configured to render the outwardly extending flange of the cover portion relatively inaccessible when the container is closed.

The aforementioned container preferably includes a skirt which depends downwardly from the upper peripheral edge of the base portion, so that the hinge extends from a lower edge of the skirt to the outwardly extending flange of the cover portion.

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The present invention is also directed to a tamper-resistant/evident container that includes a cover portion defining a outwardly extending peripheral flange, a base portion defining an upper peripheral edge forming at least in part an upwardly projecting bead extending substantially about the perimeter of the base portion and configured to render the outwardly extending flange of the cover portion relatively inaccessible when the container is closed, and a hinge joining the outwardly extending flange of the cover portion with the base portion, the hinge defining a frangible section, which upon severing, provides a projection that extends out beyond the upwardly projecting bead of the upper peripheral edge of the base portion, for facilitating removal of the cover portion from the base portion to open the container.

The aforementioned container can also include a skirt which depends downwardly from the upper peripheral edge of the base portion. Preferably, in this embodiment, the hinge extends from a lower edge of the skirt to the outwardly extending flange of the cover portion.

In another embodiment of the aforementioned container, the projection that extends out beyond the upwardly projecting bead of the upper peripheral edge of the base portion includes patterned sections to facilitate gripping thereof. It is also preferable that, upon severing the frangible section, the projection that extends out beyond the upwardly projecting bead of the upper peripheral edge of the base portion further includes tabs for facilitating removal of the cover portion from the base portion to open the container.

These and other aspects of the present invention will become more readily apparent to those having ordinary skill in the art from the following detailed description of the invention taken in conjunction with the drawings.

BRIEF DESCRIPTION OF THE FIGURES

So that those having ordinary skill in the art to which the subject invention pertains will more readily understand how to make and use the tamper-resistant/evident package disclosed herein, embodiments thereof will be described in detail below with reference to the drawings, wherein:

FIG. **1** is a perspective view of a tamper-resistant/evident container constructed in accordance with the present invention in an exemplary circular configuration having a base portion and cover portion connected to each other by a hinge having a frangible section;

FIG. **2** is a side view of the container shown in FIG. **1**, illustrating in particular the hinge having a frangible section or strip, and a suitable location for indicia to be printed thereon;

FIG. **3** is a partial top view of the container shown in FIG. **1**, illustrating in particular the hinge having a frangible section or strip and projection associated therewith that extends beyond the upwardly projecting bead associated with the upper peripheral surface of the base portion;

FIG. **4** is a partial cross sectional view of the container shown in FIG. **1**, taken along line **4**—**4** of FIG. **2**, illustrating in particular the hinge having a frangible section and upper and lower projections or arms extending from the cover portion and base portion of the container;

FIG. **5** is a partial cross sectional view of the container shown in FIG. **1**, taken along line **5**—**5** of FIG. **8**, illustrating in particular the configuration of the base portion and the structural elements that facilitate a releasable/recloseable engagement with the cover portion;

FIG. **6** is a partial cross sectional view of the container shown in FIG. **1**, taken along line **6**—**6** of FIG. **8**, illustrating in particular the configuration of the cover portion and the structural elements that facilitate a releasable/recloseable engagement with the base portion;

FIG. **7** is a partial cross sectional view of the container shown in FIG. **1**, taken along line **7**—**7** of FIG. **4**, illustrating in particular the configuration of the base portion and cover portion when the container is closed and including the structural elements that facilitate a releasable/recloseable engagement between the base and cover portions;

FIG. **8** is an exploded perspective view of the container shown in FIG. **1**, illustrating in particular the operative association between the cover portion, base portion and frangible section;

FIG. **9** is a side view of the container shown in FIG. **1**, in which the frangible section has been removed, illustrating the manner in which the cover portion is separated from the base portion and the upper and lower projections or arms associated with the cover and base portions, respectively;

FIG. **10** is a partial perspective view of the container shown in FIG. **1**, illustrating in particular the manner in which the upwardly projecting bead on the base portion physically prevents access to the outer edge of the cover portion, making it difficult to separate the cover portion from the base portion;

FIG. **11** is a partial perspective view of the container shown in FIG. **1**, illustrating in particular the manner in which the frangible section can be removed from the hinge;

FIG. **12** is a partial perspective view of the container shown in FIG. **1**, illustrating in particular the upper and lower projections formed by removal of the frangible section and the manner in which the upper and lower projections facilitate separation of the cover portion from the base portion;

FIG. **13** is a side view of a two blade knife that can be used to form the frangible section of a container constructed in accordance with the present invention;

FIG. **14** is a front plan view of a first blade of the two blade knife of FIG. **13**, illustrating the position of the nicks and cutting surfaces that can form a first score line of a frangible section of a container constructed in accordance with the present invention;

FIG. **15** is a front plan view of a second blade of the two blade knife of FIG. **13**, illustrating the position of the nicks, cutting surfaces and offset that can form a second score line of a frangible section of a container constructed in accordance with the present invention;

FIG. **16** is perspective view of a tamper-resistant/evident container constructed in accordance with the present invention in an exemplary rectangular configuration having a base portion and cover portion connected to each other by a hinge having a frangible section;

FIG. **17** is a side view of the container shown in FIG. **16**, illustrating in particular the hinge having a frangible section or strip, patterned sections on opposing ends thereof, and tabs defined by the frangible section score line;

FIG. **18** is a partial cross sectional view of the container shown in FIG. **16**, taken along line **18**—**18** of FIG. **17**, illustrating in particular the configuration of the hinge, upper and lower projections and frangible section;

FIG. **19** is a partial cross sectional view of the container shown in FIG. **16**, teken along line **19**—**19** of FIG. **18**, illustrating in particular the configuration of the hinge, upper and lower projections, frangible section, and score line defining a tab associated with the lower projection;

FIG. **20** is a partial cross sectional view of the container shown in FIG. **16**, illustrating in particular the manner in which the cover portion is closed on the base portion;

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FIG. **21** is a partial perspective view of the container shown in FIG. **16**, illustrating in particular the manner in which the frangible section is removed from the hinge; and

FIGS. **22–23** are partial perspective views of the container shown in FIG. **16**, illustrating in particular the manner in which the separation of the cover portion from the base portion is facilitated by clasping the patterned section disposed on the upper projection or arm associated with the cover portion which is formed upon removal of the frangible section.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The advantages of a tamper-evident container with tamper-resistant feature (i.e., a tamper-resistant/evident container) constructed in accordance with the present invention will become more readily apparent to those having ordinary skill in the art from the following detailed description of certain preferred and exemplary embodiments taken in conjunction with the drawings which set forth representative embodiments thereof, but are not intended to limit the scope of the present invention.

Unless otherwise apparent, or stated, directional references, such as "right," "left," "upper," "lower," "outward," "inward," etc., are intended to be relative to the orientation of a particular embodiment of the invention as shown in the first numbered view of that embodiment. In addition, a given reference numeral indicates the same or similar structure when it appears in different figures and like reference numerals identify similar structural elements and/or features of the subject invention.

In accordance with an exemplary embodiment of the subject invention illustrated in FIGS. **1** and **2**, the container **10** includes a generally circular cover portion **12** and a generally bowl-shaped base portion **14** joined together by a hinge **16**. Hinge **16** includes a tamper-evident frangible section or pull strip **18**, which, upon its removal, severs the integral connection between cover portion **12** and base portion **14**.

In use, container **10** would be filled with the contents, such as foods, over the counter medicines, etc., for which consumer protection is desired and cover portion **12** would be engaged with base portion **14**. In accordance with the present invention, cover portion **12** and base portion **14** include structural features that facilitate the formation of a non-permanent engagement between cover portion **12** to base portion **14**.

In this embodiment, the non-permanent engagement between cover portion **12** and base portion **14** is facilitated by, among other things, a peripheral locking shoulder **20** and an radially inward circumferential groove **22** formed below an outwardly extending peripheral flange **24** on cover portion **12**, which can be seated within a corresponding mating circumferential recess **26** on base portion **14**. Circumferential recess **26** on base portion **14** is formed below an upper peripheral rim **28** and includes a radially inward projecting rib **30** and a radially inwardly extending rim **32**.

When cover portion **12** is closed on base portion **14**, projecting rib **30** mates with circumferential groove **22** on cover portion **12** and extending rim **32** mates with locking shoulder **20** on cover portion **12**. In addition, outwardly extending peripheral flange **20** on cover portion **12** abuts upper peripheral rim **28** on base portion **14**.

Container **10** incorporates features which are intended to prevent and deter opening container **10** without first removing frangible strip **18** from hinge **16**. In this embodiment, container **10** includes an upwardly projecting bead **34** on base portion **14** that extends substantially about the perimeter of peripheral rim **22** and is positioned to surround the outer edge of flange **24** of cover portion **12** when container **10** is closed. The position and upward extension of bead **34** is configured to hinder the relatively easy method of removing a cover from conventional containers that may resemble or have characteristics in common with container **10**. As can be best viewed in FIG. **10**, bead **34** physically impedes access to the edge of peripheral flange **24** on cover portion **12** from fingers or any other object that might normally be used for leverage to pry cover portion **12** from base portion **14**.

Hinge **16** includes an upper outwardly projecting arm **36** connected to base portion **14**, and a similar lower outwardly projecting arm **38**, which is connected to cover portion **12**. In particular, upper arm **36** is connected with a skirt **40** that projects downward from upper peripheral rim **28** and radially outward with respect to base portion **14**. Lower arm **38** is connected with the peripheral flange **24**. Upper and lower arms **36** and **38** are joined together by a common attachment to frangible strip **18** to form hinge **16**.

Preferably, frangible strip **18** is delimited at least in part by a pair of parallel score lines **42***a*, **42***b* or areas that have been weakened or stressed during the forming process. Frangible strip **18** may be further delimited by a plurality of spaced apart areas in which material has been removed associated with the score lines, by a plurality of spaced apart depressions associated with the score lines, or by perforation lines. The width and depth of the areas and/or depressions can vary to control the tear resistance offered by frangible strip **18**. Alternatively, the integral hinge **16** could be formed with a single score line or perforation line, rather than a pair of score lines. In this instance, the single score line could be severed to create a pair of projections which would be used to open the container.

In this embodiment, strip **18** includes laterally opposed grasping tabs **44***a* and **44***b* to provide a convenient location for gripping strip **18**. Preferably, instructional indicia is imprinted on strip **18** to facilitate its removal from hinge **16** and/or consumer understanding of the significance of its removal as it relates to product tampering. Strip **18** and/or the instructional indicia preferably thereon can be colored or embossed, or otherwise fabricated to direct attention thereto.

As can be best viewed in FIGS. **11** and **12**, detaching frangible strip **18** from hinge **16** of container **10** leaves behind upper and lower arms **36** and **38** on cover portion **12** and base portion **14**, respectively. Upper and lower arms **36** and **38** extend outwardly from container **10** and can be used to facilitate removal of cover portion **12** from base portion **14**, once strip **18** has been removed, by applying sufficient opposing force to disengage locking shoulder **20** from within circumferential recess **26**.

The presence of bead **34** prevents unauthorized access to the contents of container **10** by making it difficult to pull cover portion **12** from base portion **14**. If access to container **10** is desired, strip **18** must be removed so that upper and lower arms **36** and **38** are free to be used to leverage cover portion **12** from base portion **14**. Cover portion **12** may be replaced on base portion **14** after container **10** is opened. Strip **18**, however, once removed, is not replaceable. Thus, removal of strip **18** functions as a clear indicator of possible tampering, in that if strip **18** is partially or fully removed prior to purchase, it is readily apparent to a consumer that someone may have already gained access to the contents of container **10**.

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FIGS. **13–15** illustrate an exemplary configuration for a double scoring blade having blades **46***a*, **46***b*, which can be used in a punch press system or the like to form score lines **42***a*, **42***b* in accordance with the present invention. Various dimensions of blades **46***a*, **46***b* are also provided herein as a non-limiting example.

The lateral separation L1 between blades **46***a*, **46***b* is in this embodiment about 0.36 inches. The length L2 of blades **46***a*, **46***b* is about 2.25 inches. Blades **46***a*, **46***b* include an offset recessed portion **48** with a series of substantially similar nicks **50** cut therein between cutting edges **52**. The width L3 of cutting edges **52** is preferably 0.36 inches. Preferably, the offset L4 between recessed portion **48** and cutting edges **52** is approximately 0.001 inches.

In this embodiment, blade **46***a* includes seven (7) nicks **50** while blade **46***b* includes eight (8) nicks **50**. The nicks **50** on blade **46***a* are offset with respect to the nicks **50** on blade **46***b*, which results in a desirable zipper-like effect when removing strip **18**. Preferably, nicks **50** are triangular shaped, about 0.010 inches deep and about 0.020 inches wide, and define an approximately 90 degree angle at its deepest convergence point **54**. The length L5 between nicks **50**, as measured between the respective convergence points **54** of adjacent nicks **50**, is approximately 0.252 inches. The length L6 between the respective convergence points **54** of adjacent offset nicks **50** on blade **46***b* is about 0.126 inches. The length L7 of blades **46***a*, **46***b* is about 0.1 inches, and each blade edge defines an angle of about 45 degrees.

It should be readily understood that a container constructed in accordance with the present invention, which is preferably a plastic container used for carrying items, can be manufactured in a variety of shapes and sizes, and can be formed from resins or plastic materials such as polyethylene, polypropylene, polyvinyl chloride or polyethylene terephthalat ("PETE"), as well as other suitable materials or combinations thereof. A container constructed in accordance with the present invention can also be made partially or entirely of materials which are not plastic, such as paper or metals. For example, a container of the present invention can be fabricated of a light gauge aluminum. The forming process can also vary to include methods such as thermoforming, injection molding or blow molding. The container can be transparent or translucent, and may be colored in either instance. Also, vents can be provided in the container to promote airflow therethrough, if appropriate based on the intended contents of the container.

Preferably, container **10** is formed from a roll of PETE subjected to a vacuum and pressure mold with plug assist. During manufacture, blades **46***a*, **46***b* of FIGS. **13–15** are preferably applied to a newly formed container **10** to impart score lines **42***a*, **42***b* thereon. Cutting edges **52** cut substantially through the material used to make container **10**. Preferably, the configuration of blades **46***a*, **46***b* are designed so that a desirable amount of force is necessary to remove strip **18**, as determined by consumer trials for example. Those skilled in the art will readily appreciate that the configuration of blades **46***a*, **46***b* can be adjusted for a variety of reasons, and the above dimensions are exemplary of one embodiment of the present invention.

For example, various other methods can be employed to form frangible strip **18** of hinge **16**. For example, score lines, nicks or penetrations can be created with the molding tool itself during the forming step. Alternatively, a high die forming process can be employed where, after the forming step, the container is indexed to a trim station, where one or more knives liberate the container and creates the score lines or perforations. Also, an intermittent cutter can be employed between the forming step or the trim step, a progressive punch and die operation can be employed, or a numerically controlled laser can be employed to create the nicks. It is also envisioned that electromechanical, ultra-sonic or hydrodynamic systems can be employed in the forming or post-forming processes.

Container **10** could also be formed with locking arrangements known in the art other than the tamper-resistant/evident closure of the subject invention, such as traditional male and female locking features.

Referring to FIGS. **16–23**, there is illustrated another tamper-resistant/evident container constructed in accordance with a preferred embodiment of the subject invention and designated generally by reference numeral **110**. Container **110** is similar to container **10** described above except that container **110** is rectangular in configuration rather than circular. Container **110** thus includes a base portion **114** and a cover portion **112** joined together by an integrally formed hinge **116** that defines a tamper-evident frangible pull strip **118**, which must be removed before cover portion **112** can be readily removed from base portion **114**.

Container **110** includes embossed or raised patterned sections **156***a* and **156***b* on opposing tabs **144***a* and **144***b* of strip **118**, respectively, to facilitate removal of strip **118**. Patterned sections **158***a* and **158***b* are also disposed on opposing sides of upper arm **136** to facilitate separation of cover portion **112** from base portion **114**. Instructional indicia can be imprinted on upper arm **136** between patterned sections **158***a* and **158***b*.

In this embodiment, score line **142***b* is situated on hinge **116** to define two tabs **160***a* and **160***b* which are connected with lower arm **138**. Tabs **160***a*, **160***b* remain in place on hinge **116** until strip **118** is removed, as can be best viewed in FIGS. **21–23**. Tabs **160***a*, **160***b* extend from lower arm **138** to further facilitate gripping lower arm **138** and separation of cover portion **112** from base portion **114**.

Although exemplary and preferred aspects and embodiments of the present invention and forming methods have been described with a full set of features, it is to be understood that the disclosed container and method of manufacture may be practiced successfully without the incorporation of each of those features. The scope of the present invention is not limited only to the tamper-resistant/evident containers and methods of forming and manufacture disclosed herein.

Furthermore, it should be readily apparent that the present invention is not limited to containing any one type or form of product. It is envisioned that a container constructed in accordance with the present invention can be used, or modified for use within the scope of the present invention, to hold edible or non-edible contents of varying sizes and weights.

Thus, it is to be understood that modifications and variations may be utilized without departure from the spirit and scope of the invention and method disclosed herein, as those skilled in the art will readily understand. Such modifications and variations are considered to be within the purview and scope of the appended claims and their equivalents.

What is claimed is:

1. A tamper-resistant/evident container comprising:

a) a plastic, transparent cover portion including an outwardly extending peripheral flange;

b) a base portion including an upper peripheral edge forming at least in part an upwardly projecting bead extending substantially about the perimeter of the base portion and configured to render the outwardly extending flange of the cover portion relatively inaccessible when the container is closed; and

c) a tamper evident bridge connecting the cover portion to the base portion.

2. A tamper-resistant/evident container as recited in claim **1**, wherein the tamper evident bridge includes a hinge

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joining the outwardly extending flange of the cover portion with the base portion, the hinge including a frangible section, which upon severing, provides a projection that extends out beyond the upwardly projecting bead of the upper peripheral edge of the base portion, for facilitating removal of the cover portion from the base portion to open the container.

3. A tamper-resistant/evident container as recited in claim 2, wherein a skirt depends downwardly from the upper peripheral edge of the base portion, and the hinge extends from a lower edge of the skirt to the outwardly extending flange of the cover portion.

4. A tamper-resistant/evident container as recited in claim 2, wherein the frangible section of the hinge is delimited at least in part by a pair of parallel score lines.

5. A tamper-resistant/evident container as recited in claim 4, wherein the frangible section of the hinge is further delimited by a plurality of spaced apart notches associated with the score lines.

6. A tamper-resistant/evident container as recited in claim 1, wherein the cover portion and the base portion have a generally circular configuration.

7. A tamper-resistant/evident container as recited in claim 1, wherein the cover portion and the base portion have a generally rectangular configuration.

8. A tamper-resistant/evident container as recited in claim 1, wherein at least one of the cover portion and the base portion is vented.

9. A tamper-resistant/evident container as recited in claim 1, wherein the cover portion and base portion include cooperating releasable locking structures.

10. A tamper-resistant/evident container comprising:

a) a translucent cover portion including an outwardly extending peripheral flange;

b) a base portion including an upper peripheral edge; and

c) a hinge joining the outwardly extending flange of the cover portion with the base portion, the hinge including a frangible section, which upon severing, provides a projection that extends from the base portion for facilitating removal of the cover portion from the base portion to open the container.

11. A tamper-resistant/evident container as recited in claim 10, wherein the upper peripheral edge of the base portion further comprises an upwardly projecting bead extending substantially about the perimeter of the base portion configured to render the outwardly extending flange of the cover portion relatively inaccessible when the container is closed.

12. A tamper-resistant/evident container as recited in claim 10, wherein a skirt depends downwardly from the upper peripheral edge of the base portion, and the hinge extends from a lower edge of the skirt to the outwardly extending flange of the cover portion.

13. A tamper-resistant/evident container as recited in claim 10, wherein the frangible section of the hinge is delimited at least in part by a pair of parallel score lines.

14. A tamper-resistant/evident container as recited in claim 13, wherein the frangible section of the hinge is further delimited by a plurality of spaced apart notches associated with the score lines.

15. A tamper-resistant/evident container as recited in claim 10, wherein the cover portion and the base portion have a generally circular configuration.

16. A tamper-resistant/evident container as recited in claim 10, wherein the cover portion and the base portion have a generally rectangular configuration.

17. A tamper-resistant/evident container comprising:

a) a plastic transparent cover portion including an outwardly extending peripheral flange;

b) a base portion including an upper peripheral edge forming at least in part an upwardly projecting bead extending substantially about the perimeter of the base portion and configured to render the outwardly extending flange of the cover portion relatively inaccessible when the container is closed; and

c) a hinge joining the outwardly extending flange of this cover portion with the base portion, the hinge including a frangible section, which upon severing, provides an arm that extends from the base portion for facilitating removal of the cover portion from the base portion to open the container.

18. A tamper-resistant/evident container as recited in claim 17, wherein a skirt depends downwardly from the upper peripheral edge of the base portion, and the hinge extends from a lower edge of the skirt to the outwardly extending flange of the cover portion.

19. A tamper-resistant/evident container as recited in claim 17, wherein the projection that extends out beyond the upwardly projecting bead of the upper peripheral edge of the base portion includes patterned sections to facilitate gripping thereof.

20. A tamper-resistant/evident container as recited in claim 17, wherein upon severing the frangible section, the projection that extends out beyond the upwardly projecting bead of the upper peripheral edge of the base portion further includes tabs for facilitating removal of the cover portion from the base portion to open the container.

21. A tamper-resistant/evident container comprising:

a) a cover portion including an outwardly extending peripheral flange;

b) a base portion including an upper peripheral edge;

c) a hinge joining the outwardly extending flange of the cover portion with the base portion, the hinge including a frangible section, which upon severing, provides a projection that extends out beyond the upwardly projecting bead of the upper peripheral edge of the base portion for facilitating removal of the cover portion from the base portion to open the container, and

d) a skirt depending downwardly from the upper peripheral edge of the base portion, wherein the hinge extends from a lower edge of the skirt to the outwardly extending flange of the cover portion.

22. A tamper-resistant/evident container as recited in claim 21, wherein the frangible section of the hinge has a height substantially equal to the height of the downwardly depending skirt, and wherein the cover portion, base portion, hinge and skirt are made from a single piece of material.

23. A tamper-resistant/evident container as recited in claim 1, wherein the cover portion is colored.

24. A tamper-resistant/evident container as recited in claim 1, wherein the container is capable of being resealed in a substantially leak resistant manner after a portion of the tamper evident bridge is removed to open the container.

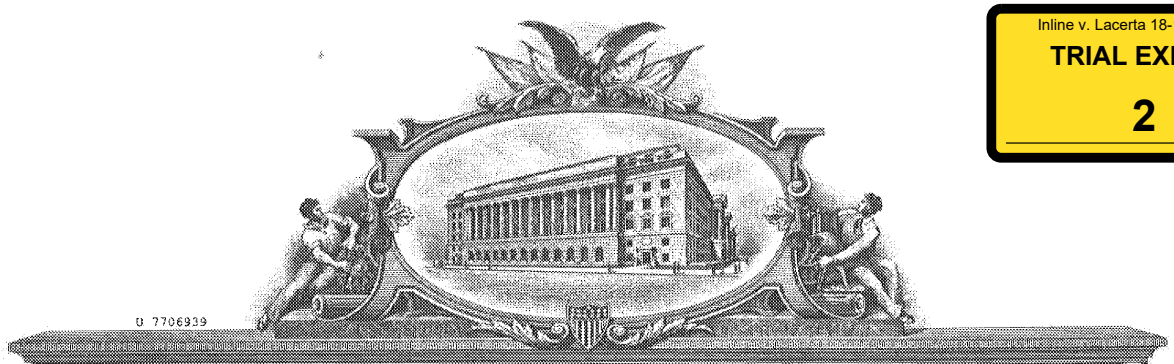
25. A tamper-resistant/evident container as recited in claim 1, wherein the base portion is also transparent.

26. A tamper-resistant/evident container as recited in claim 10, wherein the base portion is also translucent.

* * * * *

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THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THIS OFFICE OF:

U.S. PATENT: *7,073,680*
ISSUE DATE: *July 11, 2006*

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Under Secretary of Commerce for Intellectual Property
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SYLVIA HOLLEY
Certifying Officer

IP0000204

Trial Exhibit 2.1

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(12) **United States Patent**
Boback et al.

(10) **Patent No.: US 7,073,680 B2**
(45) **Date of Patent: Jul. 11, 2006**

(54) **TAMPER-RESISTANT CONTAINER WITH TAMPER-EVIDENT FEATURE AND METHOD OF FORMING THE SAME**

(75) Inventors: **Peter Boback**, Stratford, CT (US); **Robert Sellari**, Shelton, CT (US); **Bruce Stein**, Easton, CT (US); **Daniel A. Landan**, Oxford, CT (US); **Tadeusz J. Klimaszewski**, Hamden, CT (US)

(73) Assignee: **Inline Plastics Corporation**, Shelton, CT (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **11/065,681**

(22) Filed: **Feb. 24, 2005**

(65) **Prior Publication Data**

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(60) Provisional application No. 60/489,093, filed on Jul. 21, 2003.

(51) **Int. Cl.**
B65D 41/32 (2006.01)

(52) **U.S. Cl.** **220/266**; 220/4.21

(58) **Field of Classification Search** 220/266, 220/270, 4.21, 835, 780–784, 4.23, 4.25
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,433,793	A *	2/1984	Ingemann	220/276
4,535,889	A *	8/1985	Terauds	206/527
5,040,695	A *	8/1991	Adams et al.	220/270
5,219,087	A *	6/1993	Christensson	220/270
5,287,959	A *	2/1994	Hansen et al.	220/787
D352,000	S *	11/1994	Hansen et al.	D9/429
5,507,406	A *	4/1996	Urciuoli et al.	220/269
5,573,134	A *	11/1996	Chenault et al.	220/276
5,897,011	A *	4/1999	Brilliant et al.	220/4.23
5,931,332	A *	8/1999	Mygatt et al.	220/270
2003/0052133	A1	3/2003	Hayes et al.	

FOREIGN PATENT DOCUMENTS

DE	78 16 353 U1	11/1978	
DE	4418935	* 12/1995	220/270
DE	1999-083197	* 8/1999	220/270
EP	0 752 374 A1	1/1997	
GB	2257118 A	1/1993	

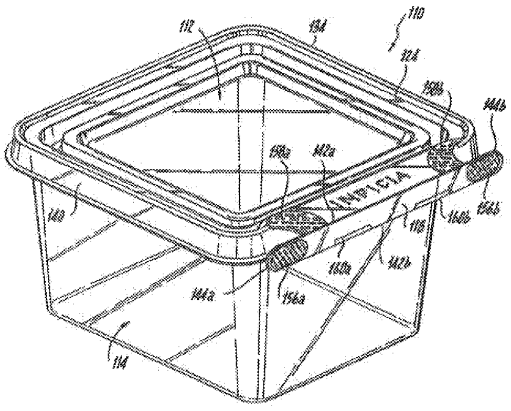
* cited by examiner

Primary Examiner—Lien M. Ngo
(74) *Attorney, Agent, or Firm*—Edwards Angell Palmer & Dodge LLP

(57) **ABSTRACT**

A tamper-resistant container with tamper-evident features which includes a cover portion defining a outwardly extending peripheral flange, a base portion defining an upper peripheral edge, a hinge joining the outwardly extending peripheral flange with the base portion and an engagement mechanism for maintaining the peripheral flange adjacent to the upper peripheral edge when the container is closed. The upper peripheral edge includes an upwardly projecting bead extending substantially about the perimeter of the base portion that is configured to render the outwardly extending flange of the cover portion relatively inaccessible when the container is closed. The hinge includes a frangible section, which upon severing, provides a projection that extends out beyond the upwardly projecting bead of the upper peripheral edge of the base portion, for facilitating the disengagement of the engagement mechanism and removal of the cover portion from the base portion to open the container.

27 Claims, 10 Drawing Sheets



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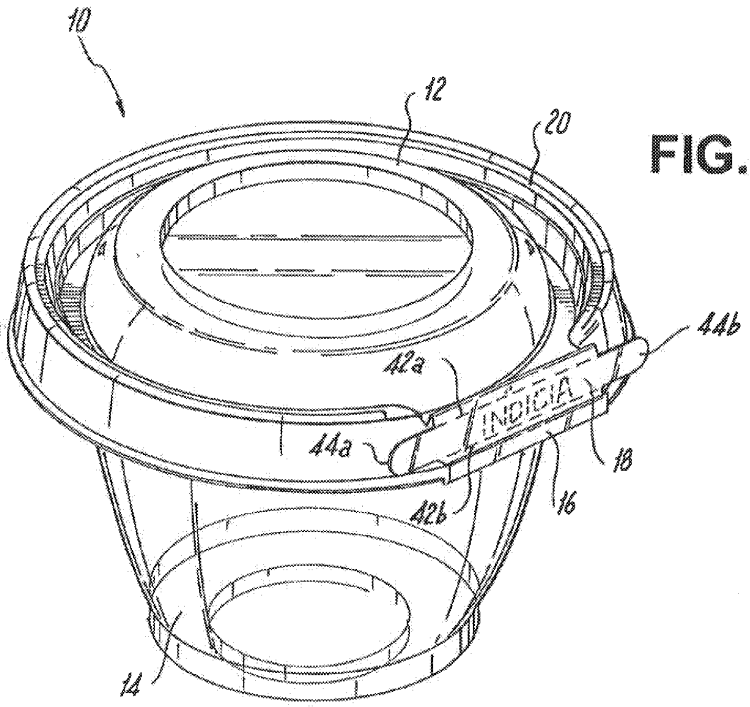


FIG. 1

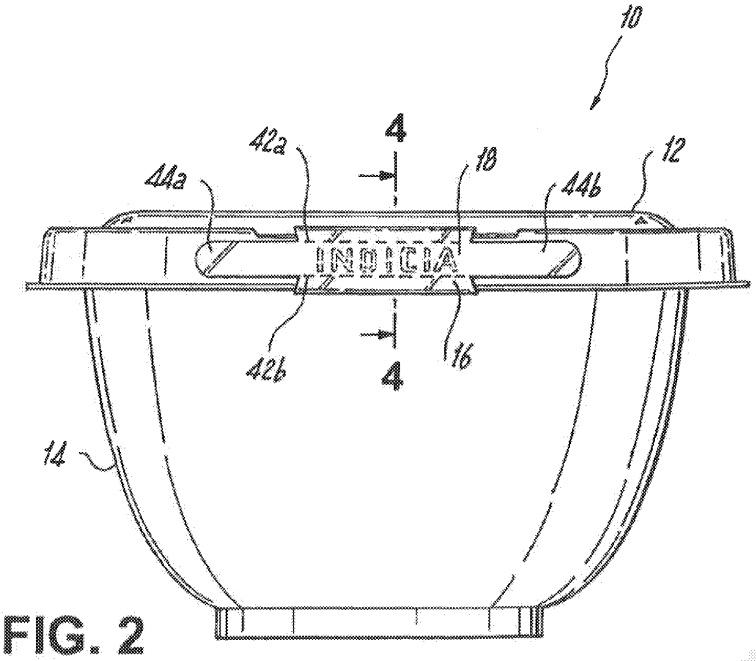


FIG. 2

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FIG. 3

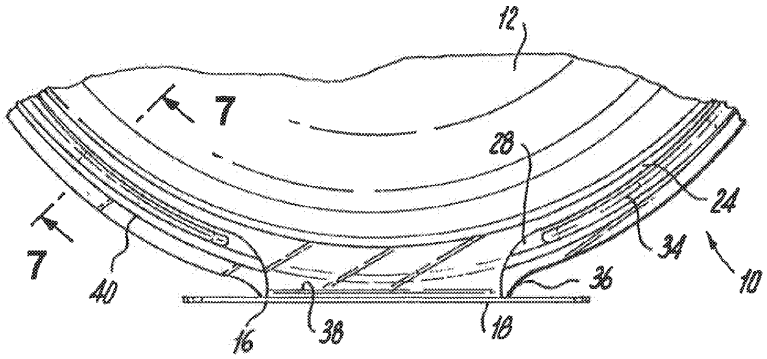
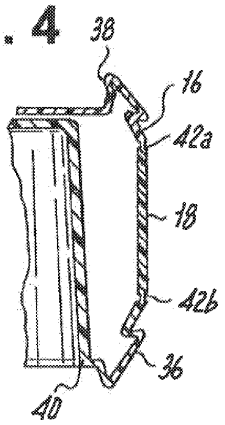


FIG. 4



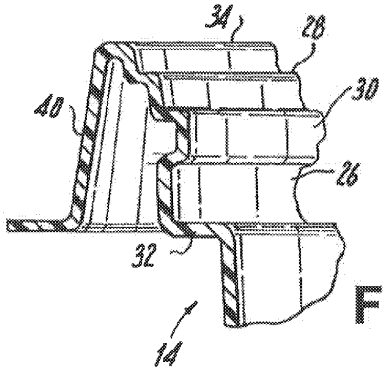


FIG. 5

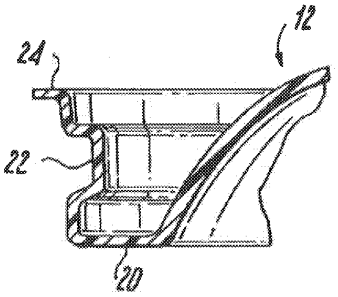


FIG. 6

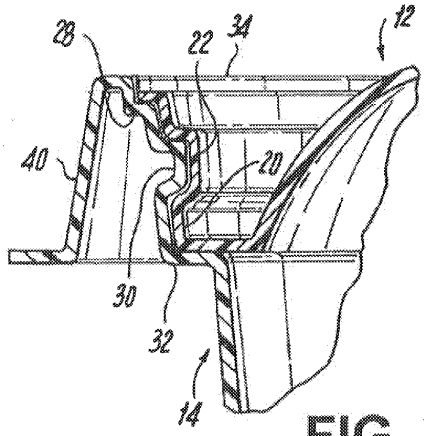


FIG. 7

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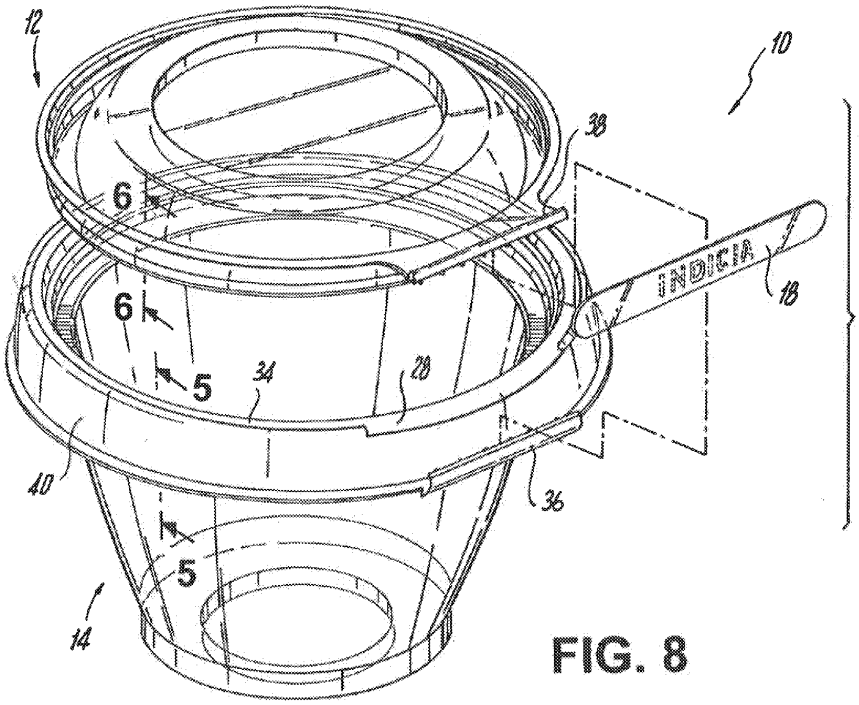


FIG. 8

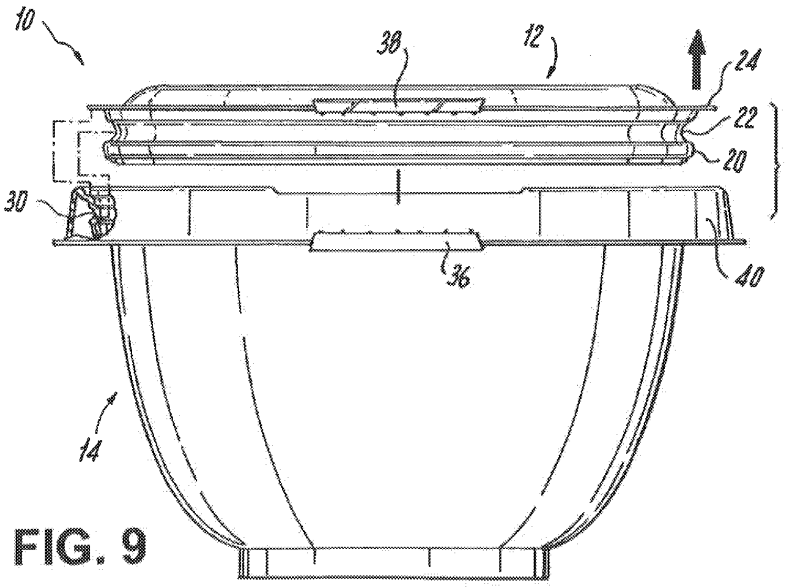


FIG. 9

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FIG. 10

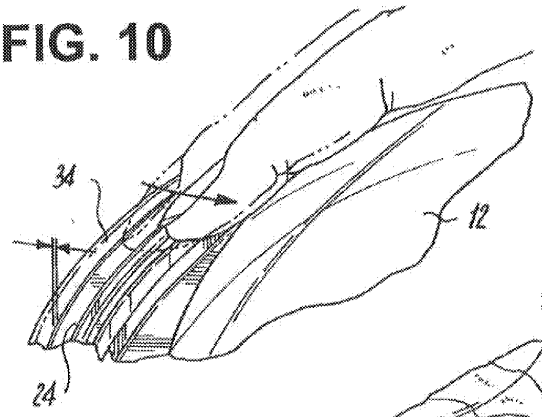
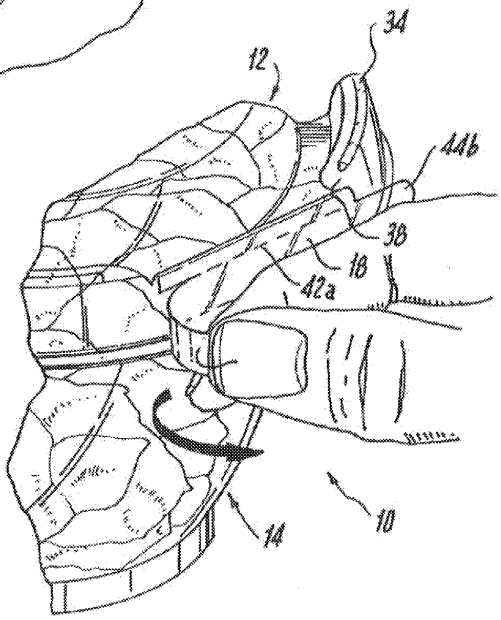


FIG. 11



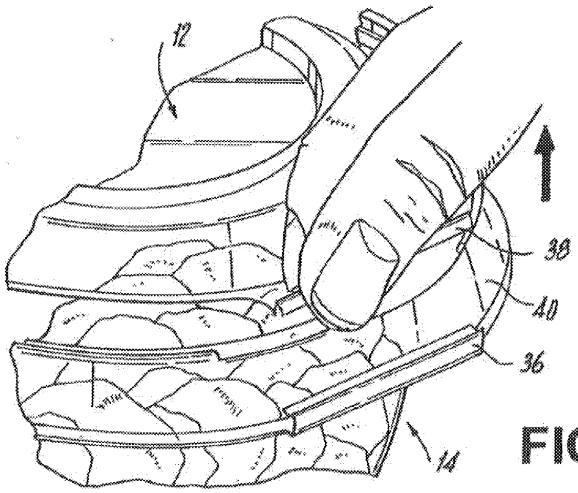


FIG. 12

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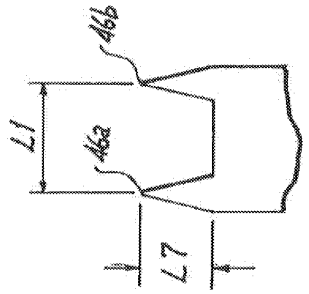


FIG. 13

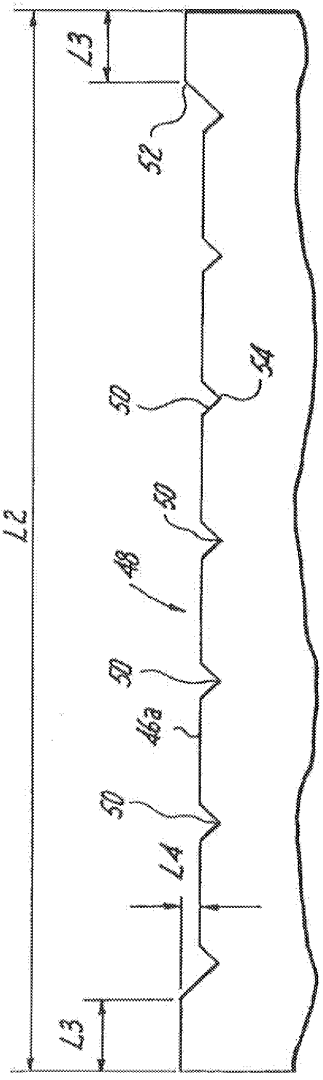


FIG. 15

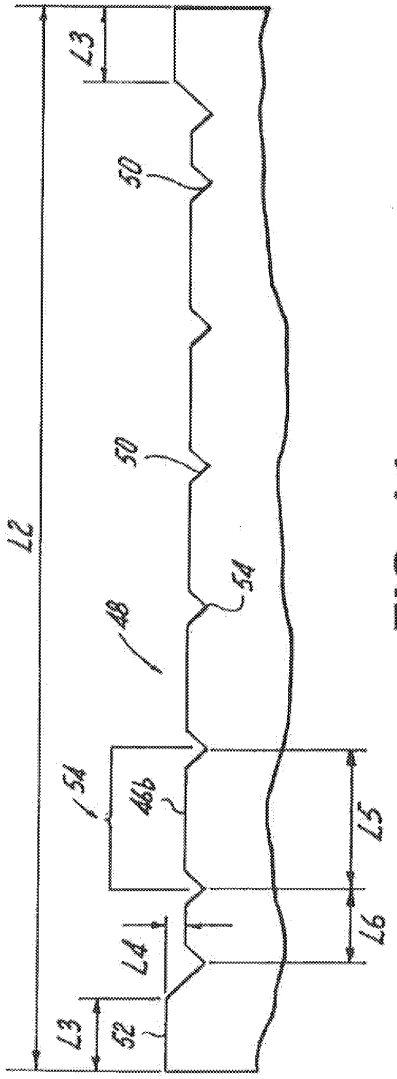
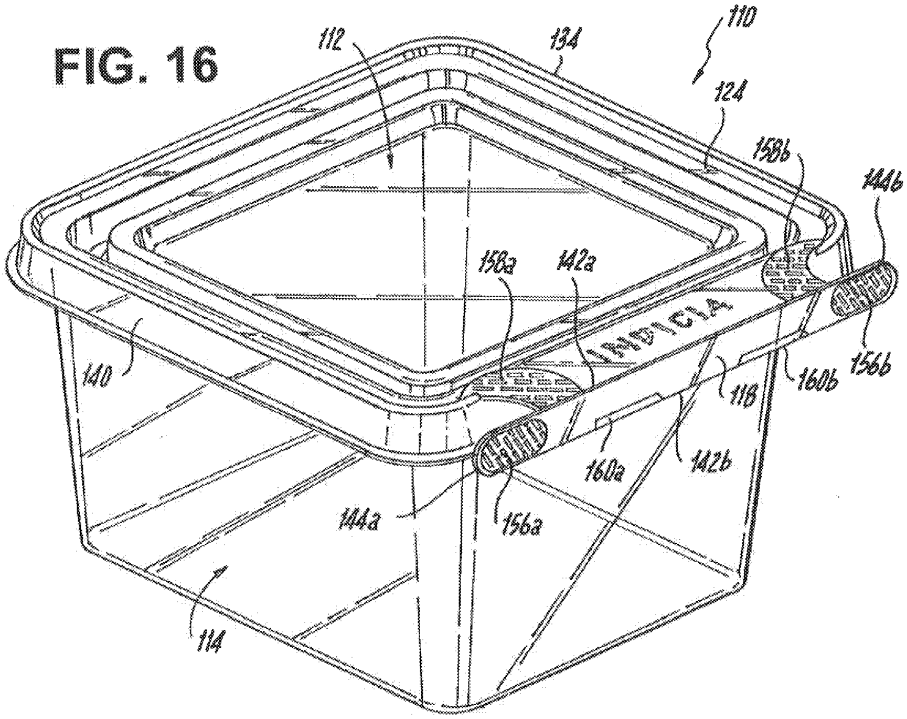


FIG. 14

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Trial Exhibit 2.7

FIG. 16



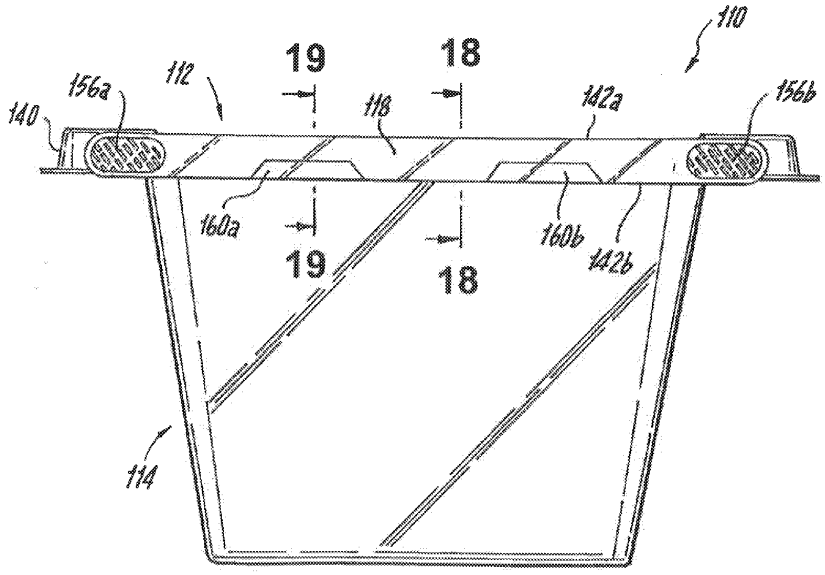


FIG. 17

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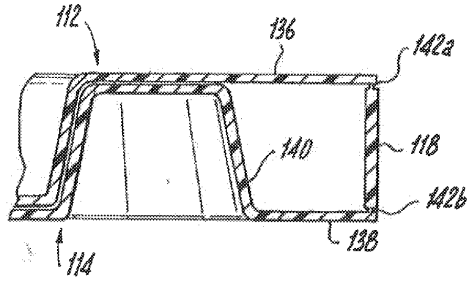


FIG. 18

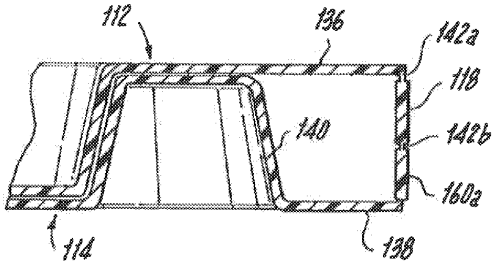


FIG. 19

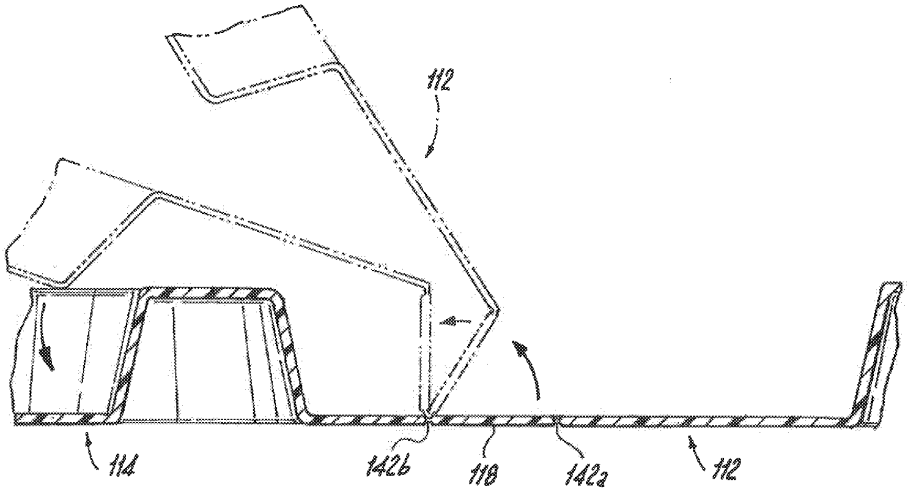


FIG. 20

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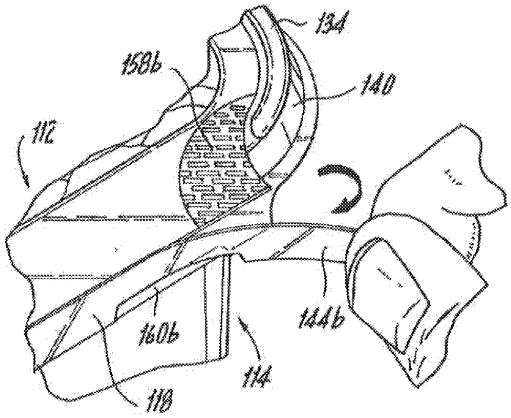


FIG. 21

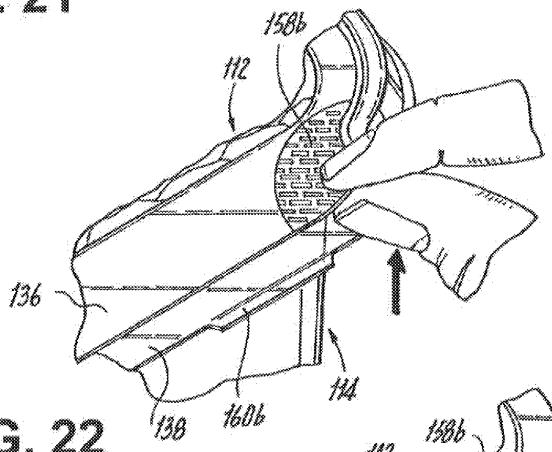


FIG. 22

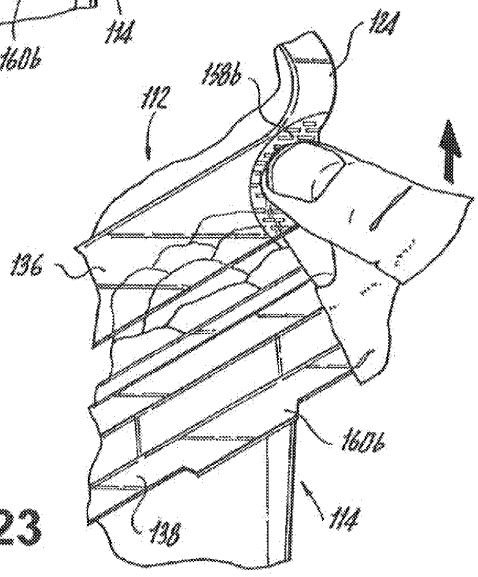


FIG. 23

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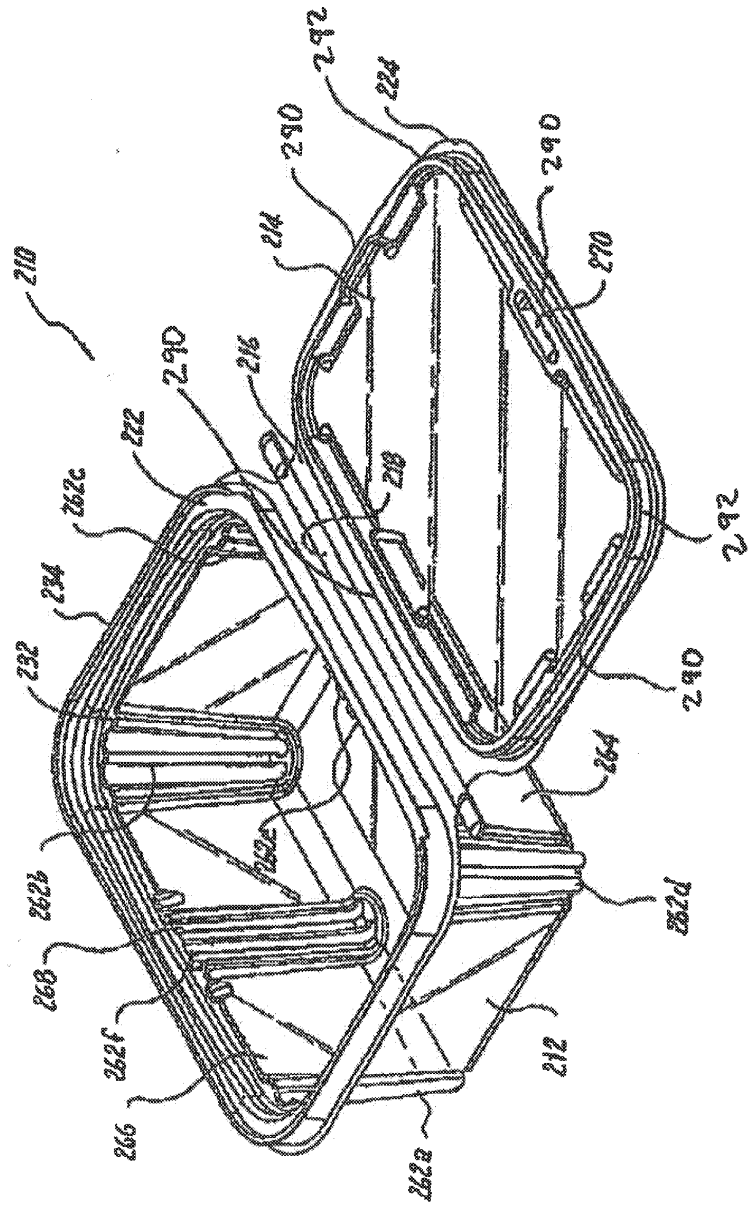


FIG. 24

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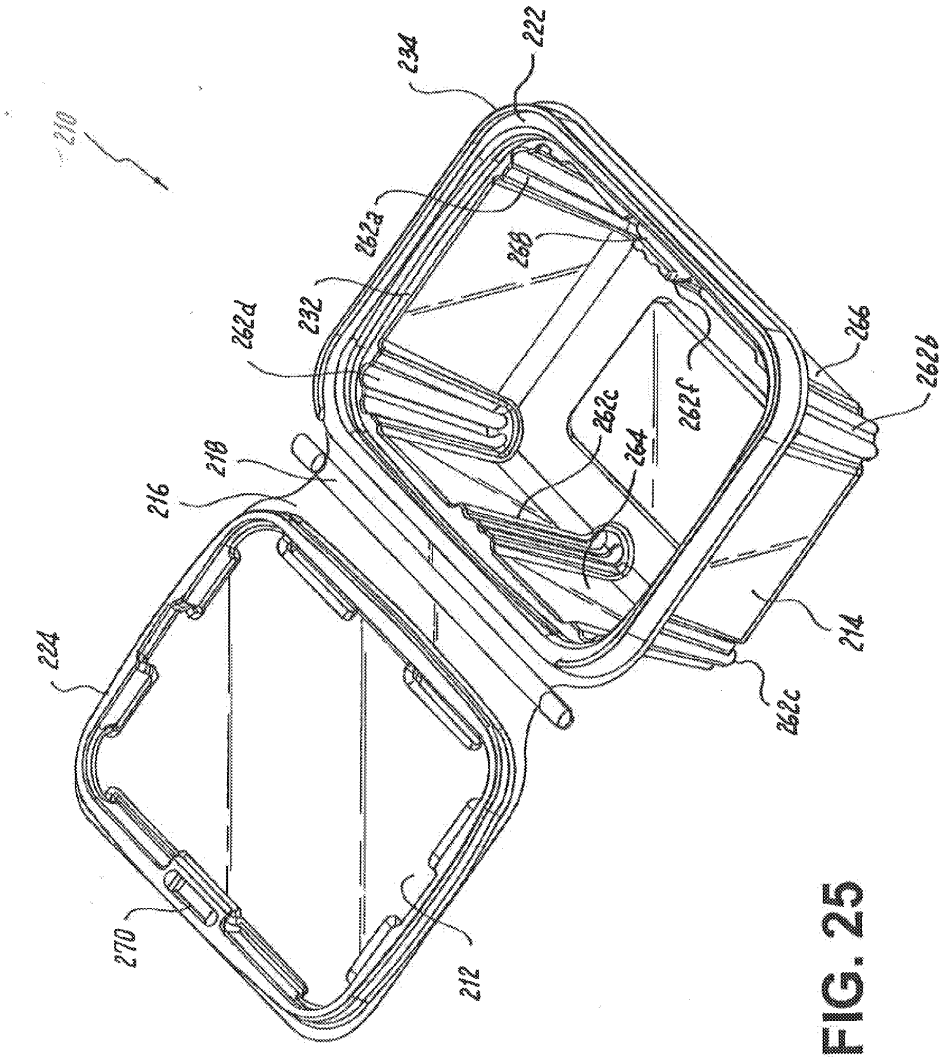


FIG. 25

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Trial Exhibit 2.12

TAMPER-RESISTANT CONTAINER WITH TAMPER-EVIDENT FEATURE AND METHOD OF FORMING THE SAME

CROSS-REFERENCE TO RELATED APPLICATION(S)

The subject application is a continuation in part of U.S. patent application Ser. No. 10/895,687 filed Jul. 21, 2004, which claims the benefit of priority to U.S. Provisional Patent Application No. 60/489,093 filed Jul. 21, 2003, the disclosures of which are herein incorporated by reference in their entirety.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The subject invention is directed to containers and packaging, and more particularly, to containers and packaging that incorporate tamper-resistant and tamper-evident features.

2. Background of the Related Art

Disposable containers for packaging, distributing, displaying or otherwise housing consumer items, especially perishable foods, are becoming increasingly important. Historically, perishable products had to be brought to market and sold quickly before exposure to the atmosphere caused the products to lose their freshness.

The advent of plastics resulted in many products being wrapped or packaged in plastic, both in the form of flexible plastic bags and solid plastic containers. The use of plastics in the modern-day convenience food industry has significantly improved the "shelf life" of perishable products, allowing both merchants and their customers to store the products for longer periods of time, resulting in substantial savings.

It has been found that consumers like recloseable packages, particularly for comestible products, especially in circumstances where more than one serving of a comestible product is contained therein, in order to reduce drying out or other deterioration of the comestible food product. In addition, consumers prefer to visually inspect the food product within such containers prior to purchase. Thus, fabricating containers from clear see-through plastics is desirable. For example, packaging provided for bakery goods has often been in the form of clear, plastic clamshell packaging, because, among other things, such clear, plastic clamshell packaging, provides a baked-on-the-premises image which grocery retailers have found to be especially appealing to consumers.

Typically, plastic containers will include a fairly rigid lid and base, although they may be subject to some amount of flexure. The lid provided must be capable of properly and effectively sealing the container, yet the container must be constructed so that the lid is relatively easy to remove, and even replace, since it is expected that the container and lid would normally be reused.

In addition to the aforementioned consumer design preferences, it is desirable to fabricate containers that include features which either deter unauthorized tampering or clearly indicate whether unauthorized tampering has occurred, or both. These tamper-resistant/evident features typically include structural elements which, when the container is tampered with or opened without authorization, enable the consumer to easily visually recognize such tampering so that the product can then be rejected. Such tamper-resistant/evident elements are important for, among other things, deterring theft and preventing the loss of product and income for the seller, as well as instilling consumer confidence in the integrity of the contents within the container and confidence in the ability of the seller and/or manufacturer to provide and maintain quality goods.

Thus, there is a compelling interest in the development of containers having consumer-preferable design elements, such as recloseability features which are reliable and easy to operate, along with tamper-resistant/evident features that deter tampering and clearly indicate whether tampering has occurred, and which are also reliable without being burdensome to the legitimate consumer. Accordingly, the present invention is directed to a container that meets these needs.

SUMMARY OF THE DISCLOSURE

The present invention meets the aforementioned needs, while also improving upon and solving problems associated with previous containers by providing, among other things, a tamper-resistant container with tamper-evident features (also referred to herein as a "tamper-resistant/evident container") that includes a cover portion defining an outwardly extending peripheral flange and a base portion defining an upper peripheral edge. The upper peripheral edge of the base portion includes, at least in part, an upwardly projecting bead extending substantially about the perimeter of the base portion. This bead is configured and dimensioned to render the outwardly extending flange of the cover portion relatively inaccessible when the container is closed. Preferably, the container includes an engagement mechanism, which may include a device or structure, among other things, for maintaining the peripheral flange adjacent to the upper peripheral edge when the container is closed.

The container can further include a hinge joining the outwardly extending flange of the cover portion with the base portion. The hinge preferably includes a frangible section, which upon severing, provides a projection that extends out beyond the upwardly projecting bead of the upper peripheral edge of the base portion to facilitate disengagement of the engagement mechanism and removal of the cover portion from the base portion. Preferably, the frangible section of the hinge is delimited at least in part by a pair of parallel score lines, and more preferably, is further delimited by a plurality of spaced apart notches, depressions or nicks associated with the score lines.

In another embodiment, the container includes a skirt which depends downwardly from the upper peripheral edge of the base portion. Preferably, the hinge extends from the lower edge of the skirt to the outwardly extending flange of the cover portion.

In a further embodiment, the aforementioned engagement mechanism is non-permanent and facilitates the reattachment of the cover portion with the base portion. Preferably, the engagement mechanism urges the peripheral flange of the cover portion and the upper peripheral edge of the base portion to remain adjacent with respect to each other when the container is closed by, among other things, securing the cover portion to the base portion.

In one embodiment, the engagement mechanism includes corresponding male and female structural members which are configured and dimensioned to form a secure engagement with each other. The male engaging member can be defined on the base portion and the female engaging member can be defined on the cover portion.

The container can also include at least one supporting rib defined on the base portion. In one embodiment, the sup-

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porting rib includes a plurality of elongated, arcuate portions positioned adjacently with respect to one another.

The present invention is also directed to a tamper-resistant/evident container that includes a cover portion defining a outwardly extending peripheral flange, a base portion defining an upper peripheral edge, a hinge joining the outwardly extending flange of the cover portion with the base portion, and an engagement mechanism, which may be a device or structure, among other things, for maintaining the peripheral flange adjacent to the upper peripheral edge when the container is closed.

In one embodiment of this container, the engagement mechanism can be non-permanent and facilitate the reattachment of the cover portion with the base portion. The engagement mechanism can also urge the peripheral flange of the cover portion and the upper peripheral edge of the base portion to resist separation when the container is closed and remain in place.

In another embodiment of this container, the engagement mechanism can include corresponding male and female engaging members, as discussed above.

This container of the present invention can also include one or more supporting ribs defined on the base portion, which, as discussed above, preferably include a plurality of elongated arcuate portions positioned adjacently with respect to one another. In a preferred embodiment, the male engaging member of an engagement mechanism having male and female engaging members, projects from at least one supporting rib.

The present invention is also directed to a container that includes a cover portion defining a outwardly extending peripheral flange, a base portion defining an upper peripheral edge forming at least in part an upwardly projecting bead extending substantially about the perimeter of the base portion and configured to render the outwardly extending flange of the cover portion relatively inaccessible when the container is closed, a hinge joining the outwardly extending flange of the cover portion with the base portion, a male engaging member defined on the base portion to project towards the cover portion when the container is closed, and a female engaging member having a receiving portion defined on the cover portion to correspond to the position of the male engaging member when the container is closed for receiving the male engaging member therein and forming a non-permanent engagement between the male and female engaging members when the container is closed.

In one embodiment of the aforementioned container constructed in accordance with the present invention, the engagement of the male and female members provides resistance to any force applied to remove the cover portion and base portion. Preferably, the engagement of the male and female members also urges the outwardly extending peripheral flange of the cover portion into contact with the peripheral edge of the base portion.

These and other aspects of the present invention will become more readily apparent to those having ordinary skill in the art from the following detailed description of the invention taken in conjunction with the drawings.

BRIEF DESCRIPTION OF THE FIGURES

So that those having ordinary skill in the art to which the subject invention pertains will more readily understand how to make and use the tamper-resistant/evident package disclosed herein, embodiments thereof will be described in detail below with reference to the drawings, wherein:

FIG. **1** is a perspective view of a tamper-resistant/evident container constructed in accordance with the present invention in an exemplary circular configuration having a base portion and cover portion connected to each other by a hinge having a frangible section;

FIG. **2** is a side view of the container shown in FIG. **1**, illustrating in particular the hinge having a frangible section or strip, and a suitable location for indicia to be printed thereon;

FIG. **3** is a partial top view of the container shown in FIG. **1**, illustrating in particular the hinge having a frangible section or strip and projection associated therewith that extends beyond the upwardly projecting bead associated with the upper peripheral surface of the base portion;

FIG. **4** is a partial cross sectional view of the container shown in FIG. **1**, taken along line **4**—**4** of FIG. **2**, illustrating in particular the hinge having a frangible section and upper and lower projections or arms extending from the cover portion and base portion of the container;

FIG. **5** is a partial cross sectional view of the container shown in FIG. **1**, taken along line **5**—**5** of FIG. **8**, illustrating in particular the configuration of the base portion and the structural elements that facilitate a releasable/recloseable engagement with the cover portion;

FIG. **6** is a partial cross sectional view of the container shown in FIG. **1**, taken along line **6**—**6** of FIG. **8**, illustrating in particular the configuration of the cover portion and the structural elements that facilitate a releasable/recloseable engagement with the base portion;

FIG. **7** is a partial cross sectional view of the container shown in FIG. **1**, taken along line **7**—**7** of FIG. **4**, illustrating in particular the configuration of the base portion and cover portion when the container is closed and including the structural elements that facilitate a releasable/recloseable engagement between the base and cover portions;

FIG. **8** is an exploded perspective view of the container shown in FIG. **1**, illustrating in particular the operative association between the cover portion, base portion and frangible section;

FIG. **9** is a side view of the container shown in FIG. **1**, in which the frangible section has been removed, illustrating the manner in which the cover portion is separated from the base portion and the upper and lower projections or arms associated with the cover and base portions, respectively;

FIG. **10** is a partial perspective view of the container shown in FIG. **1**, illustrating in particular the manner in which the upwardly projecting bead on the base portion physically prevents access to the outer edge of the cover portion, making it difficult to separate the cover portion from the base portion;

FIG. **11** is a partial perspective view of the container shown in FIG. **1**, illustrating in particular the manner in which the frangible section can be removed from the hinge;

FIG. **12** is a partial perspective view of the container shown in FIG. **1**, illustrating in particular the upper and lower projections formed by removal of the frangible section and the manner in which the upper and lower projections facilitate separation of the cover portion from the base portion;

FIG. **13** is a side view of a two blade knife that can be used to form the frangible section of a container constructed in accordance with the present invention;

FIG. **14** is a front plan view of a first blade of the two blade knife of FIG. **13**, illustrating the position of the nicks and cutting surfaces that can form a first score line of a frangible section of a container constructed in accordance with the present invention;

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FIG. **15** is a front plan view of a second blade of the two blade knife of FIG. **13**, illustrating the position of the nicks, cutting surfaces and offset that can form a second score line of a frangible section of a container constructed in accordance with the present invention;

FIG. **16** is perspective view of a tamper-resistant/evident container constructed in accordance with the present invention in an exemplary rectangular configuration having a base portion and cover portion connected to each other by a hinge having a frangible section;

FIG. **17** is a side view of the container shown in FIG. **16**, illustrating in particular the hinge having a frangible section or strip, patterned sections on opposing ends thereof, and tabs defined by the frangible section score line;

FIG. **18** is a partial cross sectional view of the container shown in FIG. **16**, taken along line **18**—**18** of FIG. **17**, illustrating in particular the configuration of the hinge, upper and lower projections and frangible section;

FIG. **19** is a partial cross sectional view of the container shown in FIG. **16**, taken along line **19**—**19** of FIG. **18**, illustrating in particular the configuration of the hinge, upper and lower projections, frangible section, and score line defining a tab associated with the lower projection;

FIG. **20** is a partial cross sectional view of the container shown in FIG. **16**, illustrating in particular the manner in which the cover portion is closed on the base portion;

FIG. **21** is a partial perspective view of the container shown in FIG. **16**, illustrating in particular the manner in which the frangible section is removed from the hinge;

FIGS. **22**–**23** are partial perspective views of the container shown in FIG. **1**, illustrating in particular the manner in which the separation of the cover portion from the base portion is facilitated by clasping the patterned section disposed on the upper projection or arm associated with the cover portion which is formed upon removal of the frangible section;

FIG. **24** is a perspective view of another embodiment of a tamper-resistant/evident container constructed in accordance with the present invention having an additional engagement mechanism and support structure for providing enhanced structural integrity and further securing the base portion and cover portion, among other things; and

FIG. **25** is another perspective view of the tamper-resistant/evident container shown in FIG. **24**.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The advantages of a tamper-resistant/evident container constructed in accordance with the present invention will become more readily apparent to those having ordinary skill in the art from the following detailed description of certain preferred and exemplary embodiments taken in conjunction with the drawings which set forth representative embodiments thereof, but are not intended to limit the scope of the present invention.

Unless otherwise apparent, or stated, directional references, such as "right," "left," "upper," "lower," "outward," "inward," etc., are intended to be relative to the orientation of a particular embodiment of the invention as shown in the first numbered view of that embodiment. In addition, a given reference numeral indicates the same or similar structure when it appears in different figures and like reference numerals identify similar structural elements and/or features of the subject invention.

In accordance with an exemplary embodiment of the subject invention illustrated in FIGS. **1** and **2**, the container **10** includes a generally circular cover portion **12** and a generally bowl-shaped base portion **14** joined together by a hinge **16**. Hinge **16** includes a tamper-evident frangible section or pull strip **18**, which, upon its removal, severs the integral connection between cover portion **12** and base portion **14**.

In use, container **10** would be filled with the contents for which consumer protection is desired and cover portion **12** would be engaged with base portion **14**. In accordance with the present invention, cover portion **12** and base portion **14** include structural features that facilitate the formation of a non-permanent engagement between cover portion **12** to base portion **14**.

In this embodiment, the non-permanent engagement between cover portion **12** and base portion **14** is facilitated by, among other things, a peripheral locking shoulder **20** and an radially inward circumferential groove **22** formed below an outwardly extending peripheral flange **24** on cover portion **12**, which can be seated within a corresponding mating circumferential recess **26** on base portion **14**. Circumferential recess **26** on base portion **14** is formed below an upper peripheral rim **28** and includes a radially inward projecting rib **30** and a radially inwardly extending rim **32**.

When cover portion **12** is closed on base portion **14**, projecting rib **30** mates with circumferential groove **22** on cover portion **12** and extending rim **32** mates with locking shoulder **20** on cover portion **12**. In addition, outwardly extending peripheral flange **20** on cover portion **12** abuts upper peripheral rim **28** on base portion **14**.

Container **10** incorporates features which are intended to prevent and deter opening container **10** without first removing frangible strip **18** from hinge **16**. In this embodiment, container **10** includes an upwardly projecting bead **34** on base portion **14** that extends substantially about the perimeter of peripheral rim **22** and is positioned to surround the outer edge of flange **24** of cover portion **12** when container **10** is closed. The position and upward extension of bead **34** is configured to hinder the relatively easy method of removing a cover from conventional containers that may resemble or have characteristics in common with container **10**. As can be best viewed in FIG. **10**, bead **34** physically blocks access to the edge of peripheral flange **24** on cover portion **12** from fingers or any other object that might normally be used for leverage to pry cover portion **12** from base portion **14**.

Hinge **16** includes an upper outwardly projecting arm **36** connected to base portion **14**, and a similar lower outwardly projecting arm **38**, which is connected to cover portion **12**. In particular, upper arm **36** is connected with a skirt **40** that projects downward from upper peripheral rim **28** and radially outward with respect to base portion **14**. Lower arm **38** is connected with the peripheral flange **24**. Upper and lower arms **36** and **38** are joined together by a common attachment to frangible strip **18** to form hinge **16**.

Preferably, frangible strip **18** is delimited at least in part by a pair of parallel score lines **42***a*, **42***b* or areas that have been weakened or stressed during the forming process. Frangible strip **18** may be further delimited by a plurality of spaced apart areas in which material has been removed associated with the score lines, by a plurality of spaced apart depressions associated with the score lines, or by perforation lines. The width and depth of the areas and/or depressions can vary to control the tear resistance offered by frangible strip **18**. Alternatively, the integral hinge **16** could be formed with a single score line or perforation line, rather than a pair of score lines. In this instance, the single score line could be severed to create a pair of projections which would be used to open the container.

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In this embodiment, strip **18** includes laterally opposed grasping tabs **44***a* and **44***b* to provide a convenient location for gripping strip **18**. Preferably, instructional indicia is imprinted on strip **18** to facilitate its removal from hinge **16** and/or consumer understanding of the significance of its removal as it relates to product tampering. Strip **18** and/or the instructional indicia preferably thereon can be colored or embossed, or otherwise fabricated to direct attention thereto.

As can be best viewed in FIGS. **11** and **12**, detaching frangible strip **18** from hinge **16** of container **10** leaves behind upper and lower arms **36** and **38** on cover portion **12** and base portion **14**, respectively. Upper and lower arms **36** and **38** extend outwardly from container **10** and can be used to facilitate removal of cover portion **12** from base portion **14**, once strip **18** has been removed, by applying sufficient opposing force to disengage locking shoulder **20** from within circumferential recess **26**.

The presence of bead **34** prevents unauthorized access to the contents of container **10** by making it difficult to pull cover portion **12** from base portion **14**. If access to container **10** is desired, strip **18** must be removed so that upper and lower arms **36** and **38** are free to be used to leverage cover portion **12** from base portion **14**. Cover portion **12** may be replaced on base portion **14** after container **10** is opened. Strip **18**, however, once removed, is not replaceable. Thus, removal of strip **18** functions as a clear indicator of possible tampering, in that if strip **18** is partially or fully removed prior to purchase, it is readily apparent to a consumer that someone may have already gained access to the contents of container **10**.

FIGS. **13–15** illustrate an exemplary configuration for a double scoring blade having blades **46***a*, **46***b*, which can be used in a punch press system or the like to form score lines **42***a*, **42***b* in accordance with the present invention. Various dimensions of blades **46***a*, **46***b* are also provided herein as a non-limiting example.

The lateral separation L1 between blades **46***a*, **46***b* is in this embodiment about 0.36 inches. The length L2 of blades **46***a*, **46***b* is about 2.25 inches. Blades **46***a*, **46***b* include an offset recessed portion **48** with a series of substantially similar nicks **50** cut therein between cutting edges **52**. The width L3 of cutting edges **52** is preferably 0.36 inches. Preferably, the offset L4 between recessed portion **48** and cutting edges **52** is approximately 0.001 inches.

In this embodiment, blade **46***a* includes seven (7) nicks **50** while blade **46***b* includes eight (8) nicks **50**. The nicks **50** on blade **46***a* are offset with respect to the nicks **50** on blade **46***b*, which results in a desirable zipper-like effect when removing strip **18**. Preferably, nicks **50** are triangular shaped, about 0.010 inches deep and about 0.020 inches wide, and define an approximately 90 degree angle at its deepest convergence point **54**. The length L5 between nicks **50**, as measured between the respective convergence points **54** of adjacent nicks **50**, is approximately 0.252 inches. The length L6 between the respective convergence points **54** of adjacent offset nicks **50** on blade **46***b* is about 0.126 inches. The length L7 of blades **46***a*, **46***b* is about 0.1 inches, and each blade edge defines an angle of about 45 degrees.

It should be readily understood that a container constructed in accordance with the present invention, which is preferably a plastic container used for carrying edible items, can be manufactured in a variety of shapes and sizes, and can be formed from resins or plastic materials such as polyethylene, polypropylene, polyvinyl chloride or polyethylene terephthalat ("PETE"), as well as other suitable materials or combinations thereof. The forming process can also vary to include methods such as thermo-forming, injection molding or blow molding. The container can be transparent or translucent, and may be colored in either instance. Also, vents can be provided in the container to promote airflow therethrough, if appropriate based on the intended contents of the container.

Preferably, container **10** is formed from a roll of PETE subjected to a vacuum and pressure mold with plug assist. During manufacture, blades **46***a*, **46***b* of FIGS. **13–15** are preferably applied to a newly formed container **10** to impart score lines **42***a*, **42***b* thereon. Cutting edges **52** cut substantially through the material used to make container **10**. Preferably, the configuration of blades **46***a*, **46***b* are designed so that a desirable amount of force is necessary to remove strip **18**, as determined by consumer trials for example. Those skilled in the art will readily appreciate that the configuration of blades **46***a*, **46***b* can be adjusted for a variety of reasons, and the above dimensions are exemplary of one embodiment of the present invention.

For example, various other methods can be employed to form frangible strip **18** of hinge **16**. For example, score lines, nicks or penetrations can be created with the molding tool itself during the forming step. Alternatively, a high die forming process can be employed where, after the forming step, the container is indexed to a trim station, where one or more knives liberate the container and creates the score lines or perforations. Also, an intermittent cutter can be employed between the forming step or the trim step, a progressive punch and die operation can be employed, or a numerically controlled laser can be employed to create the nicks. It is also envisioned that electromechanical, ultra-sonic or hydrodynamic systems can be employed in the forming process.

Container **10** could also be formed with locking arrangements known in the art other than the tamper-resistant/evident closure of the subject invention, such as traditional male and female locking features.

Referring to FIGS. **16–23**, there is illustrated another tamper-resistant/evident container constructed in accordance with a preferred embodiment of the subject invention and designated generally by reference numeral **110**. Container **110** is similar to container **10** described above except that container **110** is rectangular in configuration rather than circular. Container **110** thus includes a base portion **112** and a cover portion **114** joined together by an integrally formed hinge **116** that defines a tamper-evident frangible pull strip **118**, which must be removed before cover portion **114** can be readily removed from base portion **112**.

Container **110** includes embossed or raised patterned sections **156***a* and **156***b* on opposing tabs **144***a* and **144***b* of strip **118**, respectively, to facilitate removal of strip **118**. Patterned sections **158***a* and **158***b* are also disposed on opposing sides of upper arm **136** to facilitate separation of cover portion **112** from base portion **114**. Instructional indicia can be imprinted on upper arm **136** between patterned sections **158***a* and **158***b*.

In this embodiment, score line **142***b* is situated on hinge **116** to define two tabs **160***a* and **160***b* which are connected with lower arm **138**. Tabs **160***a*, **160***b* remain in place on hinge **116** until strip **118** is removed, as can be best viewed in FIGS. **21–23**. Tabs **160***a*, **160***b* extend from lower arm **138** to further facilitate gripping lower arm **138** and separation of cover portion **112** from base portion **114**.

FIGS. **24–25** illustrate another tamper-resistant/evident container constructed in accordance with a preferred embodiment of the subject invention and designated generally by reference numeral **210**. Container **210** is rectangular in shape, but may formed in other shapes, and has similar features to containers **10** and **110** described above. Container

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210 includes, among other things, a base portion **212** and a cover portion **214** joined, together by an integrally formed hinge **216** that defines a tamper-evident frangible pull strip **218**, which must be removed before cover portion **214** can be readily removed from base portion **212**. An upwardly projecting bead **234** is disposed on peripheral rim **222** of base portion **214**. Bead **234** is positioned to substantially surround the outer edge of flange **224** of cover portion **212** when container **210** is closed, thus physically blocking access by fingers or any other object that could be applied to the edge of peripheral flange **224** and rim **222** for leverage while attempting to pry cover portion **212** from base portion **214**.

In this embodiment, a plurality of supporting ribs **262***a–f*, each extending from about the enclosed bottom of base portion **214** to about extending rim **232** are positioned at the four corners (ribs **262***a–d*, respectively) of base portion **214** and the midpoints on hinge side wall **264** (rib **262***e*) and opposing side wall **266** (rib **262***f*) of base portion **214** to provide enhanced structural integrity. Supporting ribs **262***a–f* generally consist of multiple elongated, arcuate portions, each having a curved latitudinal cross-sectional profile, positioned adjacently with respect to one another.

As further disclosed in this embodiment, a circumferential engagement sealing interface between cover portion **214** and base portion **212** is defined in part by a plurality of outwardly bowed arcuate portions **290**. As depicted, outwardly bowed arcuate portions **290** are connected by rounded corner portions **292**.

Container **210** also includes an additional independent, engaging mechanism that provides even further structural integrity, enhances security by urging flange **224** to remain in position against peripheral rim **222**, and facilitates the reattachment of cover portion **212** to base portion **214**, among other things. A male engaging member **268** projects upwardly from supporting rib **262***f* on side wall **266** which is received by a correspondingly sized female engaging member **270** defined on cover portion **212**.

Thus, when container **210** is closed, male engaging member **268** on base portion **210** and female engaging member **270** on cover portion **212** form an engagement which further secures base portion **214** to cover portion **212**. In addition to urging flange **224** against rim **222**, the aforementioned features increase the amount of force that would be necessary to pry cover portion **212** from base portion **214** in an unauthorized manner (i.e., without removal of strip **218**).

Also, the aforementioned engagement facilitates the reattachment of cover portion **212** with base portion **214** after container **210** is opened legitimately by a consumer. Container **210** can be reclosed after purchase by urging cover portion **212** onto base portion **214**, and in particular, this can be accomplished by pressing on the corners of cover portion **212**, as indicated by instructional indicia printed in the outer corner areas of cover portion **212** in this embodiment. In reclosing container **210**, the initial engagement of male member **268** with female member **270** facilitates the subsequent step of applying pressure on the corners of cover portion **212**, making it easier to reattach cover portion **212** to base portion **214**. It should be readily apparent to those skilled in the art that other engagement mechanisms, devices, engagements and container designs, and combinations thereof, could be incorporated in any embodiment in accordance with the present invention.

Although exemplary and preferred aspects and embodiments of the present invention and forming methods have been described with a full set of features, it is to be understood that the disclosed container and method of manufacture may be practiced successfully without the incorporation of each of those features. The scope of the present invention is not limited only to the tamper-resistant/evident containers and methods of manufacture disclosed herein. Thus, it is to be understood that modifications and variations may be utilized without departure from the spirit and scope of the invention and method disclosed herein, as those skilled in the art will readily understand. Such modifications and variations are considered to be within the purview and scope of the appended claims and their equivalents.

What is claimed is:

1. A tamper-resistant/evident container comprising:

a) a cover portion including an outwardly extending peripheral flange;

b) a base portion including an upper peripheral edge forming at least in part an upwardly projecting bead extending substantially about the perimeter of the base portion and configured to render the outwardly extending flange of the cover portion relatively inaccessible when the container is closed, wherein the cover portion and base portion are adapted and configured to lock together about their periphery by way of a circumferential engagement sealing interface, wherein the circumferential engagement sealing interface is defined at least in part by a perimeter having a plurality of arcuate segments and rounded corner portions; and

c) a lock for maintaining the peripheral flange adjacent to the upper peripheral edge when the container is closed.

2. A tamper-resistant/evident container as recited in claim **1**, further comprising:

d) a hinge joining the outwardly extending flange of the cover portion with the base portion, the hinge including a frangible section, which upon severing, provides a projection that extends out beyond the upwardly projecting bead of the upper peripheral edge of the base portion, for facilitating disengagement of the lock and removal of the cover portion from the base portion to open the container.

3. A tamper-resistant/evident container as recited in claim **2**, wherein a skirt depends downwardly from the upper peripheral edge of the base portion, and the hinge extends from a lower edge of the skirt to the outwardly extending flange of the cover portion.

4. A tamper-resistant/evident container as recited in claim **2**, wherein the lock facilitates the reattachment of the cover portion with the base portion.

5. A tamper-resistant/evident container as recited in claim **4**, wherein the lock is disposed along one of the arcuate segments, and is configured and adapted to urge the peripheral flange of the cover portion and the upper peripheral edge of the base portion to remain adjacent with respect to each other when the container is closed by securing the cover portion to the base portion.

6. A tamper-resistant/evident container as recited in claim **1**, wherein the lock includes corresponding male and female engaging members.

7. A tamper-resistant/evident container as recited in claim **6**, wherein the male engaging member is defined on the base portion and the female engaging member is defined on the cover portion.

8. A tamper-resistant/evident container as recited in claim **1**, further comprising:

d) a support disposed on the base portion proximate the lock configured and adapted to resist a load imposed downwardly on the cover portion of the container.

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9. A tamper-resistant/evident container as recited in claim 8, wherein the base portion is rectangular and the support includes ribs disposed adjacent each corner of the base portion.

10. A tamper-resistant/evident container comprising:

a) a cover portion including an outwardly extending peripheral flange;

b) a base portion including an upper peripheral edge, wherein the cover portion and base portion are adapted and configured to lock together about their periphery by way of a circumferential engagement means;

c) a hinge joining the outwardly extending flange of the cover portion with the base portion, the hinge including a frangible section, which upon severing, provides a projection extending outwardly from the base portion, for facilitating removal of the cover portion from the base portion to open the container;

d) a latch disposed proximate the circumferential engagement means for maintaining the peripheral flange adjacent to the upper peripheral edge when the container is closed; and

e) at least one supporting rib defined on the base portion and including a plurality of elongated arcuate portions positioned adjacently with respect to one another.

11. A tamper-resistant/evident container as recited in claim 10, further comprising an upwardly projecting bead extending substantially about the perimeter of the base portion configured to render the outwardly extending flange of the cover portion relatively inaccessible when the container is closed.

12. A tamper-resistant/evident container as recited in claim 10, wherein at least one of the engagement means and the latch facilitates the reattachment of the cover portion with the base portion.

13. A tamper-resistant/evident container as recited in claim 10, wherein the latch is disposed proximate the circumferential engagement means, and urges the peripheral flange of the cover portion and the upper peripheral edge of the base portion to resist separation when the container is closed.

14. A tamper-resistant/evident container as recited in claim 10, wherein the latch includes corresponding male and female engaging members.

15. A tamper-resistant/evident container as recited in claim 14, wherein the male engaging member is defined on the base portion and the female engaging member is defined on the cover portion.

16. A tamper-resistant/evident container as recited in claim 10, wherein a male engaging member of the latch extends from the at least one supporting rib.

17. A tamper-resistant/evident container comprising:

a) a cover portion including an outwardly extending peripheral flange;

b) a base portion including an upper peripheral edge forming at least in part an upwardly projecting bead extending substantially about the perimeter of the base portion and configured to render the outwardly extending flange of the cover portion relatively inaccessible when the container is closed;

c) a hinge joining the outwardly extending flange of the cover portion with the base portion, the hinge including a frangible section, which upon severing, provides a projection including tabs extending outwardly from the base portion for facilitating removal of the cover portion from the base portion to open the container;

d) a male engaging member defined on the base portion to project towards the cover portion when the container is closed; and

e) a female engaging member having a receiving portion defined on the cover portion to correspond to the position or the male engaging member when the container is closed for receiving the male engaging member therein and forming a non-permanent engagement between the male and female engaging members when the container is closed.

18. A tamper-resistant/evident container as recited in claim 17, wherein the engagement of the male and female members provide resistance to force applied to remove the cover portion and base portion and urge the outwardly extending peripheral flange of the cover portion into contact with the peripheral edge of the base portion.

19. A tamper-resistant/evident container as recited in claim 1, wherein the cover portion is adapted and configured to be mated with the base portion along the circumferential engagement sealing interface by pressing downwardly on one or more corners of the cover portion.

20. A tamper-resistant/evident container as recited in claim 1, wherein the circumferential engagement sealing interface includes four arcuate segments.

21. A tamper-resistant/evident container as recited in claim 1, wherein the arcuate segments are outwardly bowed.

22. A tamper-resistant/evident container as recited in claim 17, wherein the engagement between the male and female engaging members increases the amount of force that would be necessary to separate the cover portion from the base portion without removal of the frangible section.

23. A tamper-resistant/evident container as recited in claim 5, wherein the lock is disposed along a portion of the container substantially opposite the hinge.

24. A tamper-resistant/evident container as recited in claim 10, wherein the latch is disposed along a portion of the container substantially opposite the hinge.

25. A tamper-resistant/evident container as recited in claim 17, wherein the male engaging member and female engaging member are disposed along a portion of the container substantially opposite the hinge.

26. A tamper-resistant/evident container as recited in claim 10, wherein a skirt depends downwardly from the upper peripheral edge of the base portion, and the hinge extends from a lower edge of the skirt to the outwardly extending flange of the cover portion.

27. A tamper-resistant/evident container as recited in claim 17, wherein a skirt depends downwardly from the upper peripheral edge of the base portion, and the hinge extends from a lower edge of the skirt to the outwardly extending flange of the cover portion.

* * * * *

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THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THIS OFFICE OF:

U.S. PATENT: *9,630,756*
ISSUE DATE: *April 25, 2017*

By Authority of the
Under Secretary of Commerce for Intellectual Property
and Director of the United States Patent and Trademark Office

SYLVIA HOLLEY
Certifying Officer

US009630756B2

(12) **United States Patent**
Sellari et al.

(10) **Patent No.: US 9,630,756 B2**
(45) **Date of Patent: Apr. 25, 2017**

(54) **TAMPER-RESISTANT AND TAMPER EVIDENT CONTAINERS**

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B65D 55/02 (2006.01)
B65D 43/02 (2006.01)
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(52) **U.S. Cl.**
CPC ***B65D 55/024*** (2013.01); ***B29D 22/003*** (2013.01); ***B65D 41/32*** (2013.01);
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(58) **Field of Classification Search**
CPC B65D 55/024; B65D 55/02; B65D 41/32; B65D 11/105; B65D 11/10; B65D 11/188;
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(56) **References Cited**

U.S. PATENT DOCUMENTS

646,563 A 4/1900 Bontrager et al.
2,798,631 A 7/1957 Engel
(Continued)

FOREIGN PATENT DOCUMENTS

CA 2074836 A1 6/1992
DE 78 16 353 U1 11/1978
(Continued)

OTHER PUBLICATIONS

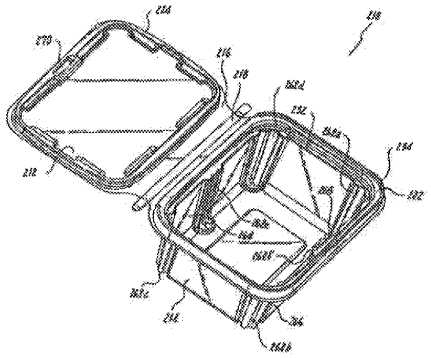
Transmittal of the International Search Report for PCT/US2007/15739 together with the Written Opinion of the International Searching Authority (ISA) dated Sep. 10, 2008 (7 pages).
(Continued)

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(57) **ABSTRACT**

A tamper-resistant container with tamper-evident features includes a cover portion including an outwardly extending peripheral flange and a base portion an upper peripheral rim and a skirt depending downwardly therefrom. The upper peripheral rim extending substantially about the perimeter of the container and configured to substantially surround the outwardly extending peripheral flange of the cover portion to render the outwardly extending peripheral flange of the cover portion relatively inaccessible when the container is closed. The container includes a hinge joining the cover portion to the base portion. The vertical height of the hinge correlates with the height of the skirt that depends downwardly from the base portion when the height of the skirt is substantially uniform around the perimeter of the container. The hinge includes a frangible section including at least one line of weakness which, when severed, facilitates removal of the cover portion from the base portion.

9 Claims, 13 Drawing Sheets



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Related U.S. Application Data

continuation of application No. 13/044,776, filed on Mar. 10, 2011, now Pat. No. 8,795,580, which is a division of application No. 11/483,900, filed on Jul. 10, 2006, now abandoned, which is a continuation-in-part of application No. 11/065,681, filed on Feb. 24, 2005, now Pat. No. 7,073,680, which is a continuation-in-part of application No. 10/895,687, filed on Jul. 21, 2004, now Pat. No. 7,118,003.

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,915,214	A		12/1959	Frankel
3,164,478	A		1/1965	Bostrom
3,389,825	A		6/1968	Whiteford
3,511,433	A		5/1970	Andrews
3,536,251	A		10/1970	Edwards
3,669,606	A		6/1972	Brown
3,767,110	A		10/1973	Congleton
4,224,275	A		9/1980	Sauer
4,433,793	A		2/1984	Ingemann
4,535,889	A		8/1985	Terauds
4,555,038	A	*	11/1985	Nagel, Jr. B65D 47/0852 215/235
4,555,043	A		11/1985	Bernhardt
4,576,330	A		3/1986	Schepp
4,576,370	A		3/1986	Jackson
4,742,935	A		5/1988	Schellenberg
4,771,934	A		9/1988	Kalmanides
4,886,204	A		12/1989	Kalmanides
4,986,438	A		1/1991	Borst
5,027,969	A		7/1991	Lesquir
5,040,695	A		8/1991	Adams et al.
5,046,659	A		9/1991	Warburton
5,052,574	A		10/1991	McKinnon et al.
5,092,479	A		3/1992	Wells
D328,705	S		8/1992	Krupa
5,219,087	A		6/1993	Christensson
5,287,959	A		2/1994	Hansen et al.
5,303,839	A		4/1994	Blumenschein
D352,000	S		11/1994	Hansen et al.
5,398,836	A		3/1995	Luch et al.
5,429,833	A		7/1995	Wyslotsky
5,507,406	A		4/1996	Urciuoli et al.
5,573,134	A		11/1996	Chenault et al.
5,584,408	A		12/1996	Orkisz
5,685,444	A		11/1997	Valley
5,758,791	A		6/1998	Mangla
5,860,530	A		1/1999	Simmons et al.
5,860,549	A		1/1999	Allers et al.
5,897,011	A		4/1999	Brilliant et al.
5,931,332	A		8/1999	Mygatt et al.
5,938,068	A		8/1999	Atkins et al.
5,979,687	A		11/1999	Hayes et al.
5,985,079	A		11/1999	Ellison
6,095,324	A		8/2000	Mullin
6,196,408	B1		3/2001	Setty et al.
6,220,529	B1		4/2001	Xu
6,517,242	B1		2/2003	Buchman
6,530,870	B2		3/2003	Buchman et al.
6,572,909	B1		6/2003	Bagwell et al.
6,609,623	B2		8/2003	Chou
6,625,955	B2		9/2003	Aylward
6,715,632	B2		4/2004	Baker
7,073,680	B2		7/2006	Boback et al.
8,240,505	B1		8/2012	Chen
8,261,933	B2		9/2012	Kidd et al.
8,640,914	B2		2/2014	Meyer et al.
8,684,212	B2		4/2014	Stone et al.
8,795,580	B2		8/2014	Sellari et al.
8,925,755	B2		1/2015	Lesquir et al.
9,242,769	B2		1/2016	Gartz et al.
9,278,786	B2		3/2016	Vovan et al.
2003/0051350	A1		3/2003	Harrold
2003/0052125	A1		3/2003	Hayes et al.
2003/0052133	A1		3/2003	Hayes et al.
2004/0118848	A1	*	6/2004	Marshall B65D 43/169 220/266
2005/0017007	A1		1/2005	Sellari et al.
2006/0289541	A1		12/2006	Boback et al.
2007/0045317	A1		3/2007	Rosender et al.
2009/0120937	A1		5/2009	Vovan
2009/0134180	A1		5/2009	Kidd et al.
2009/0206082	A1		8/2009	Vovan
2010/0072217	A1		3/2010	Parikh et al.
2010/0276422	A1		11/2010	Vovan et al.
2011/0000929	A1		1/2011	Brown et al.
2012/0005994	A1		1/2012	Tidball et al.
2012/0103990	A1		5/2012	McCumber
2013/0020325	A1		1/2013	Stone et al.
2013/0160406	A1		6/2013	Johnston
2013/0320015	A1		12/2013	Dyble et al.
2014/0041343	A1		2/2014	Corbett et al.
2014/0069922	A1		3/2014	Boback et al.
2014/0138383	A1		5/2014	Lisowy et al.
2014/0300034	A1		10/2014	Sellari et al.
2014/0367383	A1		12/2014	Sellari et al.
2015/0028033	A1		1/2015	Samuel
2015/0060455	A1		3/2015	Chou
2015/0083725	A1		3/2015	Sinha et al.
2015/0225139	A1		8/2015	Baker
2015/0266611	A1		9/2015	Dow et al.
2015/0298853	A1		10/2015	Chen
2015/0329249	A1		11/2015	Gingras et al.
2015/0367987	A1		12/2015	Clark et al.
2016/0016707	A1		1/2016	Sellari et al.
2016/0023815	A1		1/2016	Siskindovich et al.

FOREIGN PATENT DOCUMENTS

DE	4418935	A1	12/1995
DE	1999-083197		8/1999
EP	0 752 374	A1	1/1997
GB	2219284	A	12/1989
GB	2257118	A	1/1993
JP	1-114536	U	8/1989
JP	2-144531	U	12/1990
JP	7-267275	A	10/1995

Copy provided by USPTO from the PIRS Image Database on 01-08-2019

(56) **References Cited**

FOREIGN PATENT DOCUMENTS

JP	2002012283		1/2002
WO	WO-9513222	A2	5/1995
WO	WO-2005009857	A1	2/2005

OTHER PUBLICATIONS

Search Report and Written Opinion for PCT/2004/023473 dated Nov. 15, 2004.
European Communication for EP 04 778821.1 dated May 12, 2006.
European Communication for EP 04 778821.1 dated Jan. 25, 2007.
European Communication for EP 06003237.2 dated Feb. 13, 2008.
Extended European Search Report for EP 06003237.2 dated Jun. 7, 2006.
Russian Office Action dated Jun. 17, 2008 for RU 2006105207/12 (005627).
Russian Office Action dated Mar. 11, 2010 for RU 2006105515/12 (005971).
Translation of Ukrainian Office Action dated Oct. 5, 2009 for UA 2006 01701/I.
Translation of Ukrainian Office Action dated Sep. 3, 2008 for UA 2006 00913/M.
Canadian Office Action dated Jan. 30, 2013 for CA 2,533,236.
Canadian Office Action dated Aug. 20, 2010 for CA 2,533,046.
Canadian Office Action dated Jul. 14, 2011 for CA 2,533,046.
Canadian Protest dated Apr. 11, 2012 for CA 2,533,046 submitted by Bereskin & Parr LLP.
Canadian Office Action dated Oct. 31, 2012 for CA 2,533,046.
Canadian Protest dated Aug. 19, 2013 for CA 2,533,046 submitted by Bereskin & Parr LLP.
Chinese Office Action dated Jun. 27, 2008 for CN 200480024304.6.
Translation of Chinese Office Action for CN200610057668.5 dated Mar. 2009.
EasyPak, LLC's Motion for Leave to File Amended Invalidity Contentions dated Nov. 12, 2013.
Memo in Support of EasyPak, LLC's Motion for Leave to File Amended Invalidity Contentions dated Nov. 12, 2013.
Defendant's Reply in Support of Its Motion to File Amended Invalidity Contentions dated Dec. 6, 2013.
Plaintiff's Opposition to EasyPak's Motion for Leave to File Amended Invalidity Contentions dated Nov. 26, 2013.
Canadian Patent Ofice Office Action dated Feb. 5, 2014 issued in Canadian Patent Application No. 2,533,046.
Canadian Protest dated Oct. 7, 2014 filed by Bereskin & Parr in Canadian Application No. 2,533,046.
Canadian Office Action dated Apr. 15, 2015 issued in Canadian Patent application No. 2,533,046.
Canadian Protest dated Apr. 11, 2012 for CA 2,533,046.
Canadian Protest dated Aug. 19, 2013 for CA 2,533,046.
Transmittal of the International Search Report for PCT/US2007/15739 together with the Written Opinion of the International Searching Authority (ISA) dated Sep. 10, 2008.
Canadian Office Action dated Apr. 1, 2016 issued in Canadian Application No. 2,533,046.

* cited by examiner

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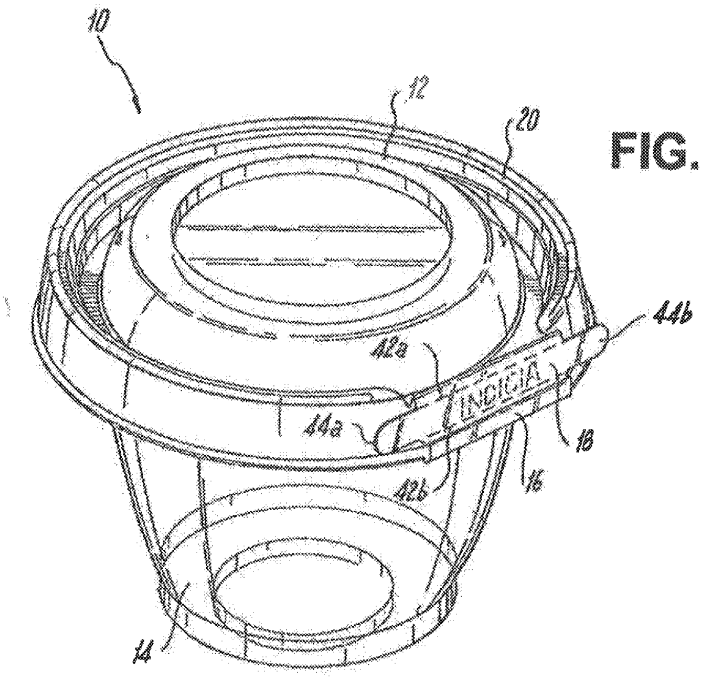


FIG. 1

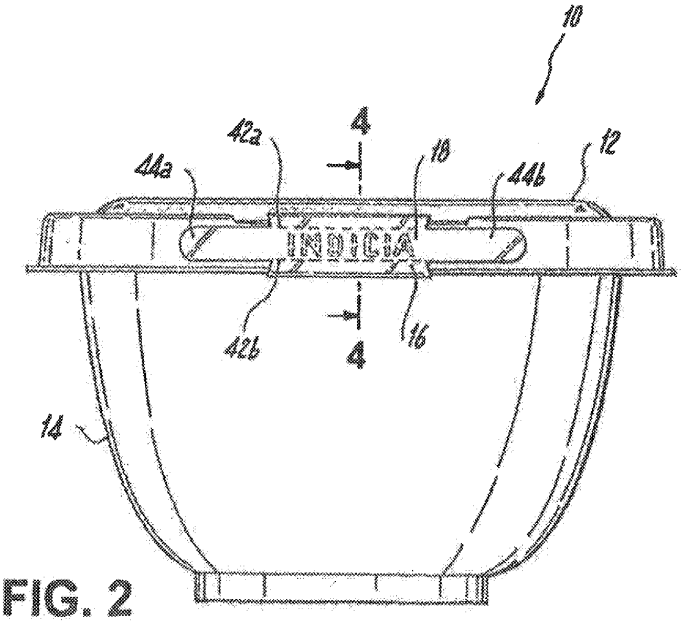


FIG. 2

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FIG. 3

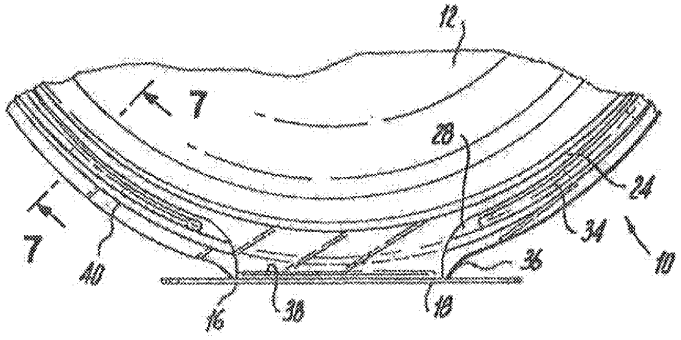
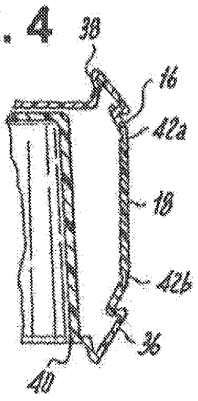


FIG. 4



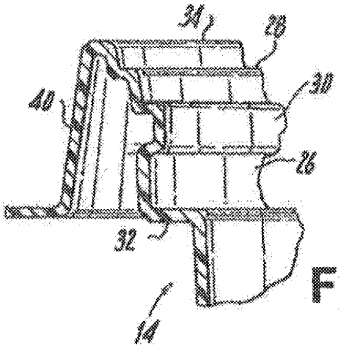


FIG. 5

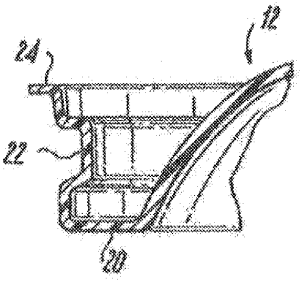


FIG. 6

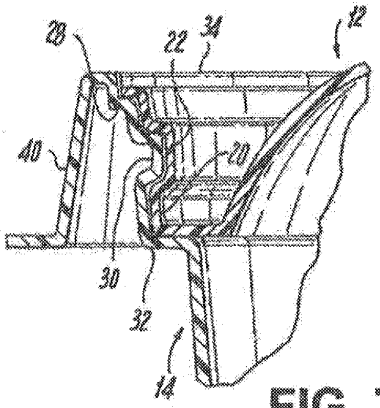


FIG. 7

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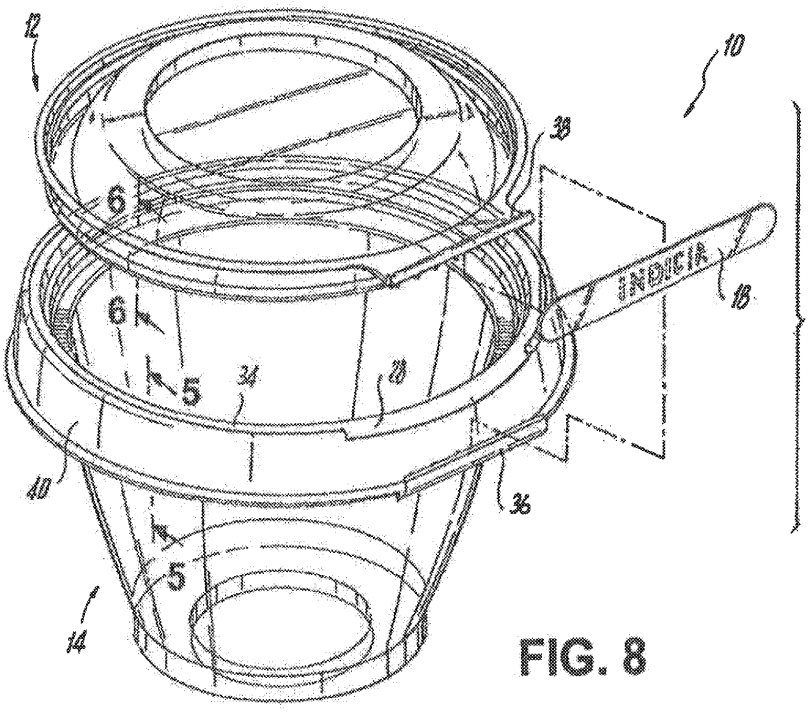


FIG. 8

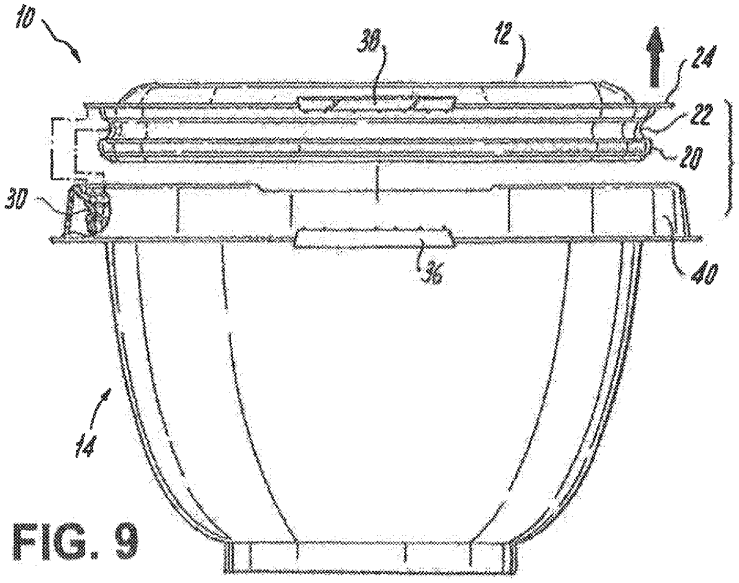


FIG. 9

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FIG. 10

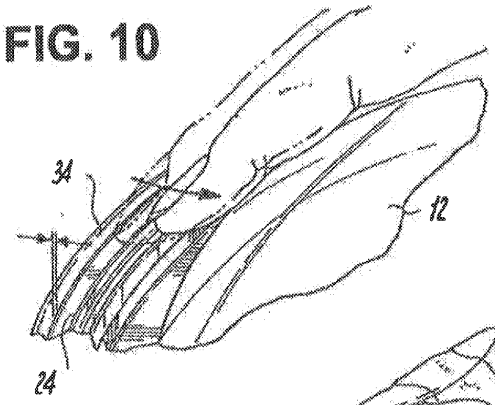
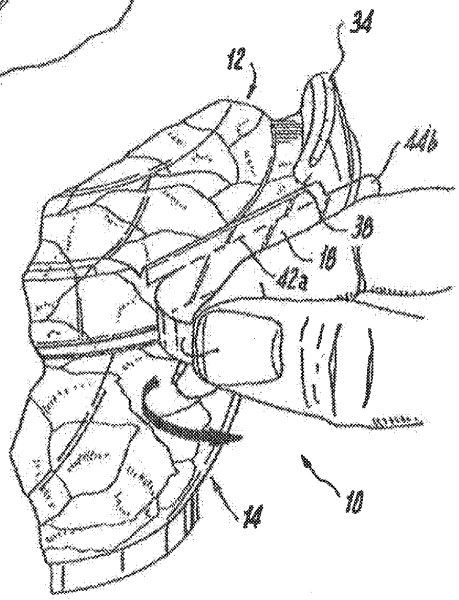


FIG. 11



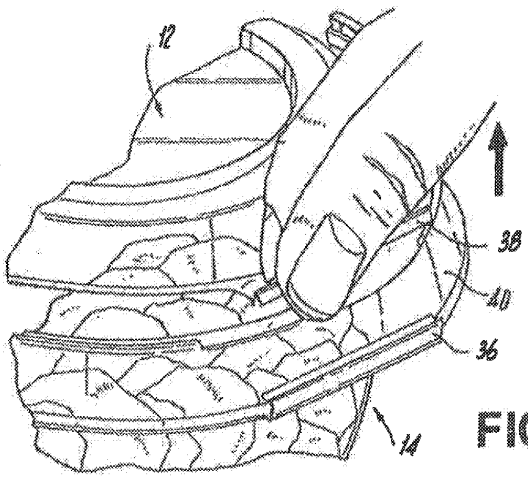


FIG. 12

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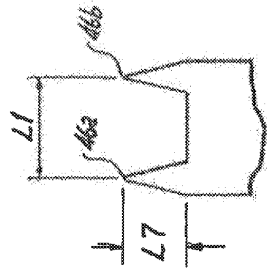


FIG. 13

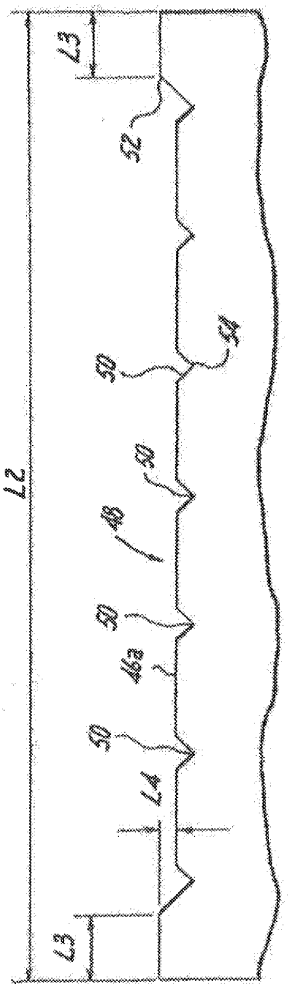


FIG. 15

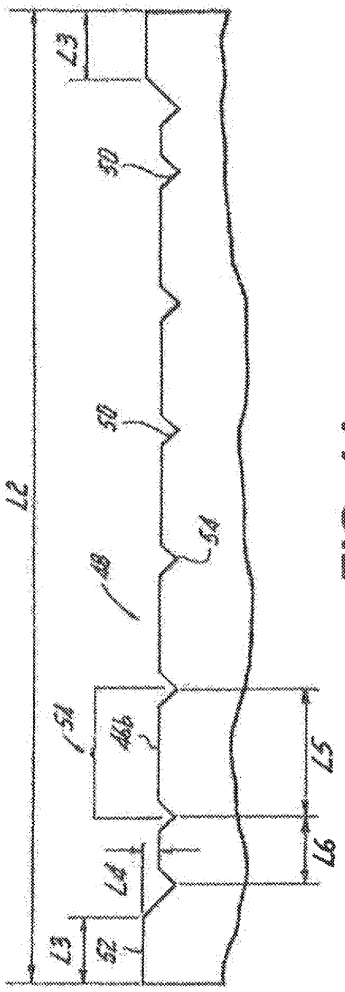
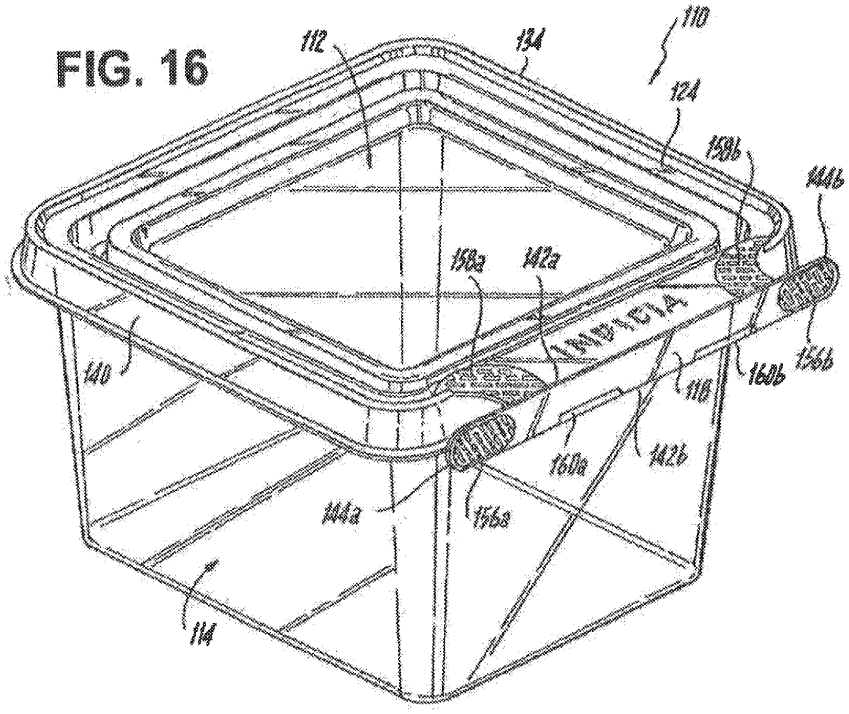


FIG. 14

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FIG. 16



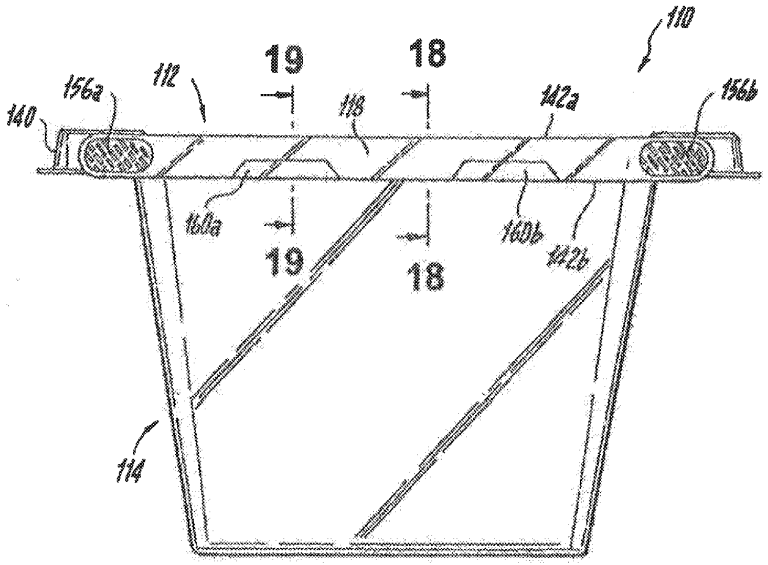


FIG. 17

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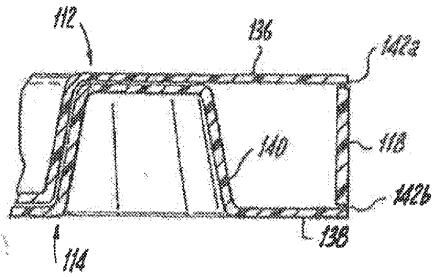


FIG. 18

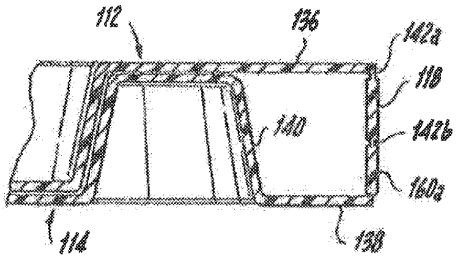


FIG. 19

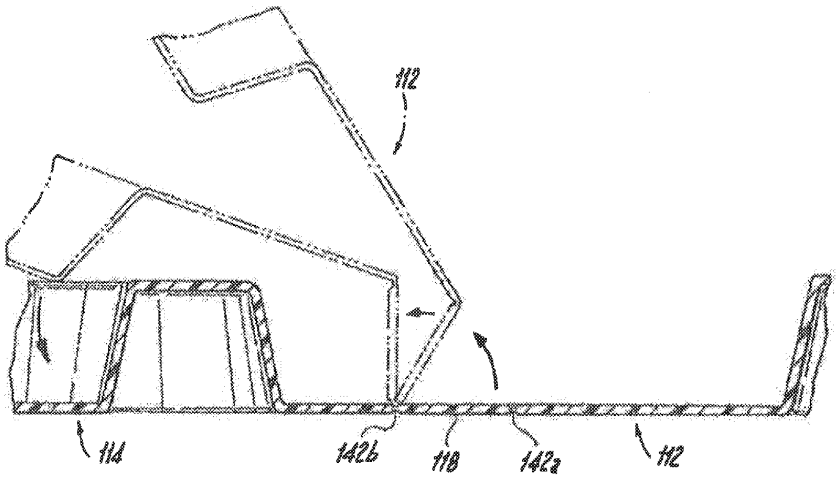


FIG. 20

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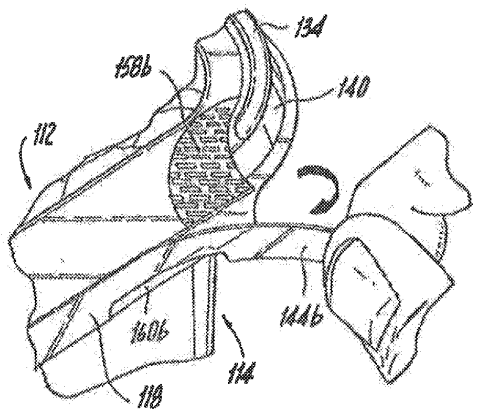


FIG. 21

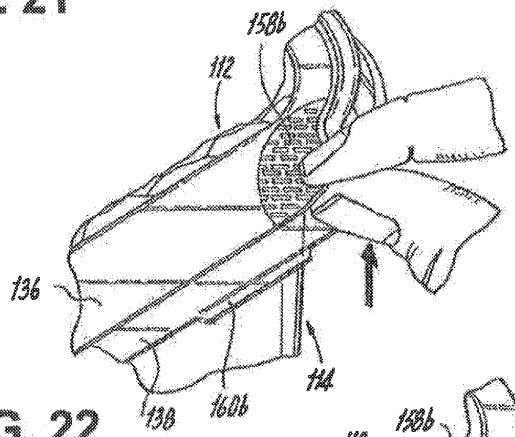


FIG. 22

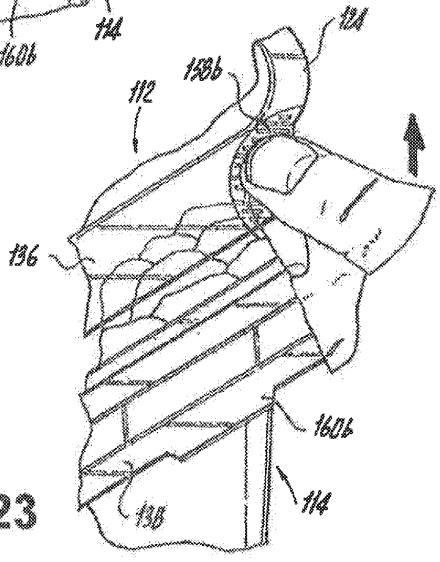


FIG. 23

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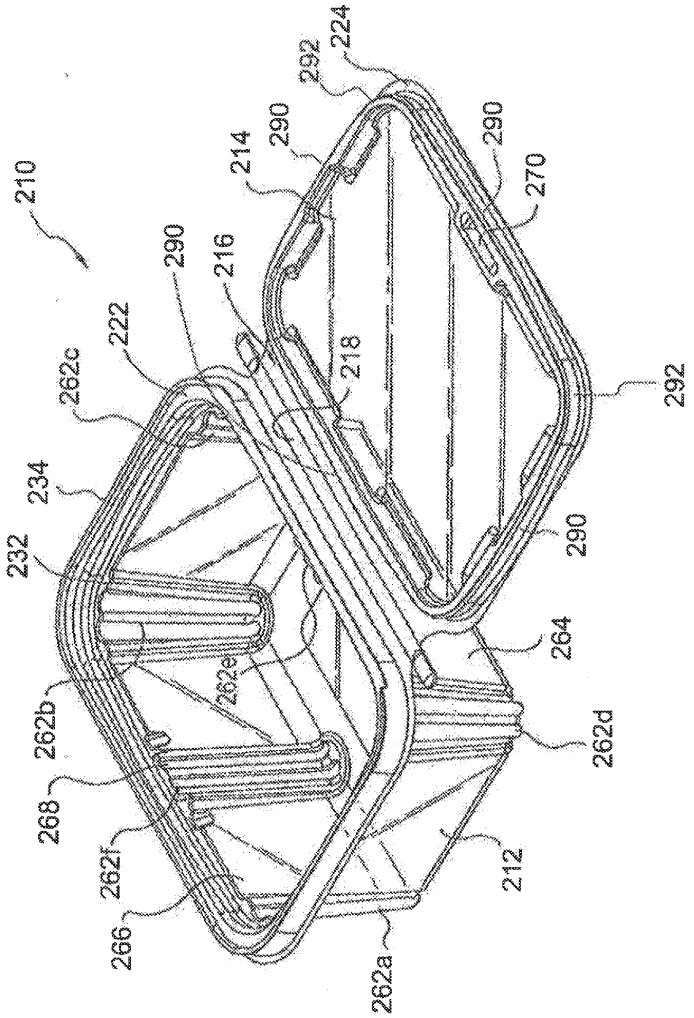


FIG. 24

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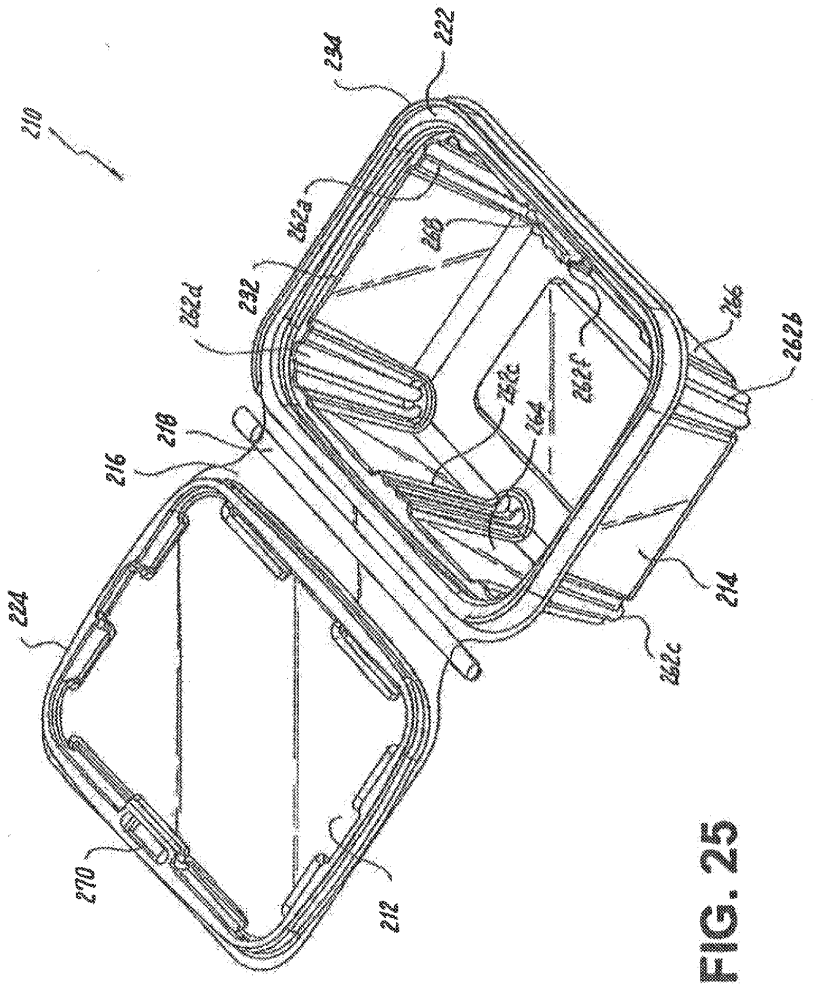


FIG. 25

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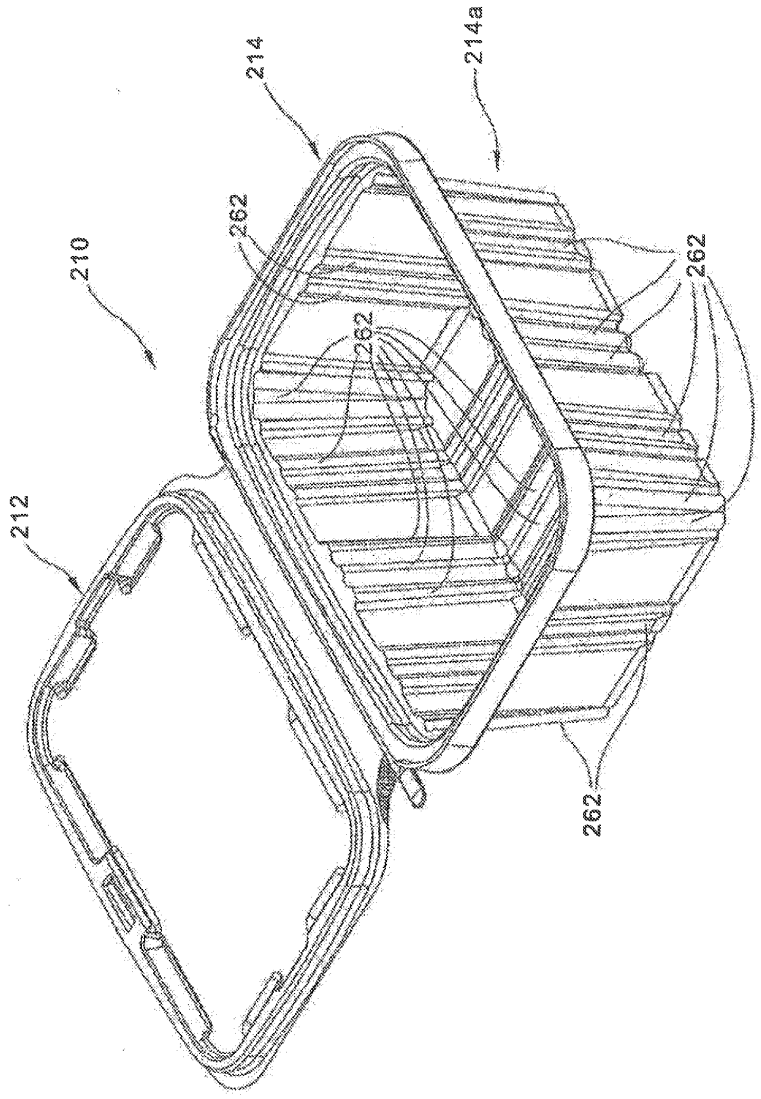


FIG. 26

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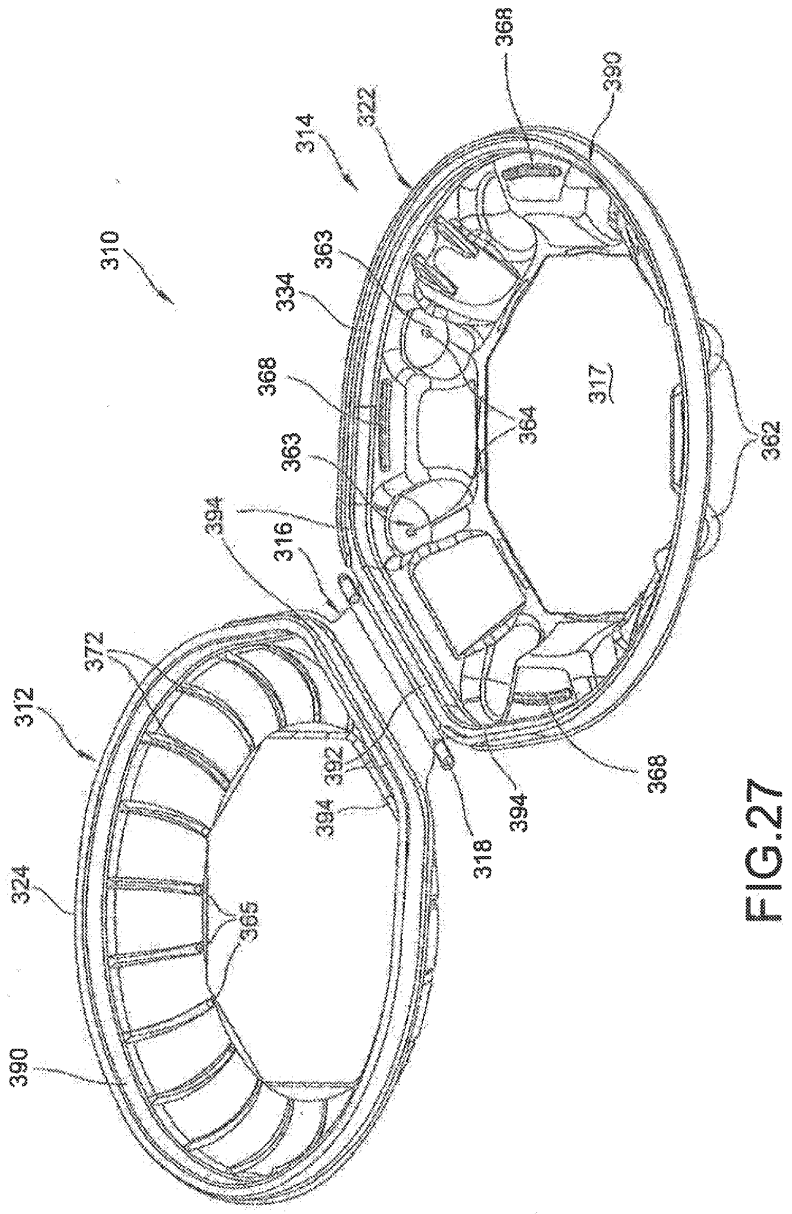


FIG.27

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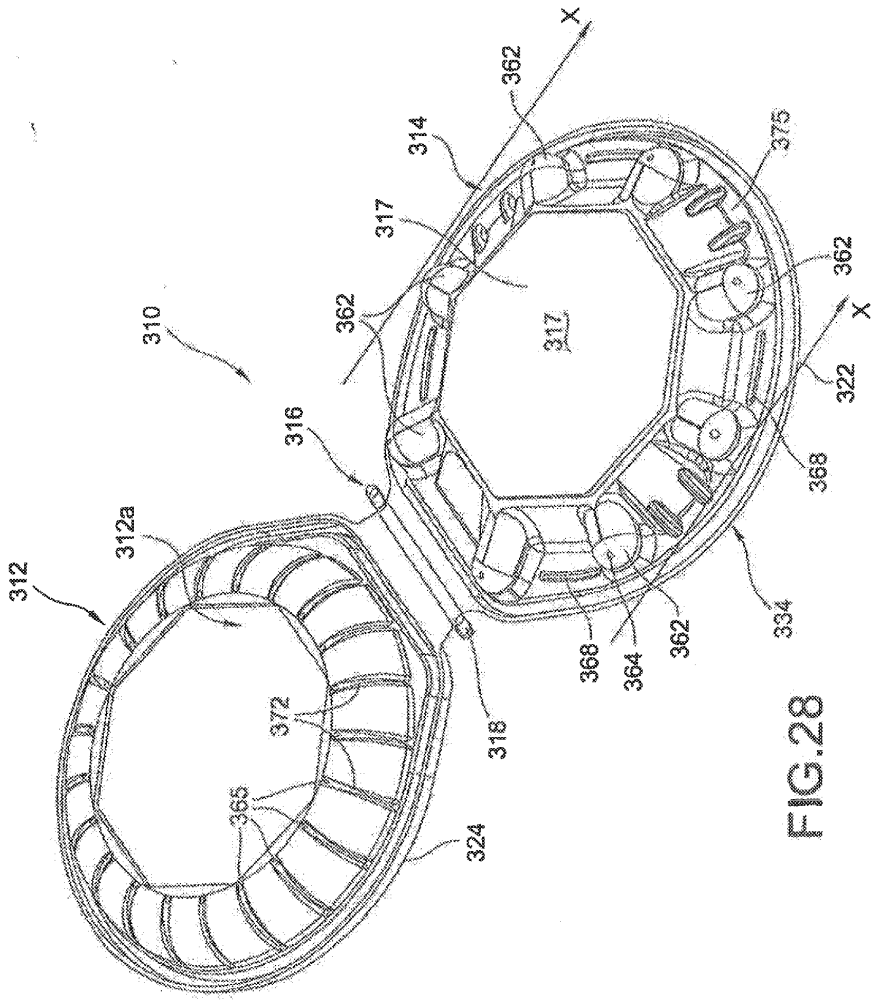


FIG.28

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Trial Exhibit 3.17

TAMPER-RESISTANT AND TAMPER EVIDENT CONTAINERS

CROSS-REFERENCE TO RELATED APPLICATION(S)

The subject application is a continuation of U.S. patent application Ser. No. 14/310,965 filed on Jun. 20, 2014, which is a continuation of U.S. patent application Ser. No. 13/044,776 filed on Mar. 10, 2011, now U.S. Pat. No. 8,795,580, which is a division of U.S. patent application Ser. No. 11/483,900 filed Jul. 10, 2006, which is a continuation in part of U.S. patent application Ser. No. 11/065,681, filed Feb. 24, 2005, now U.S. Pat. No. 7,073,680, which is a continuation in part of U.S. patent application Ser. No. 10/895,687 filed Jul. 21, 2004, now U.S. Pat. No. 7,118,003, which claims the benefit of priority to U.S. Provisional Patent Application No. 60/489,093 filed Jul. 21, 2003, the disclosure of each being incorporated by reference herein in its entirety.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The subject invention is directed to containers and packaging, and more particularly, to containers and packaging that incorporate tamper-resistant and tamper-evident features.

2. Background of the Related Art

Disposable containers for packaging, distributing, displaying or otherwise housing consumer items, especially perishable foods, are becoming increasingly important. Historically, perishable products had to be brought to market and sold quickly before exposure to the atmosphere caused the products to lose their freshness.

The advent of plastics resulted in many products being wrapped or packaged in plastic, both in the form of flexible plastic bags and solid plastic containers. The use of plastics in the modern-day convenience food industry has significantly improved the "shelf life" of perishable products, allowing both merchants and their customers to store the products for longer periods of time, resulting in substantial savings.

It has been found that consumers like recloseable packages, particularly for comestible products, especially in circumstances where more than one serving of a comestible product is contained therein, in order to reduce drying out or other deterioration of the comestible food product. In addition, consumers prefer to visually inspect the food product within such containers prior to purchase. Thus, fabricating containers from clear see-through plastics is desirable. For example, packaging provided for bakery goods has often been in the form of clear, plastic clamshell packaging, because, among other things, such clear, plastic clamshell packaging, provides a baked-on-the-premises image which grocery retailers have found to be especially appealing to consumers.

Typically, plastic containers will include a fairly rigid lid and base, although they may be subject to some amount of flexure. The lid provided must be capable of properly and effectively sealing the container, yet the container must be constructed so that the lid is relatively easy to remove, and even replace, since it is expected that the container and lid would normally be reused.

In addition to the aforementioned consumer design preferences, it is desirable to fabricate containers that include features which either deter unauthorized tampering or clearly indicate whether unauthorized tampering has occurred, or both. These tamper-resistant/tamper-evident features typically include structural elements which, when the container is tampered with or opened without authorization, enable the consumer to easily visually recognize such tampering so that the product can then be rejected. Such tamper-resistant/tamper-evident elements are important for, among other things, deterring theft and preventing the loss of product and income for the seller, as well as instilling consumer confidence in the integrity of the contents within the container and confidence in the ability of the seller and/or manufacturer to provide and maintain quality goods.

Thus, there is a compelling interest in the development of containers having consumer-preferable design elements, such as recloseability features which are reliable and easy to operate, along with tamper-resistant/tamper-evident features that deter tampering and clearly indicate whether tampering has occurred, and which are also reliable without being burdensome to the legitimate consumer. Accordingly, the present invention is directed to a container that meets these needs.

SUMMARY OF THE DISCLOSURE

The present invention meets the aforementioned needs, while also improving upon and solving problems associated with previous containers by providing, among other things, a tamper-resistant container with tamper-evident features (also referred to herein as a "tamper-resistant/tamper-evident container") that includes a cover portion defining an outwardly extending peripheral flange and a base portion defining an upper peripheral edge. The upper peripheral edge of the base portion includes, at least in part, an upwardly projecting bead extending substantially about the perimeter of the base portion. This bead is configured and dimensioned to render the outwardly extending flange of the cover portion relatively inaccessible when the container is closed thereby providing a tamper-resistant container.

The container can further include a hinge joining the outwardly extending flange of the cover portion with the base portion. The hinge preferably includes a frangible portion, which upon severing, facilitates removal of the cover portion from the base portion.

In another embodiment, the container includes a skirt which depends downwardly from the upper peripheral edge of the base portion. Preferably, the hinge extends from the lower edge of the skirt to the outwardly extending flange of the cover portion.

These and other aspects of the present invention will become more readily apparent to those having ordinary skill in the art from the following detailed description of the invention taken in conjunction with the drawings.

BRIEF DESCRIPTION OF THE FIGURES

So that those having ordinary skill in the art to which the subject invention pertains will more readily understand how to make and use the tamper-resistant/tamper-evident package disclosed herein, embodiments thereof will be described in detail below with reference to the drawings, wherein:

FIG. 1 is a perspective view of a tamper-resistant/tamper-evident container constructed in accordance with the present invention in an exemplary circular configuration having a base portion and cover portion connected to each other by a hinge having a frangible section;

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FIG. **2** is a side view of the container shown in FIG. **1**, illustrating in particular the hinge having a frangible section or strip, and a suitable location for indicia to be printed thereon;

FIG. **3** is a partial top view of the container shown in FIG. **1**, illustrating in particular the hinge having a frangible section or strip and projection associated therewith that extends beyond the upwardly projecting bead associated with the upper peripheral surface of the base portion;

FIG. **4** is a partial cross sectional view of the container shown in FIG. **1**, taken along line **4-4** of FIG. **2**, illustrating in particular the hinge having a frangible section and upper and lower projections or arms extending from the cover portion and base portion of the container;

FIG. **5** is a partial cross sectional view of the container shown in FIG. **1**, taken along line **5-5** of FIG. **8**, illustrating in particular the configuration of the base portion and the structural elements that facilitate a releasable/recloseable engagement with the cover portion;

FIG. **6** is a partial cross sectional view of the container shown in FIG. **1**, taken along line **6-6** of FIG. **8**, illustrating in particular the configuration of the cover portion and the structural elements that facilitate a releasable/recloseable engagement with the base portion;

FIG. **7** is a partial cross sectional view of the container shown in FIG. **1**, taken along line **7-7** of FIG. **3**, illustrating in particular the configuration of the base portion and cover portion when the container is closed and including the structural elements that facilitate a releasable/recloseable engagement between the base and cover portions;

FIG. **8** is an exploded perspective view of the container shown in FIG. **1**, illustrating in particular the operative association between the cover portion, base portion and frangible section;

FIG. **9** is a side view of the container shown in FIG. **1**, in which the frangible section has been removed, illustrating the manner in which the cover portion is separated from the base portion and the upper and lower projections or arms associated with the cover and base portions, respectively;

FIG. **10** is a partial perspective view of the container shown in FIG. **1**, illustrating in particular the manner in which the upwardly projecting bead on the base portion physically prevents access to the outer edge of the cover portion, making it difficult to separate the cover portion from the base portion;

FIG. **11** is a partial perspective view of the container shown in FIG. **1**, illustrating in particular the manner in which the frangible section can be removed from the hinge;

FIG. **12** is a partial perspective view of the container shown in FIG. **1**, illustrating in particular the upper and lower projections formed by removal of the frangible section and the manner in which the upper and lower projections facilitate separation of the cover portion from the base portion;

FIG. **13** is a side view of a two blade knife that can be used to form the frangible section of a container constructed in accordance with an embodiment of the present invention;

FIG. **14** is a front plan view of a first blade of the two blade knife of FIG. **13**, illustrating the position of the nicks and cutting surfaces that can form a first score line of a frangible section of a container constructed in accordance with an embodiment of the present invention;

FIG. **15** is a front plan view of a second blade of the two blade knife of FIG. **13**, illustrating the position of the nicks, cutting surfaces and offset that can form a second score line of a frangible section of a container constructed in accordance with an embodiment of the present invention;

FIG. **16** is perspective view of a tamper-resistant/evident container constructed in accordance with the present invention in an exemplary rectangular configuration having a base portion and cover portion connected to each other by a hinge having a frangible section;

FIG. **17** is a side view of the container shown in FIG. **16**, illustrating in particular the hinge having a frangible section or strip, patterned sections on opposing ends thereof, and tabs defined by the frangible section score line;

FIG. **18** is a partial cross sectional view of the container shown in FIG. **16**, taken along line **18-18** of FIG. **17**, illustrating in particular the configuration of the hinge, upper and lower projections and frangible section;

FIG. **19** is a partial cross sectional view of the container shown in FIG. **16**, taken along line **19-19** of FIG. **17**, illustrating in particular the configuration of the hinge, upper and lower projections, frangible section, and score line defining a tab associated with the lower projection;

FIG. **20** is a partial cross sectional view of the container shown in FIG. **16**, illustrating in particular the manner in which the cover portion is closed on the base portion;

FIG. **21** is a partial perspective view of the container shown in FIG. **16**, illustrating in particular the manner in which the frangible section is removed from the hinge;

FIGS. **22-23** are partial perspective views of the container shown in FIG. **1**, illustrating in particular the manner in which the separation of the cover portion from the base portion is facilitated by clasping the patterned section disposed on the upper projection or arm associated with the cover portion which is formed upon removal of the frangible section;

FIG. **24** is a perspective view of another embodiment of a tamper-resistant/evident container constructed in accordance with the present invention having an additional engagement mechanism and support structure for providing enhanced structural integrity and further securing the base portion and cover portion, among other things; and

FIG. **25** is another perspective view of the tamper-resistant/tamper-evident container shown in FIG. **24**.

FIG. **26** is a perspective view of another embodiment of a tamper-resistant/tamper-evident container similar to that depicted in FIGS. **24-25**, but including a further variation of a pattern of reinforcing ribs.

FIGS. **27-28** are perspective views of another embodiment of a tamper-resistant/tamper-evident container made in accordance with the invention. FIG. **27** is a view of the interior of such an open container, and FIG. **28** is a view of the exterior of the container.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The advantages of a tamper-resistant/tamper-evident container constructed in accordance with the present invention will become more readily apparent to those having ordinary skill in the art from the following detailed description of certain preferred and exemplary embodiments taken in conjunction with the drawings which set forth representative embodiments thereof, but are not intended to limit the scope of the present invention.

Unless otherwise apparent, or stated, directional references, such as "right," "left," "upper," "lower," "outward," "inward," etc., are intended to be relative to the orientation of a particular embodiment of the invention as shown in the first numbered view of that embodiment. In addition, a given reference numeral indicates the same or similar structure

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when it appears in different figures and like reference numerals identify similar structural elements and/or features of the subject invention.

In accordance with an exemplary embodiment of the subject invention illustrated in FIGS. **1** and **2**, the container **10** includes a generally circular cover portion **12** and a generally bowl-shaped base portion **14** joined together by a hinge **16**. Hinge **16** includes a tamper-evident frangible section or pull strip **18**, which, upon its removal, severs the integral connection between cover portion **12** and base portion **14**.

In use, container **10** would be filled with the contents for which consumer protection is desired and cover portion **12** would be engaged with base portion **14**. In accordance with the present invention, cover portion **12** and base portion **14** may include structural features that facilitate the formation of a non-permanent engagement between cover portion **12** to base portion **14**.

In this embodiment, the non-permanent engagement between cover portion **12** and base portion **14** is facilitated by, among other things, a peripheral locking shoulder **20** and an radially inward circumferential groove **22** formed below an outwardly extending peripheral flange **24** on cover portion **12**, which can be seated within a corresponding mating circumferential recess **26** on base portion **14**. Circumferential recess **26** on base portion **14** is formed below an upper peripheral rim **28** and includes a radially inward projecting rib **30** and a radially inwardly extending rim **32**.

When cover portion **12** is closed on base portion **14**, projecting rib **30** mates with circumferential groove **22** on cover portion **12** and extending rim **32** mates with locking shoulder **20** on cover portion **12**. In addition, outwardly extending peripheral flange **24** on cover portion **12** abuts upper peripheral rim **28** on base portion **14**.

Container **10** incorporates features which are intended to prevent and deter opening container **10** without first removing frangible strip **18** from hinge **16**. In this embodiment, container **10** includes an upwardly projecting bead **34** on base portion **14** that extends substantially about the perimeter of peripheral rim **28** and is positioned to surround the outer edge of flange **24** of cover portion **12** when container **10** is closed. The position and upward extension of bead **34** is configured to hinder the relatively easy method of removing a cover from conventional containers that may resemble or have characteristics in common with container **10**. As can be best viewed in FIG. **10**, bead **34** physically blocks access to the edge of peripheral flange **24** on cover portion **12** from fingers or any other object that might normally be used for leverage to pry cover portion **12** from base portion **14**.

Hinge **16** includes an upper outwardly projecting arm **36** connected to base portion **14**, and a similar lower outwardly projecting arm **38**, which is connected to cover portion **12**. In particular, upper arm **36** is connected with a skirt **40** that projects downward from upper peripheral rim **28** and radially outward with respect to base portion **14**. Lower arm **38** is connected with the peripheral flange **24**. Upper and lower arms **36** and **38** are joined together by a common attachment to frangible strip **18** to form hinge **16**.

Preferably, frangible strip **18** is delimited at least in part by a pair of parallel score lines **42***a*, **42***b* or areas that have been weakened or stressed during the forming process. Frangible strip **18** may be further delimited by a plurality of spaced apart areas in which material has been removed associated with the score lines, by a plurality of spaced apart depressions associated with the score lines, or by perforation lines. The width and depth of the areas and/or depressions can vary to control the tear resistance offered by frangible strip **18**. Alternatively, the integral hinge **16** could be formed with a single score line or perforation line, rather than a pair of score lines. In this instance, the single score line could be severed to create a pair of projections which would be used to open the container.

In this embodiment, strip **18** includes laterally opposed grasping tabs **44***a* and **44***b* to provide a convenient location for gripping strip **18**. Preferably, instructional indicia is imprinted on strip **18** to facilitate its removal from hinge **16** and/or consumer understanding of the significance of its removal as it relates to product tampering. Strip **18** and/or the instructional indicia preferably thereon can be colored or embossed, or otherwise fabricated to direct attention thereto.

As can be best viewed in FIGS. **11** and **12**, detaching frangible strip **18** from hinge **16** of container **10** leaves behind upper and lower arms **36** and **38** on cover portion **12** and base portion **14**, respectively. Upper and lower arms **36** and **38** extend outwardly from container **10** and can be used to facilitate removal of cover portion **12** from base portion **14**, once strip **18** has been removed, by applying sufficient opposing force to disengage locking shoulder **20** from within circumferential recess **26**.

The presence of bead **34** prevents unauthorized access to the contents of container **10** by making it difficult to pull cover portion **12** from base portion **14**. If access to container **10** is desired, strip **18** must be removed so that upper and lower arms **36** and **38** are free to be used to leverage cover portion **12** from base portion **14**. Cover portion **12** may be replaced on base portion **14** after container **10** is opened. Strip **18**, however, once removed, is not replaceable. Thus, removal of strip **18** functions as a clear indicator of possible tampering, in that if strip **18** is partially or fully removed prior to purchase, it is readily apparent to a consumer that someone may have already gained access to the contents of container **10**.

FIGS. **13-15** illustrate an exemplary configuration for a double scoring blade having blades **46***a*, **46***b*, which can be used in a punch press system or the like to form score lines **42***a*, **42***b* in accordance with one embodiment of the present invention. Various dimensions of blades **46***a*, **46***b* are also provided herein as a non-limiting example.

The lateral separation L1 between blades **46***a*, **46***b* is in this embodiment about 0.36 inches. The length L2 of blades **46***a*, **46***b* is about 2.25 inches. Blades **46***a*, **46***b* include an offset recessed portion **48** with a series of substantially similar nicks **50** cut therein between cutting edges **52**. The width L3 of cutting edges **52** is preferably 0.36 inches. Preferably, the offset L4 between recessed portion **48** and cutting edges **52** is approximately 0.001 inches.

In this embodiment, blade **46***a* includes seven (7) nicks **50** while blade **46***b* includes eight (8) nicks **50**. The nicks **50** on blade **46***a* are offset with respect to the nicks **50** on blade **46***b*, which results in a desirable zipper-like effect when removing strip **18**. Preferably, nicks **50** are triangular shaped, about 0.010 inches deep and about 0.020 inches wide, and define an approximately 90 degree angle at its deepest convergence point **54**. The length L5 between nicks **50**, as measured between the respective convergence points **54** of adjacent nicks **50**, is approximately 0.252 inches. The length L6 between the respective convergence points **54** of adjacent offset nicks **50** on blade **46***b* is about 0.126 inches. The length L7 of blades **46***a*, **46***b* is about 0.1 inches, and each blade edge defines an angle of about 45 degrees.

It should be readily understood that a container constructed in accordance with the present invention, which is preferably a plastic container used for carrying edible items, can be manufactured in a variety of shapes and sizes, and can

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be formed from resins or plastic materials such as polyethylene, polypropylene, polyvinyl chloride or polyethylene terephthalate ("PETE"), as well as other suitable materials or combinations thereof. The forming process can also vary to include methods such as thermo-forming, injection molding or blow molding. The container can be transparent or translucent, and may be colored in either instance. Also, vents can be provided in the container to promote airflow therethrough, if appropriate, based on the intended contents of the container.

Preferably, container **10** is formed from a roll of PETE subjected to a vacuum and pressure mold with plug assist. During manufacture, blades **46***a*, **46***b* of FIGS. **13-15** are preferably applied to a newly formed container **10** to impart score lines **42***a*, **42***b* thereon. Cutting edges **52** cut substantially through the material used to make container **10**. Preferably, the configuration of blades **46***a*, **46***b* are designed so that a desirable amount of force is necessary to remove strip **18**, as determined by consumer trials for example. Those skilled in the art will readily appreciate that the configuration of blades **46***a*, **46***b* can be adjusted for a variety of reasons, and the above dimensions are exemplary of one embodiment of the present invention.

For example, various other methods can be employed to form frangible strip **18** of hinge **16**. For example, score lines, nicks or penetrations can be created with the molding tool itself during the forming step. Alternatively, a high die forming process can be employed where, after the forming step, the container is indexed to a trim station, where one or more knives liberate the container and create the score lines or perforations. Also, an intermittent cutter can be employed between the forming step or the trim step, a progressive punch and die operation can be employed, or a numerically controlled laser can be employed to create the nicks. It is also envisioned that electro-mechanical, ultra-sonic or hydrodynamic systems can be employed in the forming process.

Container **10** could also be formed with locking arrangements known in the art other than the tamper-resistant/evident closure of the subject invention, such as traditional male and female locking features.

Referring to FIGS. **16-23**, there is illustrated another tamper-resistant/evident container constructed in accordance with a preferred embodiment of the subject invention and designated generally by reference numeral **110**. Container **110** is similar to container **10** described above except that container **110** is rectangular in configuration rather than circular. Container **110** thus includes a base portion **114** and a cover portion **112** joined together by an integrally formed hinge **116** that defines a tamper-evident frangible pull strip **118**, which must be removed before cover portion **112** can be readily removed from base portion **114**.

Container **110** includes embossed or raised patterned sections **156***a* and **156***b* on opposing tabs **144***a* and **144***b* of strip **118**, respectively, to facilitate removal of strip **118**. Patterned sections **158***a* and **158***b* are also disposed on opposing sides of upper arm **136** to facilitate separation of cover portion **112** from base portion **114**. Instructional indicia can be imprinted on upper arm **136** between patterned sections **158***a* and **158***b*.

In this embodiment, score line **142***b* is situated on hinge **116** to define two tabs **160***a* and **160***b* which are connected with lower arm **138**. Tabs **160***a*, **160***b* remain in place on hinge **116** until strip **118** is removed, as can be best viewed in FIGS. **21-23**. Tabs **160***a*, **160***b* extend from lower arm **138** to further facilitate gripping lower arm **138** and separation of cover portion **112** from base portion **114**.

FIGS. **24-26** illustrate other tamper-resistant/evident containers constructed in accordance with a preferred embodiment of the subject invention and designated generally by reference numeral **210**. Container **210** is rectangular in shape, but may be formed in other shapes, and has similar features to containers **10** and **110** described above. Container **210** includes, among other things, a base portion **214** and a cover portion **212** joined together by an integrally formed hinge **216** that defines a tamper-evident frangible pull strip **218**, which must be removed before cover portion **212** can be readily removed from base portion **214**. An upwardly projecting bead **234** is disposed on peripheral rim **222** of base portion **214**. Bead **234** is positioned to substantially surround the outer edge of flange **224** of cover portion **212** when container **210** is closed, thus physically blocking access by fingers or any other object that could be applied to the edge of peripheral flange **224** and rim **222** for leverage while attempting to pry cover portion **212** from base portion **214**.

In the embodiments of FIGS. **24-25** a plurality of supporting ribs **262***a-f*, each extending from about the enclosed bottom of base portion **214** to about extending rim **232** are positioned at the four corners (ribs **262***a-d*, respectively) of base portion **214** and the midpoints on hinge side wall **264** (rib **262***e*) and opposing side wall **266** (rib **262***f*) of base portion **214** to provide enhanced structural integrity. Supporting ribs **262***a-f* generally consist of multiple elongated, arcuate portions, each having a curved latitudinal cross-sectional profile, positioned adjacently with respect to one another.

In the embodiment disclosed in FIG. **26**, a multiplicity of ribs **262** are provided distributed about the bottom of base portion **214** as well as about the peripheral wall **214***a* of base portion **214**. Applicants have discovered that the disclosed arrangement of ribs **262** about base portion **214** provides particularly advantageous performance. Over two dozen containers were tested having various rib patterns. However, the container disclosed in FIG. **26** exhibited the most superior performance. By way of illustration only, the container depicted in FIGS. **24-25**, without the rib pattern of the container in FIG. **26** may be made, for example, from a thermoformable material such as polyethylene terephthalate sheet in a thickness range from about 12 mils to about 40 mils, and preferably from about 14 mils to about 25 mils, depending on the size of the container. For example, it may be desirable to form a smaller container from a thinner gage material than a larger container.

It has been discovered that the container depicted in FIG. **26** can be made from a substantially thinner gauge of sheet material than that depicted in FIG. **25**. A 32 ounce container as depicted in FIG. **25** made of polyethylene terephthalate, for example, can be made from a 25 mil sheet. In contrast, an even stronger container as depicted in FIG. **26** can be made from a 22 mil sheet. It is further believed that such a container could be made of a 20 mil sheet of polyethylene terephthalate. This accordingly may result in a 20% material savings, which can result in significant cost reduction for making a container of a given size.

As further disclosed in these embodiments, a circumferential engagement sealing interface between cover portion **212** and base portion **214** is defined in part by a plurality of outwardly bowed arcuate portions **290**. As depicted, outwardly bowed arcuate portions **290** are connected by rounded corner portions **292**.

Container **210** may also include an additional independent, engaging mechanism that provides even further structural integrity, enhances security by urging flange **224** to

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remain in position against peripheral rim **222**, and facilitates the reattachment of cover portion **212** to base portion **214**, among other things. As depicted in FIGS. **24** and **25**, for example, male engaging member **268** projects upwardly from supporting rib **262***f* on side wall **266** which is received by a correspondingly sized female engaging member **270** defined on cover portion **212**.

Thus, when container **210** is closed, male engaging member **268** on base portion **214** and female engaging member **270** on cover portion **212** form an engagement which further secures base portion **214** to cover portion **212**. In addition to urging flange **224** against rim **222**, the aforementioned features increase the amount of force that would be necessary to pry cover portion **212** from base portion **214** in an unauthorized manner (i.e., without removal of strip **218**).

Also, the aforementioned engagement facilitates the reattachment of cover portion **212** with base portion **214** after container **210** is opened legitimately by a consumer. Container **210** can be reclosed after purchase by urging cover portion **212** onto base portion **214**, and in particular, this can be accomplished by pressing on the corners of cover portion **212**, as indicated by instructional indicia printed in the outer corner areas of cover portion **212** in this embodiment. In reclosing container **210**, the initial engagement of male member **268** with female member **270** facilitates the subsequent step of applying pressure on the corners of cover portion **212**, making it easier to reattach cover portion **212** to base portion **214**. It should be readily apparent to those skilled in the art that other engagement mechanisms, devices, engagements and container designs, and combinations thereof, could be incorporated in any embodiment in accordance with the present invention.

FIGS. **27-28** illustrate another tamper-resistant/tamper-evident container constructed in accordance with a preferred embodiment of the subject invention and designated generally by reference numeral **310**. Container **310** is generally round in shape, but may be formed in other shapes, and has similar features to containers **10**, **110** and **210** described above. Container **310** includes, among other things, a base portion **314** and a cover portion **312** joined together by an integrally formed hinge **316** that defines a tamper-evident frangible pull strip **318**, which must be removed before cover portion **312** can be readily removed from base portion **314**. An upwardly projecting bead **334** is disposed on peripheral rim **322** of base portion **314**. Bead **334** is positioned to substantially surround the outer edge of flange **324** of cover portion **312** when container **310** is closed, thus physically blocking access by fingers or any other object that could be applied to the edge of peripheral flange **324** and rim **322** for leverage while attempting to pry cover portion **312** from base portion **314**.

In this embodiment, a plurality of supporting gussets **362***a-h*, each extending from about the enclosed bottom of base portion **314** to about extending rim **332** are disposed proximate the eight corners of base portion **314** to provide enhanced structural integrity. Gussets **362** also define interior spaces **363** that can be used to facilitate fingers of a user to remove an object (such as a pie, for example) from container **310**. Container **310** can also be provided with lower and upper vents **364**, **365** respectively, disposed circumferentially proximate the top and bottom of the container **310** to facilitate defrosting or heating of the contents of container **310**. In the case of a frozen pie, for example, warm air can be drawn in through upper vents **365**. As air enters through upper vent **365**, it is cooled, and sinks out through lower vent **364**. If desired, vents **364** can be positioned proximate the lower portions of gussets **362**, whereby each gusset can act as an air duct to facilitate transport of air through the container. It will be appreciated that vents **364**, **365** can also operate to cool the contents of container **310**, whereby relatively cool ambient air can be drawn in through lower ducts **364** and out of upper ducts **365**, whereby the air is heated by the contents of the container to drive the flow. It will be appreciated that the location of vents **364**, **365** can be varied, as desired. As depicted, vents **365** are disposed in welled recesses that form ribs **372** in cover portion **312** of container **310**.

It was discovered through experimentation that it is desirable to have gussets **362** extend as close to the bottom **317** of base **314** as possible. This spreads out the load of the contents of container **310** over a larger area of containers **310** when containers **310** are stacked. It has also been discovered that it is desirable to have gussets **362** extend up to flange **375** to prevent flexure of container **310** to prevent flange **324** from being separated from bead **334**. These design features significantly help make container **310** more tamper resistant by making container **310** more resistant to flexure.

As depicted, bottom **317** of base **314** is generally octagonal, and is adapted and configured to nest within the octagonal recess **312***a* formed in cover portion **312**. The octagonal features permit directional stacking which can facilitate the alignment, transport, display and merchandizing of goods. It will be understood that other shapes besides octagonal can be used, as understood by those of skill in the art.

As depicted in FIG. **27**, gussets **362** are adapted and configured so that gussets **362** can act as guides for guiding container between parallel rails (the locations of which being represented by axes X) of a guiding device to move, stack, fill and/or close containers **310**, if desired.

As further disclosed in this embodiment, a circumferential engagement sealing interface between cover portion **312** and base portion **314** is defined in part by a rounded segment **390**, a relatively straight segment **392** and two rounded corner portions **394**. The shape of interface is adapted and configured to provide substantial resistance to ensure container **310** is relatively tamper resistant.

Container **310** also includes an additional independent, engaging mechanism that provides even further structural integrity, enhances security by urging flange **324** to remain in position against peripheral rim **322**, and facilitates the reattachment of cover portion **312** to base portion **314**, among other things. A plurality of male engaging members **368** project upwardly from base portion **314** disposed circumferentially about container **310**. Male engaging members **368** actually cooperate to urge flange **324** against peripheral rim **322**. This advantageously helps prevent tampering with the container. Members **368** also facilitate in guiding and aligning cover portion **312** with base portion to facilitate the reclosing of container **310** after it has been opened.

It will be understood that the cover portions **12**, **112**, **212** and **312** and base portions **14**, **114**, **214** and **314** can be made of different colored materials. For example, all or a part of the cover portions and/or base portions can be transparent while the rest of the container can be translucent or opaque. In accordance with one embodiment, two-tone sheeting is used (such as PETE) wherein a dark opaque material is mated adjacently to a transparent segment. The separation between the two sections can be routed in the machine direction of the thermoforming machine used to make the containers. The transition area from transparent to opaque can be aligned with the tamper evident strip of the container

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so that the cover portion can be a different color than (or transparent or translucent compared to) the base portion.

Although exemplary and preferred aspects and embodiments of the present invention and forming methods have been described with a full set of features, it is to be understood that the disclosed container and method of manufacture may be practiced successfully without the incorporation of each of those features. The scope of the present invention is not limited only to the tamper-resistant/tamper-evident containers and methods of manufacture disclosed herein. Thus, it is to be understood that modifications and variations may be utilized without departure from the spirit and scope of the invention and method disclosed herein, as those skilled in the art will readily understand. Such modifications and variations are considered to be within the purview and scope of the appended claims and their equivalents.

What is claimed is:

1. A plastic tamper-resistant/tamper-evident container comprising:

a cover portion including an outwardly extending peripheral flange;

a base portion including an upper peripheral rim and a skirt depending downwardly therefrom, the upper peripheral rim extending substantially about the perimeter of the container and configured to substantially surround the outwardly extending peripheral flange of the cover portion to render the outwardly extending peripheral flange of the cover portion relatively inaccessible when the container is closed; and

a hinge joining the cover portion to the base portion, wherein the vertical height of the hinge correlates with the height of the skirt that depends downwardly from the base portion when the height of the skirt is substantially uniform around the perimeter of the container, the hinge including a frangible section, the frangible section comprising at least one line of weakness which, when severed, forms at least one projection extending from at least one of the base portion or cover portion for facilitating removal of the cover portion from the base portion to open the container.

2. The plastic tamper-resistant/tamper-evident container of claim 1, wherein the frangible section comprises one score line.

3. The plastic tamper-resistant/tamper-evident container of claim 1, wherein the frangible section comprises at least two score lines.

4. The plastic tamper-resistant/tamper-evident container of claim 3, wherein the at least two score lines are substantially parallel.

5. The plastic tamper-resistant/tamper-evident container of claim 1, wherein the container is formed from a material including at least one of polyethylene terephthalate, polyethylene, polypropylene and polyvinyl chloride.

6. The plastic tamper-resistant/tamper-evident container of claim 1, wherein the cover portion, base portion, and hinge are unitarily thermoformed from a single sheet of plastic.

7. The plastic tamper-resistant/tamper-evident container of claim 1, wherein the projection extends from the base portion of the container.

8. The plastic tamper-resistant/tamper-evident container of claim 1, wherein the projection extends from the cover portion of the container.

9. The plastic tamper-resistant/tamper-evident container of claim 1 wherein the base portion further comprises one or more gussets that resist flexure of the container when the container is closed.

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U.S. PATENT: *8,795,580*
ISSUE DATE: *August 05, 2014*

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SYLVIA HOLLEY
Certifying Officer

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(12) **United States Patent**
Sellari et al.

(10) **Patent No.: US 8,795,580 B2**
(45) **Date of Patent: Aug. 5, 2014**

(54) **METHODS OF MANUFACTURING TAMPER-RESISTANT AND TAMPER EVIDENT CONTAINERS**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 25 days.

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(51) **Int. Cl.**

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B65D 43/02	(2006.01)

(52) **U.S. Cl.**

CPC ***B65D 41/32*** (2013.01); *B65D 2543/00546* (2013.01); *B65D 2543/00796* (2013.01); *B65D 2543/00731* (2013.01); *B65D 2543/00092* (2013.01); *B65D 2543/00296* (2013.01); *B65D 2543/0062* (2013.01); ***B65D 43/162*** (2013.01); ***B65D 43/0254*** (2013.01); *B65D 2543/00509* (2013.01); *B65D 2543/00351* (2013.01); *B65D 2543/00685* (2013.01); *B65D 2543/00101* (2013.01)

USPC **264/544**; 264/553; 264/554

(58) **Field of Classification Search**

CPC B29C 51/00; B29C 51/10; B29C 51/265; B29C 51/266

USPC 264/544, 553, 554

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,798,631 A 7/1957 Engel
2,915,214 A * 12/1959 Morris 220/266

(Continued)

FOREIGN PATENT DOCUMENTS

CA 2074836 A1 6/1992
DE 78 16 353 U1 11/1978

(Continued)

OTHER PUBLICATIONS

Transmittal of the International Search Report for PCT/US2007/15739 together with the Written Opinion of the International Searching Authority (ISA) dated Sep. 10, 2008 (7 pages).

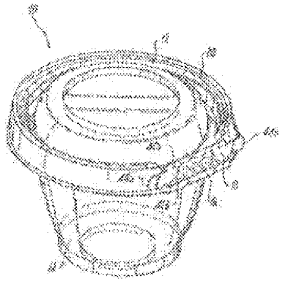
(Continued)

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(74) *Attorney, Agent, or Firm* — Edwards Wildman Palmer LLP; Barry Kramer; Adam P. Daniels

(57) **ABSTRACT**

A tamper-resistant container with tamper-evident features which includes a cover portion defining a peripheral flange, a base portion defining an upper peripheral edge, and a hinge joining the cover portion with the base portion. The upper peripheral edge includes an upwardly projecting bead extending substantially about the perimeter of the base portion that is configured to render the peripheral flange of the cover portion relatively inaccessible when the container is closed. The hinge includes a frangible portion for facilitating the removal of the cover portion from the base portion to open the container.

16 Claims, 13 Drawing Sheets



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Related U.S. Application Data

continuation-in-part of application No. 11/065,681, filed on Feb. 24, 2005, now Pat. No. 7,073,680, which is a continuation-in-part of application No. 10/895,687, filed on Jul. 21, 2004, now Pat. No. 7,118,003.

(60) Provisional application No. 60/489,093, filed on Jul. 21, 2003.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,389,825	A *	6/1968	Whiteford	220/23.4
3,536,251	A	10/1970	Edwards	
3,767,110	A	10/1973	Congleton	
4,224,275	A *	9/1980	Sauer	264/516
4,433,793	A	2/1984	Ingemann	220/276
4,535,889	A	8/1985	Terauds	206/527
4,576,330	A	3/1986	Schepp	
4,576,370	A	3/1986	Jackson	
4,771,934	A	9/1988	Kalmanides	
4,886,204	A	12/1989	Kalmanides	
4,986,438	A	1/1991	Borst	
5,027,969	A	7/1991	Lesquir	
5,040,695	A	8/1991	Adams et al.	220/270
5,046,659	A	9/1991	Warburton	
5,052,574	A	10/1991	McKinnon et al.	
5,092,479	A	3/1992	Wells	
D328,705	S	8/1992	Krupa	
5,219,087	A	6/1993	Christensson	220/207
5,287,959	A	2/1994	Hansen et al.	220/787
5,303,839	A	4/1994	Blumenschein	
D352,000	S	11/1994	Hansen et al.	D9/429
5,398,836	A	3/1995	Luch et al.	
5,429,833	A	7/1995	Wysiotsky	
5,507,406	A	4/1996	Urciuoli et al.	220/269
5,573,134	A	11/1996	Chenault et al.	220/276
5,584,408	A	12/1996	Orkisz	
5,758,791	A	6/1998	Mangla	
5,860,530	A	1/1999	Simmons et al.	
5,897,011	A	4/1999	Brilliant et al.	
5,931,332	A	8/1999	Mygatt et al.	220/270
5,938,068	A	8/1999	Atkins et al.	
5,979,687	A *	11/1999	Hayes et al.	220/4.23
5,985,079	A *	11/1999	Ellison	156/244.23
6,095,324	A *	8/2000	Mullin	206/204
6,196,408	B1	3/2001	Setty et al.	
6,220,529	B1 *	4/2001	Xu	239/569
6,517,242	B1 *	2/2003	Buchman	383/5
6,530,870	B2 *	3/2003	Buchman et al.	493/394
6,572,909	B1	6/2003	Bagwell et al.	
6,609,623	B2	8/2003	Chou	
6,715,632	B2	4/2004	Baker	
2003/0052125	A1	3/2003	Hayes et al.	
2003/0052133	A1	3/2003	Hayes et al.	
2005/0017007	A1	1/2005	Sellari et al.	

FOREIGN PATENT DOCUMENTS

DE	4418935 A1	12/1995	220/270
DE	1999-083197	8/1999	220/270
EP	0 752 374 A1	1/1997	
GB	2219284 A	12/1989	
GB	2257118 A	1/1993	
JP	1-114536 U	8/1989	
JP	2-144531 U	12/1990	
JP	7-267275 A	10/1995	
JP	200201228	1/2002	
WO	WO-9513222 A2	5/1995	
WO	WO-2005009857	2/2005	

OTHER PUBLICATIONS

Written Opinion of the International Searching Authority (ISA) for PCT/US2004/023473 (6 pages).
European Communication for EP 04 778821.1 dated May 12, 2006.
European Communication for EP 04 778821.1 dated Jan. 25, 2007.
European Communication for EP 06003237.2 dated Feb. 13, 2008.
Extended European Search Report for EP 06003237.2 dated Jun. 7, 2006.
Russian Office Action dated Jun. 17, 2008 for RU 2006105207/12.
Russian Office Action dated Mar. 16, 2010 for RU 2006105515/12.
Ukrainian Office Action dated Oct. 5, 2009 for UA 2006 01701.
Ukrainian Office Action dated Sep. 3, 2008 for UA 2006 00913/M.
Canadian Office Action dated Jan. 30, 2013 for CA 2,533,236.
Canadian Office Action dated Aug. 20, 2010 for CA 2,533,046.
Canadian Office Action dated Jul. 14, 2011 for CA 2,533,046.
Canadian Protest dated Apr. 18, 2012 for CA 2,533,046.
Canadian Office Action dated Oct. 31, 2012 for CA 2,533,046.
Canadian Protest dated Aug. 19, 2013 for CA 2,533,046.
Chinese Office Action dated Jun. 27, 2008 for CN 200480024304.6.
Chinese Office Action for CN200610057668.5.
EasyPak, LLC's Motion for Leave to File Amended Invalidity Contentions dated Nov. 12, 2013.
Memo in Support of EasyPak, LLC's Motion for Leave to File Amended Invalidity Contentions dated Nov. 12, 2013.
Defendant's Reply in Support of Its Motion to File Amended Invalidity Contentions dated Dec. 6, 2013.
Plaintiff's Opposition to EasyPak's Motion for Leave to File Amended Invalidity Contentions dated Nov. 26, 2013.

* cited by examiner

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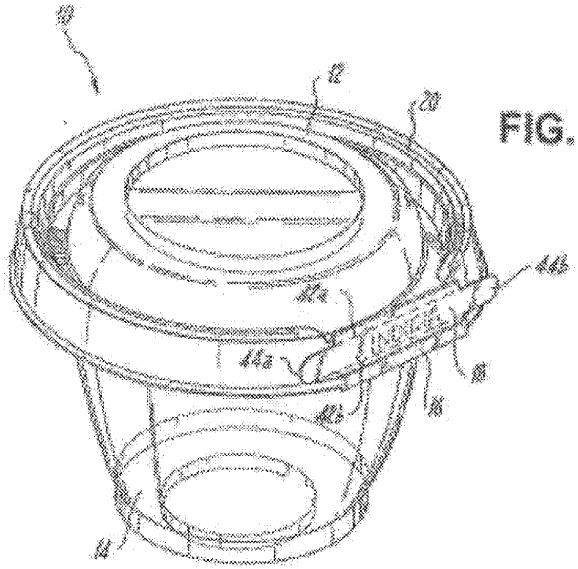


FIG. 1

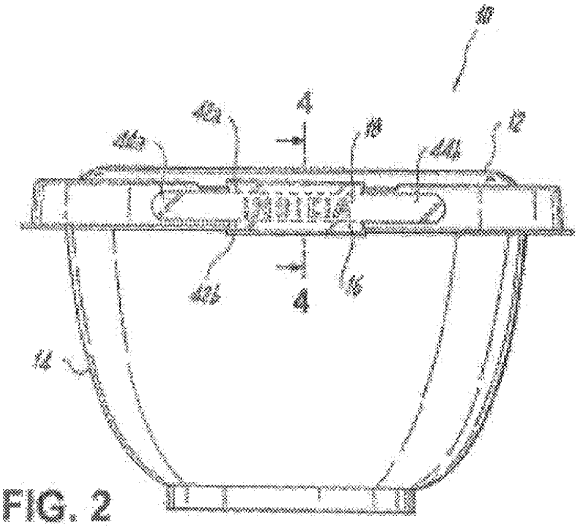


FIG. 2

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FIG. 3

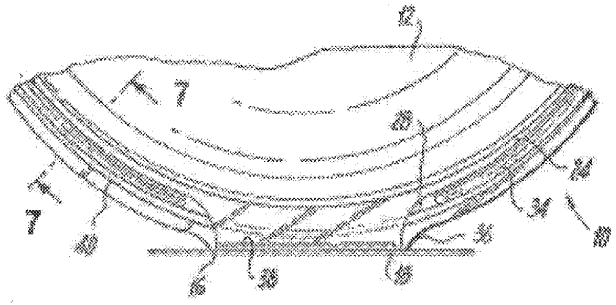
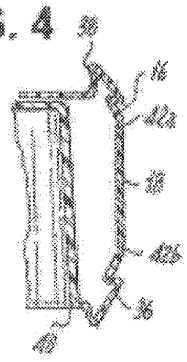


FIG. 4



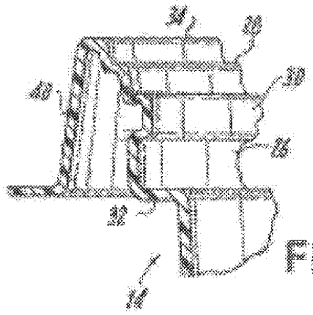


FIG. 5

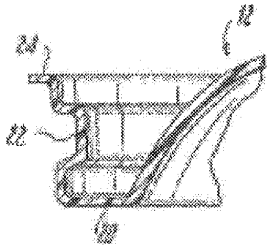


FIG. 6

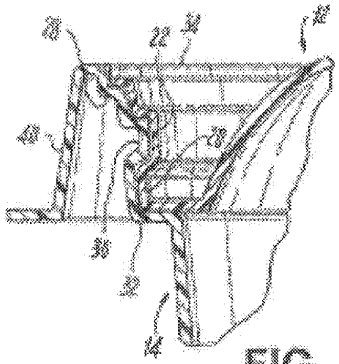


FIG. 7

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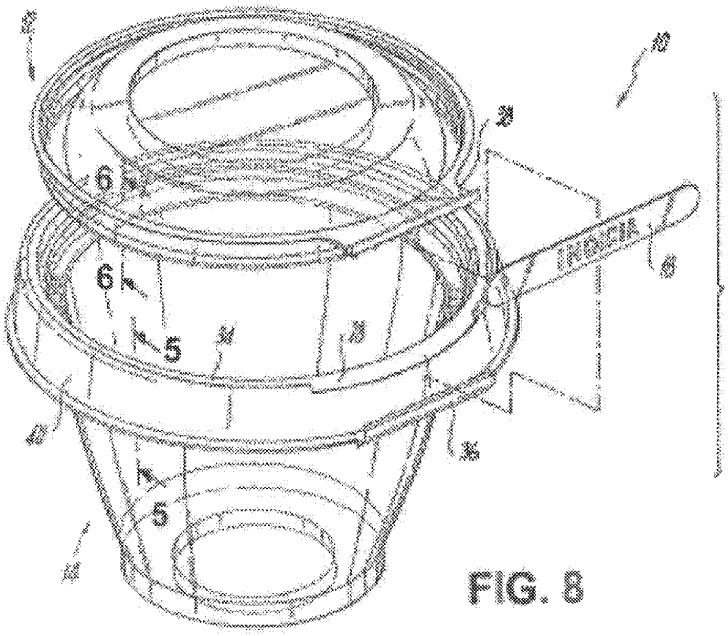


FIG. 8

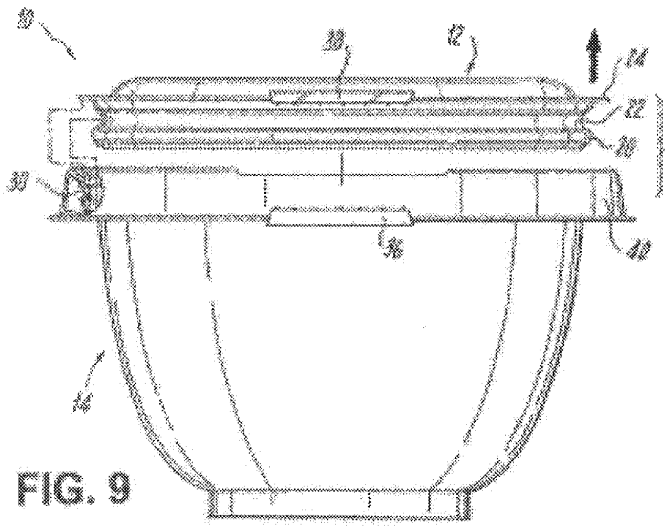


FIG. 9

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FIG. 10

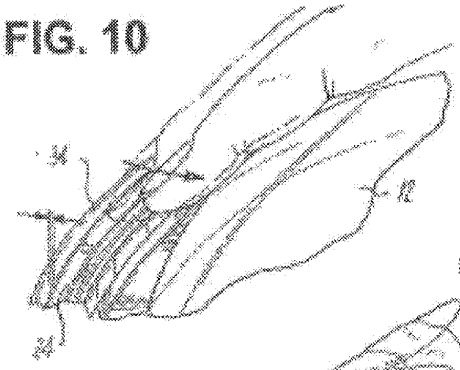
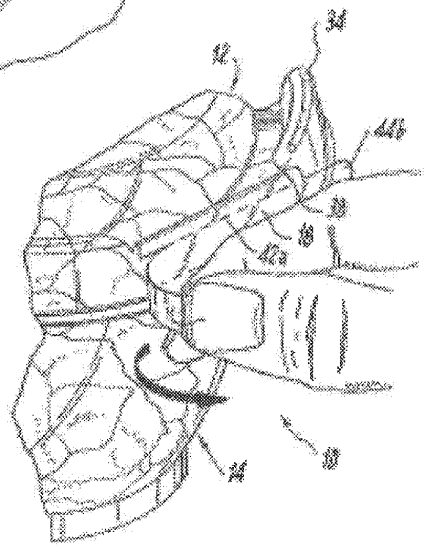


FIG. 11



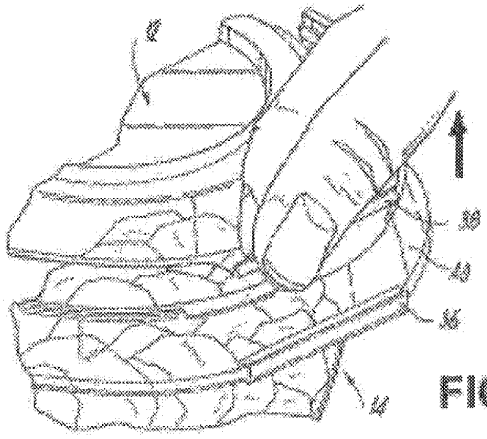


FIG. 12

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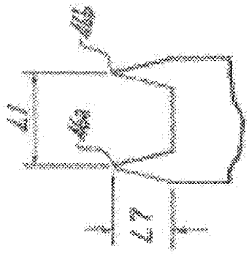


FIG. 13

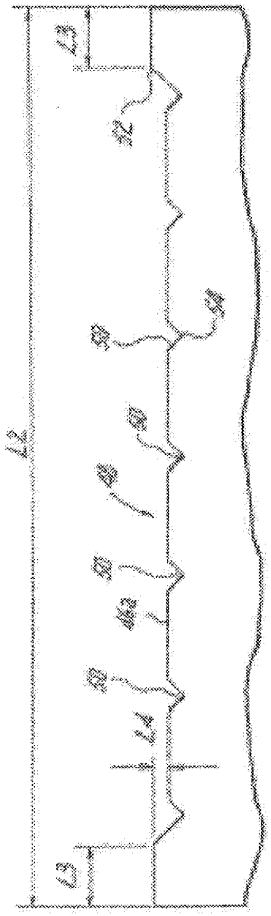


FIG. 15

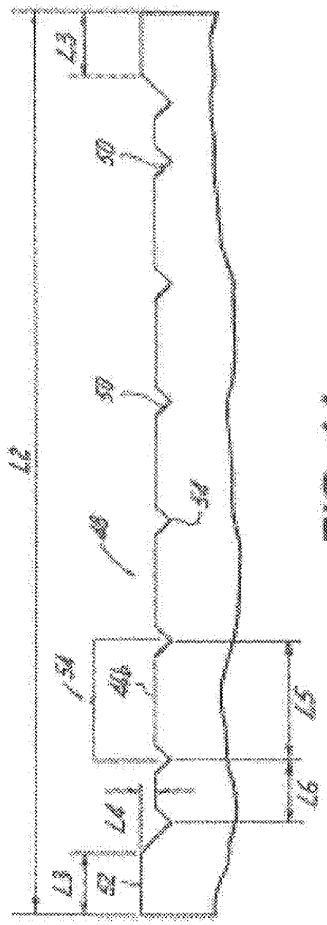
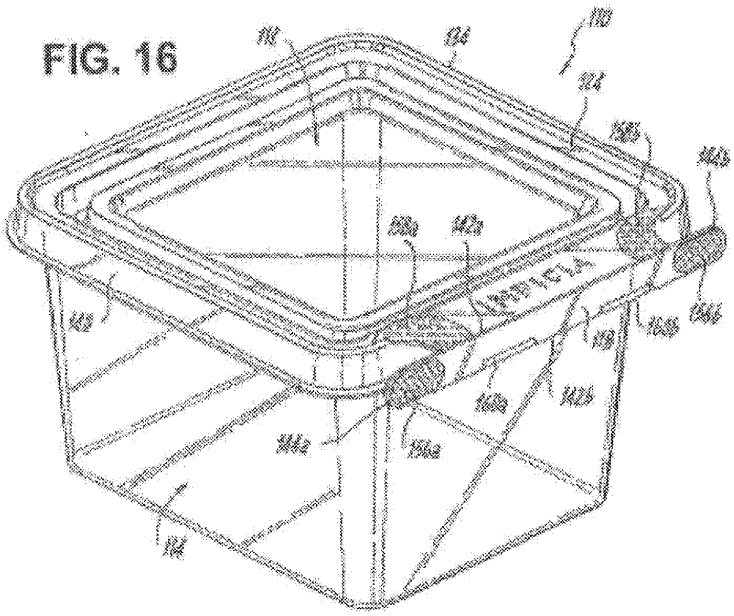


FIG. 14

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FIG. 16



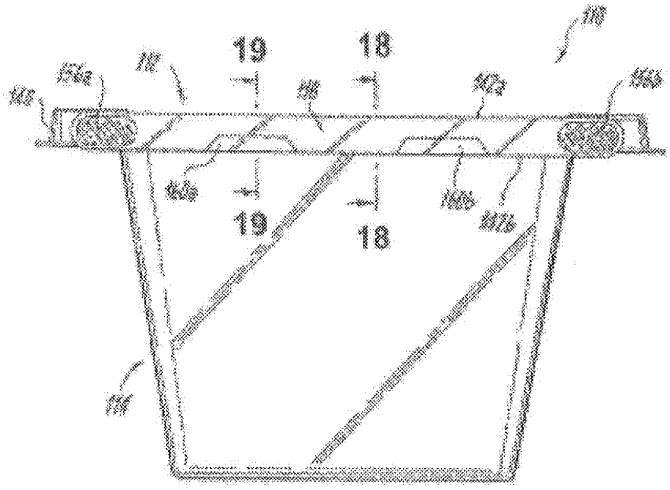


FIG. 17

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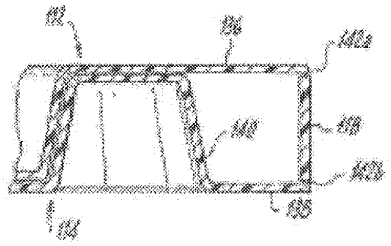


FIG. 18

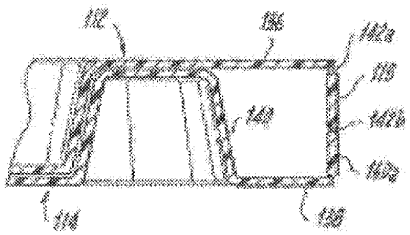


FIG. 19

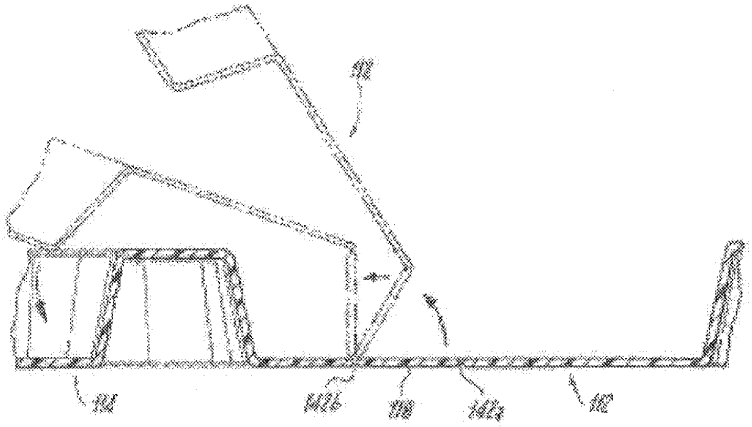


FIG. 20

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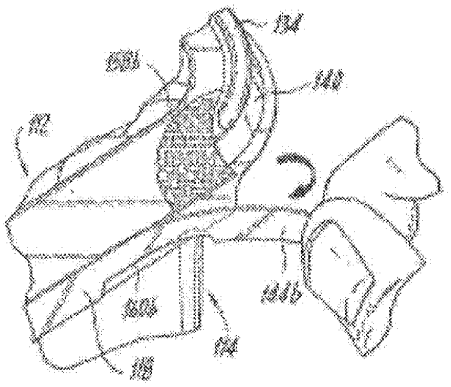


FIG. 21

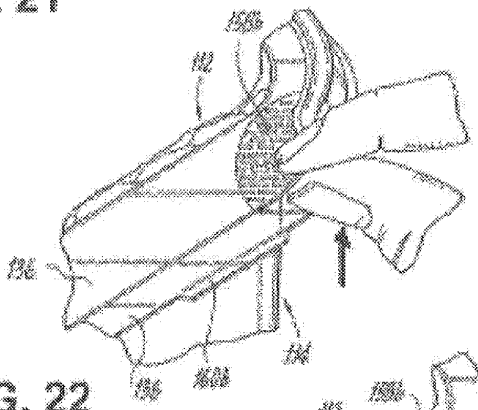


FIG. 22

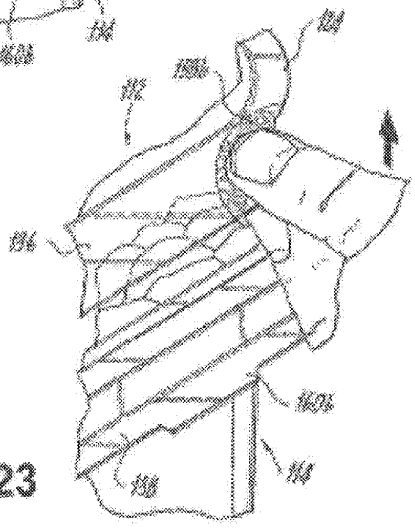


FIG. 23

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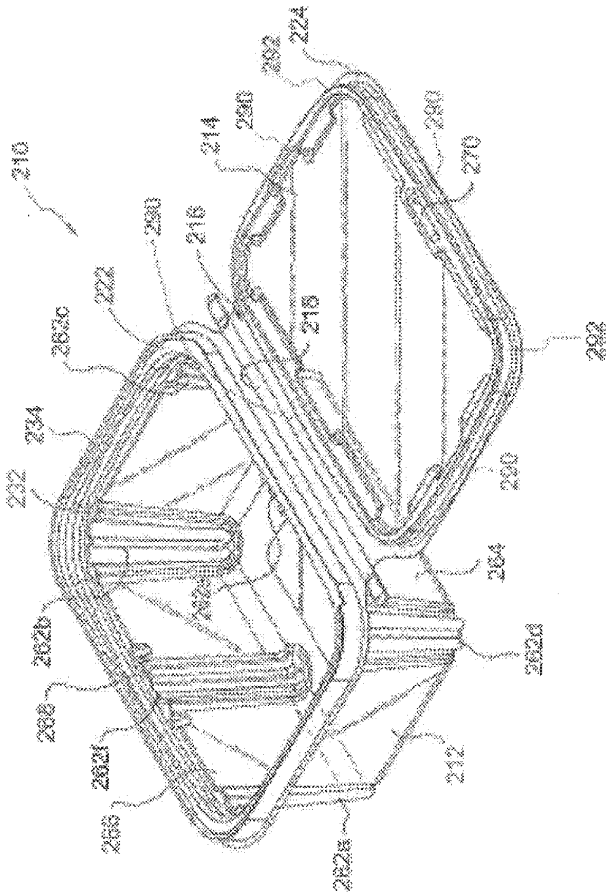


FIG. 24

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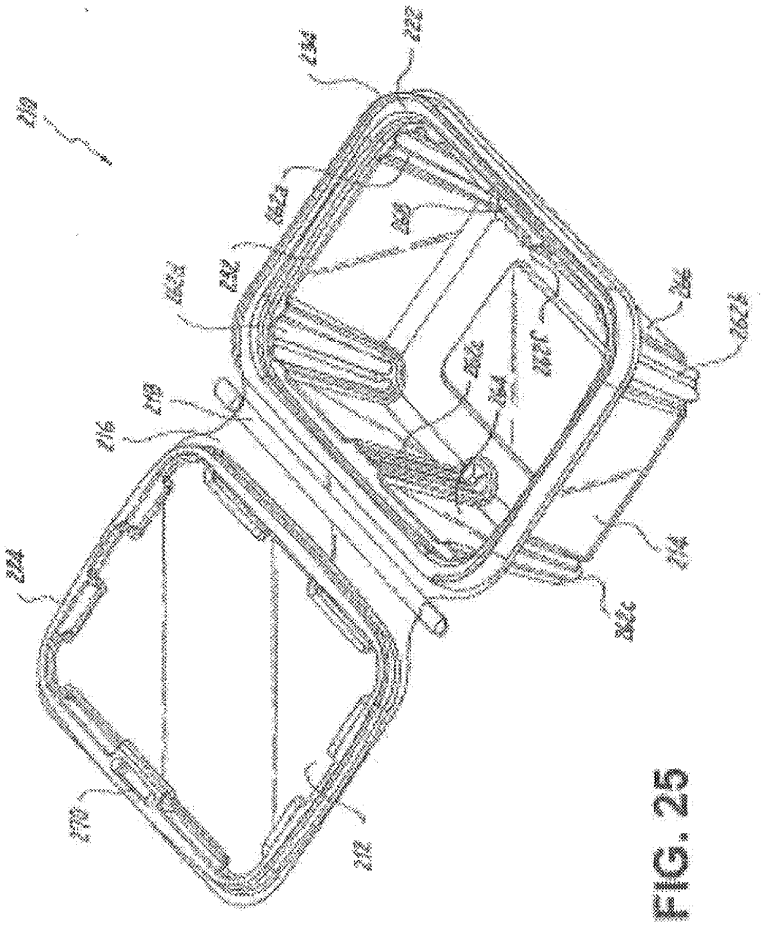


FIG. 25

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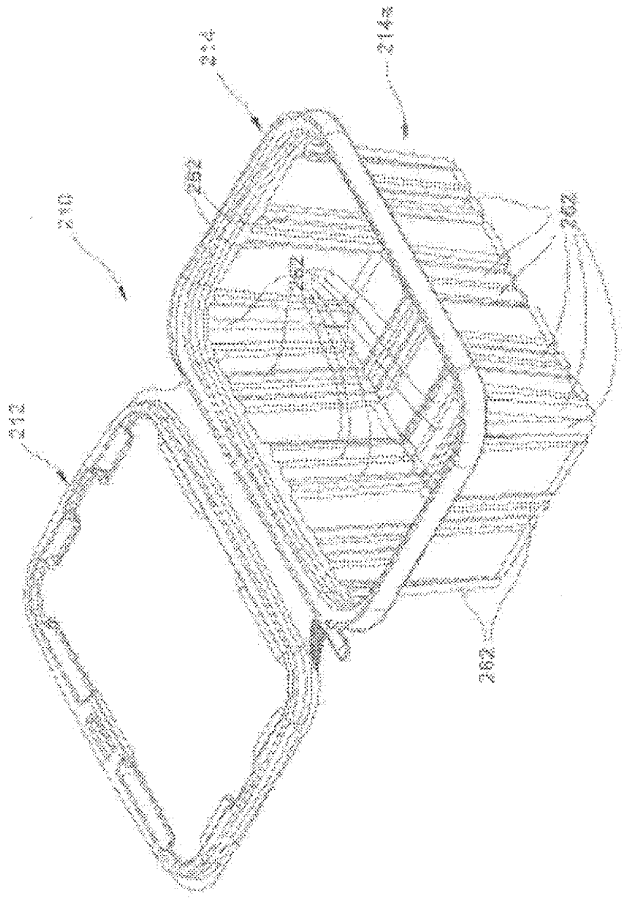


FIG. 26

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Trial Exhibit 4.14

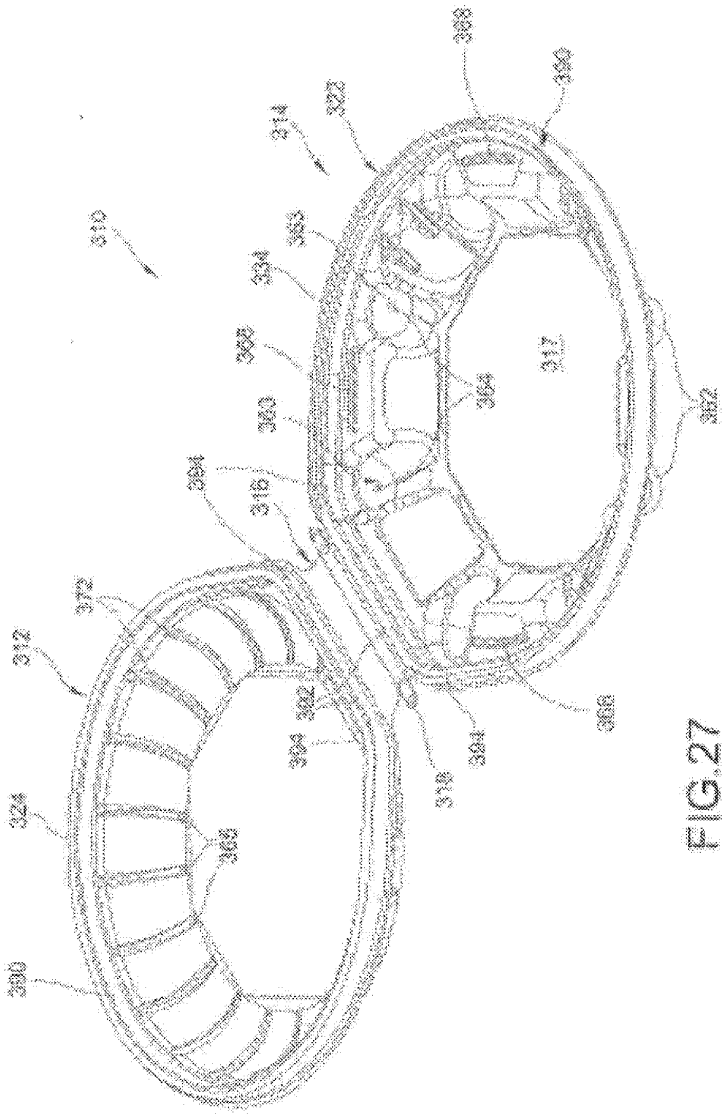


FIG. 27

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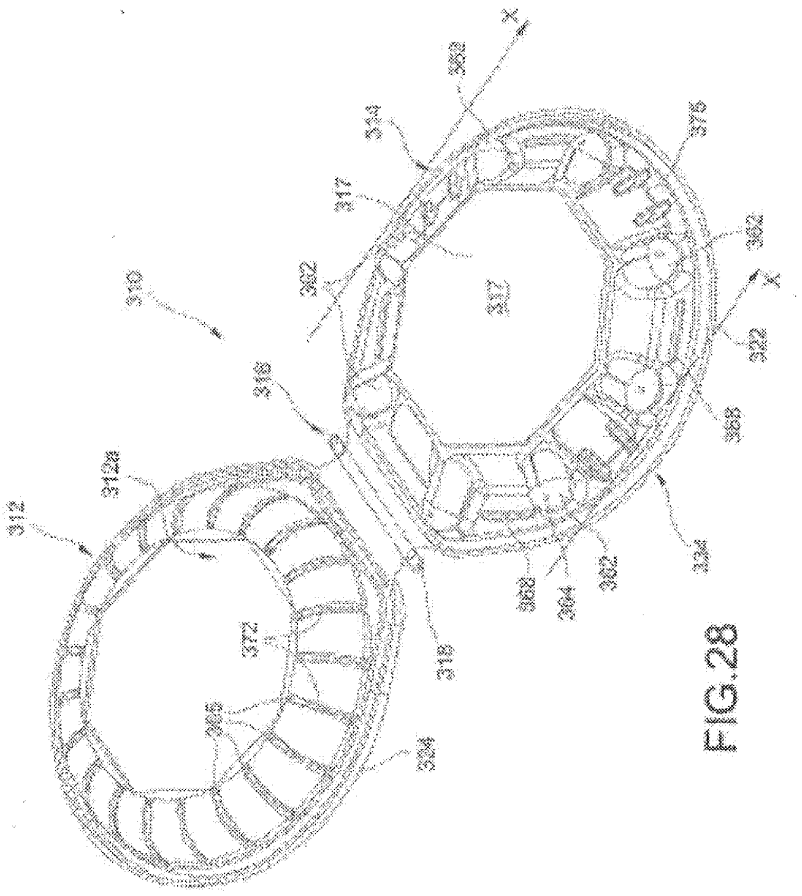


FIG.28

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Trial Exhibit 4.16

METHODS OF MANUFACTURING TAMPER-RESISTANT AND TAMPER EVIDENT CONTAINERS

CROSS-REFERENCE TO RELATED APPLICATION(S)

The subject application is a division of Ser. No. 11/483,900 filed Jul. 10, 2006, which is a continuation in part of U.S. patent application Ser. No. 11/065,681, filed Feb. 24, 2005, now U.S. Pat. No. 7,073,680, which is a continuation in part of U.S. patent application Ser. No. 10/895,687 filed Jul. 21, 2004, which claims the benefit of priority to U.S. Provisional Patent Application No. 60/489,093 filed Jul. 21, 2003, the disclosure of each being incorporated by reference herein in its entirety.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The subject invention is directed to containers and packaging, and more particularly, to containers and packaging that incorporate tamper-resistant and tamper-evident features.

2. Background of the Related Art

Disposable containers for packaging, distributing, displaying or otherwise housing consumer items, especially perishable foods, are becoming increasingly important. Historically, perishable products had to be brought to market and sold quickly before exposure to the atmosphere caused the products to lose their freshness.

The advent of plastics resulted in many products being wrapped or packaged in plastic, both in the form of flexible plastic bags and solid plastic containers. The use of plastics in the modern-day convenience food industry has significantly improved the "shelf life" of perishable products, allowing both merchants and their customers to store the products for longer periods of time, resulting in substantial savings.

It has been found that consumers like recloseable packages, particularly for comestible products, especially in circumstances where more than one serving of a comestible product is contained therein, in order to reduce drying out or other deterioration of the comestible food product. In addition, consumers prefer to visually inspect the food product within such containers prior to purchase. Thus, fabricating containers from clear see-through plastics is desirable. For example, packaging provided for bakery goods has often been in the form of clear, plastic clamshell packaging, because, among other things, such clear, plastic clamshell packaging, provides a baked-on-the-premises image which grocery retailers have found to be especially appealing to consumers.

Typically, plastic containers will include a fairly rigid lid and base, although they may be subject to some amount of flexure. The lid provided must be capable of properly and effectively sealing the container, yet the container must be constructed so that the lid is relatively easy to remove, and even replace, since it is expected that the container and lid would normally be reused.

In addition to the aforementioned consumer design preferences, it is desirable to fabricate containers that include features which either deter unauthorized tampering or clearly indicate whether unauthorized tampering has occurred, or both. These tamper-resistant/evident features typically include structural elements which, when the container is tampered with or opened without authorization, enable the consumer to easily visually recognize such tampering so that the product can then be rejected. Such tamper-resistant/evident

elements are important for, among other things, deterring theft and preventing the loss of product and income for the seller, as well as instilling consumer confidence in the integrity of the contents within the container and confidence in the ability of the seller and/or manufacturer to provide and maintain quality goods.

Thus, there is a compelling interest in the development of containers having consumer-preferable design elements, such as recloseability features which are reliable and easy to operate, along with tamper-resistant/evident features that deter tampering and clearly indicate whether tampering has occurred, and which are also reliable without being burdensome to the legitimate consumer. Accordingly, the present invention is directed to a container that meets these needs.

SUMMARY OF THE DISCLOSURE

The present invention meets the aforementioned needs, while also improving upon and solving problems associated with previous containers by providing, among other things, a tamper-resistant container with tamper-evident features (also referred to herein as a "tamper-resistant/evident container") that includes a cover portion defining an outwardly extending peripheral flange and a base portion defining an upper peripheral edge. The upper peripheral edge of the base portion includes, at least in part, an upwardly projecting bead extending substantially about the perimeter of the base portion. This bead is configured and dimensioned to render the outwardly extending flange of the cover portion relatively inaccessible when the container is closed.

The container can further include a hinge joining the outwardly extending flange of the cover portion with the base portion. The hinge preferably includes a frangible portion, which upon severing, facilitates removal of the cover portion from the base portion. In one embodiment, the frangible section of the hinge is delimited at least in part by a pair of parallel score lines or a plurality of spaced apart notches, depressions or nicks associated with the score lines.

In another embodiment, the container includes a skirt which depends downwardly from the upper peripheral edge of the base portion. Preferably, the hinge extends from the lower edge of the skirt to the outwardly extending flange of the cover portion.

These and other aspects of the present invention will become more readily apparent to those having ordinary skill in the art from the following detailed description of the invention taken in conjunction with the drawings.

BRIEF DESCRIPTION OF THE FIGURES

So that those having ordinary skill in the art to which the subject invention pertains will more readily understand how to make and use the tamper-resistant/evident package disclosed herein, embodiments thereof will be described in detail below with reference to the drawings, wherein:

FIG. **1** is a perspective view of a tamper-resistant/evident container constructed in accordance with the present invention in an exemplary circular configuration having a base portion and cover portion connected to each other by a hinge having a frangible section;

FIG. **2** is a side view of the container shown in FIG. **1**, illustrating in particular the hinge having a frangible section or strip, and a suitable location for indicia to be printed thereon;

FIG. **3** is a partial top view of the container shown in FIG. **1**, illustrating in particular the hinge having a frangible section or strip and projection associated therewith that extends

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beyond the upwardly projecting bead associated with the upper peripheral surface of the base portion;

FIG. **4** is a partial cross sectional view of the container shown in FIG. **1**, taken along line **4-4** of FIG. **2**, illustrating in particular the hinge having a frangible section and upper and lower projections or arms extending from the cover portion and base portion of the container;

FIG. **5** is a partial cross sectional view of the container shown in FIG. **1**, taken along line **5-5** of FIG. **8**, illustrating in particular the configuration of the base portion and the structural elements that facilitate a releasable/recloseable engagement with the cover portion;

FIG. **6** is a partial cross sectional view of the container shown in FIG. **1**, taken along line **6-6** of FIG. **8**, illustrating in particular the configuration of the cover portion and the structural elements that facilitate a releasable/recloseable engagement with the base portion;

FIG. **7** is a partial cross sectional view of the container shown in FIG. **1**, taken along line **7-7** of FIG. **3**, illustrating in particular the configuration of the base portion and cover portion when the container is closed and including the structural elements that facilitate a releasable/recloseable engagement between the base and cover portions;

FIG. **8** is an exploded perspective view of the container shown in FIG. **1**, illustrating in particular the operative association between the cover portion, base portion and frangible section;

FIG. **9** is a side view of the container shown in FIG. **1**, in which the frangible section has been removed, illustrating the manner in which the cover portion is separated from the base portion and the upper and lower projections or arms associated with the cover and base portions, respectively;

FIG. **10** is a partial perspective view of the container shown in FIG. **1**, illustrating in particular the manner in which the upwardly projecting bead on the base portion physically prevents access to the outer edge of the cover portion, making it difficult to separate the cover portion from the base portion;

FIG. **11** is a partial perspective view of the container shown in FIG. **1**, illustrating in particular the manner in which the frangible section can be removed from the hinge;

FIG. **12** is a partial perspective view of the container shown in FIG. **1**, illustrating in particular the upper and lower projections formed by removal of the frangible section and the manner in which the upper and lower projections facilitate separation of the cover portion from the base portion;

FIG. **13** is a side view of a two blade knife that can be used to form the frangible section of a container constructed in accordance with the present invention;

FIG. **14** is a front plan view of a first blade of the two blade knife of FIG. **13**, illustrating the position of the nicks and cutting surfaces that can form a first score line of a frangible section of a container constructed in accordance with the present invention;

FIG. **15** is a front plan view of a second blade of the two blade knife of FIG. **13**, illustrating the position of the nicks, cutting surfaces and offset that can form a second score line of a frangible section of a container constructed in accordance with the present invention;

FIG. **16** is perspective view of a tamper-resistant/evident container constructed in accordance with the present invention in an exemplary rectangular configuration having a base portion and cover portion connected to each other by a hinge having a frangible section;

FIG. **17** is a side view of the container shown in FIG. **16**, illustrating in particular the hinge having a frangible section or strip, patterned sections on opposing ends thereof, and tabs defined by the frangible section score line;

FIG. **18** is a partial cross sectional view of the container shown in FIG. **16**, taken along line **18-18** of FIG. **17**, illustrating in particular the configuration of the hinge, upper and lower projections and frangible section;

FIG. **19** is a partial cross sectional view of the container shown in FIG. **16**, taken along line **19-19** of FIG. **17**, illustrating in particular the configuration of the hinge, upper and lower projections, frangible section, and score line defining a tab associated with the lower projection;

FIG. **20** is a partial cross sectional view of the container shown in FIG. **16**, illustrating in particular the manner in which the cover portion is closed on the base portion;

FIG. **21** is a partial perspective view of the container shown in FIG. **16**, illustrating in particular the manner in which the frangible section is removed from the hinge;

FIGS. **22-23** are partial perspective views of the container shown in FIG. **1**, illustrating in particular the manner in which the separation of the cover portion from the base portion is facilitated by clasping the patterned section disposed on the upper projection or arm associated with the cover portion which is formed upon removal of the frangible section;

FIG. **24** is a perspective view of another embodiment of a tamper-resistant/evident container constructed in accordance with the present invention having an additional engagement mechanism and support structure for providing enhanced structural integrity and further securing the base portion and cover portion, among other things; and

FIG. **25** is another perspective view of the tamper-resistant/evident container shown in FIG. **24**.

FIG. **26** is a perspective view of another embodiment of a tamper-resistant/evident container similar to that depicted in FIGS. **24-25**, but including a further variation of a pattern of reinforcing ribs.

FIGS. **27-28** are perspective views of another embodiment of a tamper-resistant/evident container made in accordance with the invention. FIG. **27** is a view of the interior of such an open container, and FIG. **28** is a view of the exterior of the container.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The advantages of a tamper-resistant/evident container constructed in accordance with the present invention will become more readily apparent to those having ordinary skill in the art from the following detailed description of certain preferred and exemplary embodiments taken in conjunction with the drawings which set forth representative embodiments thereof, but are not intended to limit the scope of the present invention.

Unless otherwise apparent, or stated, directional references, such as "right," "left," "upper," "lower," "outward," "inward," etc., are intended to be relative to the orientation of a particular embodiment of the invention as shown in the first numbered view of that embodiment. In addition, a given reference numeral indicates the same or similar structure when it appears in different figures and like reference numerals identify similar structural elements and/or features of the subject invention.

In accordance with an exemplary embodiment of the subject invention illustrated in FIGS. **1** and **2**, the container **10** includes a generally circular cover portion **12** and a generally bowl-shaped base portion **14** joined together by a hinge **16**. Hinge **16** includes a tamper-evident frangible section or pull strip **18**, which, upon its removal, severs the integral connection between cover portion **12** and base portion **14**.

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In use, container **10** would be filled with the contents for which consumer protection is desired and cover portion **12** would be engaged with base portion **14**. In accordance with the present invention, cover portion **12** and base portion **14** may include structural features that facilitate the formation of a non-permanent engagement between cover portion **12** to base portion **14**.

In this embodiment, the non-permanent engagement between cover portion **12** and base portion **14** is facilitated by, among other things, a peripheral locking shoulder **20** and an radially inward circumferential groove **22** formed below an outwardly extending peripheral flange **24** on cover portion **12**, which can be seated within a corresponding mating circumferential recess **26** on base portion **14**. Circumferential recess **26** on base portion **14** is formed below an upper peripheral rim **28** and includes a radially inward projecting rib **30** and a radially inwardly extending rim **32**.

When cover portion **12** is closed on base portion **14**, projecting rib **30** mates with circumferential groove **22** on cover portion **12** and extending rim **32** mates with locking shoulder **20** on cover portion **12**. In addition, outwardly extending peripheral flange **24** on cover portion **12** abuts upper peripheral rim **28** on base portion **14**.

Container **10** incorporates features which are intended to prevent and deter opening container **10** without first removing frangible strip **18** from hinge **16**. In this embodiment, container **10** includes an upwardly projecting bead **34** on base portion **14** that extends substantially about the perimeter of peripheral rim **28** and is positioned to surround the outer edge of flange **24** of cover portion **12** when container **10** is closed. The position and upward extension of bead **34** is configured to hinder the relatively easy method of removing a cover from conventional containers that may resemble or have characteristics in common with container **10**. As can be best viewed in FIG. **10**, bead **34** physically blocks access to the edge of peripheral flange **24** on cover portion **12** from fingers or any other object that might normally be used for leverage to pry cover portion **12** from base portion **14**.

Hinge **16** includes an upper outwardly projecting arm **36** connected to base portion **14**, and a similar lower outwardly projecting arm **38**, which is connected to cover portion **12**. In particular, upper arm **36** is connected with a skirt **40** that projects downward from upper peripheral rim **28** and radially outward with respect to base portion **14**. Lower arm **38** is connected with the peripheral flange **24**. Upper and lower arms **36** and **38** are joined together by a common attachment to frangible strip **18** to form hinge **16**.

Preferably, frangible strip **18** is delimited at least in part by a pair of parallel score lines **42***a*, **42***b* or areas that have been weakened or stressed during the forming process. Frangible strip **18** may be further delimited by a plurality of spaced apart areas in which material has been removed associated with the score lines, by a plurality of spaced apart depressions associated with the score lines, or by perforation lines. The width and depth of the areas and/or depressions can vary to control the tear resistance offered by frangible strip **18**. Alternatively, the integral hinge **16** could be formed with a single score line or perforation line, rather than a pair of score lines. In this instance, the single score line could be severed to create a pair of projections which would be used to open the container.

In this embodiment, strip **18** includes laterally opposed grasping tabs **44***a* and **44***b* to provide a convenient location for gripping strip **18**. Preferably, instructional indicia is imprinted on strip **18** to facilitate its removal from hinge **16** and/or consumer understanding of the significance of its removal as it relates to product tampering. Strip **18** and/or the instructional indicia preferably thereon can be colored or embossed, or otherwise fabricated to direct attention thereto.

As can be best viewed in FIGS. **11** and **12**, detaching frangible strip **18** from hinge **16** of container **10** leaves behind upper and lower arms **36** and **38** on cover portion **12** and base portion **14**, respectively. Upper and lower arms **36** and **38** extend outwardly from container **10** and can be used to facilitate removal of cover portion **12** from base portion **14**, once strip **18** has been removed, by applying sufficient opposing force to disengage locking shoulder **20** from within circumferential recess **26**.

The presence of bead **34** prevents unauthorized access to the contents of container **10** by making it difficult to pull cover portion **12** from base portion **14**. If access to container **10** is desired, strip **18** must be removed so that upper and lower arms **36** and **38** are free to be used to leverage cover portion **12** from base portion **14**. Cover portion **12** may be replaced on base portion **14** after container **10** is opened. Strip **18**, however, once removed, is not replaceable. Thus, removal of strip **18** functions as a clear indicator of possible tampering, in that if strip **18** is partially or fully removed prior to purchase, it is readily apparent to a consumer that someone may have already gained access to the contents of container **10**.

FIGS. **13-15** illustrate an exemplary configuration for a double scoring blade having blades **46***a*, **46***b*, which can be used in a punch press system or the like to form score lines **42***a*, **42***b* in accordance with one embodiment of the present invention. Various dimensions of blades **46***a*, **46***b* are also provided herein as a non-limiting example.

The lateral separation L1 between blades **46***a*, **46***b* is in this embodiment about 0.36 inches. The length L2 of blades **46***a*, **46***b* is about 2.25 inches. Blades **46***a*, **46***b* include an offset recessed portion **48** with a series of substantially similar nicks **50** cut therein between cutting edges **52**. The width L3 of cutting edges **52** is preferably 0.36 inches. Preferably, the offset L4 between recessed portion **48** and cutting edges **52** is approximately 0.001 inches.

In this embodiment, blade **46***a* includes seven (7) nicks **50** while blade **46***b* includes eight (8) nicks **50**. The nicks **50** on blade **46***a* are offset with respect to the nicks **50** on blade **46***b*, which results in a desirable zipper-like effect when removing strip **18**. Preferably, nicks **50** are triangular shaped, about 0.010 inches deep and about 0.020 inches wide, and define an approximately 90 degree angle at its deepest convergence point **54**. The length L5 between nicks **50**, as measured between the respective convergence points **54** of adjacent nicks **50**, is approximately 0.252 inches. The length L6 between the respective convergence points **54** of adjacent offset nicks **50** on blade **46***b* is about 0.126 inches. The length L7 of blades **46***a*, **46***b* is about 0.1 inches, and each blade edge defines an angle of about 45 degrees.

It should be readily understood that a container constructed in accordance with the present invention, which is preferably a plastic container used for carrying edible items, can be manufactured in a variety of shapes and sizes, and can be formed from resins or plastic materials such as polyethylene, polypropylene, polyvinyl chloride or polyethylene terephthalate ("PETE"), as well as other suitable materials or combinations thereof. The forming process can also vary to include methods such as thermo-forming, injection molding or blow molding. The container can be transparent or translucent, and may be colored in either instance. Also, vents can be provided in the container to promote airflow therethrough, if appropriate based on the intended contents of the container.

Preferably, container **10** is formed from a roll of PETE subjected to a vacuum and pressure mold with plug assist. During manufacture, blades **46***a*, **46***b* of FIGS. **13-15** are

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preferably applied to a newly formed container **10** to impart score lines **42***a*, **42***b* thereon. Cutting edges **52** cut substantially through the material used to make container **10**. Preferably, the configuration of blades **46***a*, **46***b* are designed so that a desirable amount of force is necessary to remove strip **18**, as determined by consumer trials for example. Those skilled in the art will readily appreciate that the configuration of blades **46***a*, **46***b* can be adjusted for a variety of reasons, and the above dimensions are exemplary of one embodiment of the present invention.

For example, various other methods can be employed to form frangible strip **18** of hinge **16**. For example, score lines, nicks or penetrations can be created with the molding tool itself during the forming step. Alternatively, a high die forming process can be employed where, after the forming step, the container is indexed to a trim station, where one or more knives liberate the container and create the score lines or perforations. Also, an intermittent cutter can be employed between the forming step or the trim step, a progressive punch and die operation can be employed, or a numerically controlled laser can be employed to create the nicks. It is also envisioned that electro-mechanical, ultra-sonic or hydrodynamic systems can be employed in the forming process.

Container **10** could also be formed with locking arrangements known in the art other than the tamper-resistant/evident closure of the subject invention, such as traditional male and female locking features.

Referring to FIGS. **16-23**, there is illustrated another tamper-resistant/evident container constructed in accordance with a preferred embodiment of the subject invention and designated generally by reference numeral **110**. Container **110** is similar to container **10** described above except that container **110** is rectangular in configuration rather than circular. Container **110** thus includes a base portion **114** and a cover portion **112** joined together by an integrally formed hinge **116** that defines a tamper-evident frangible pull strip **118**, which must be removed before cover portion **112** can be readily removed from base portion **114**.

Container **110** includes embossed or raised patterned sections **156***a* and **156***b* on opposing tabs **144***a* and **144***b* of strip **118**, respectively, to facilitate removal of strip **118**. Patterned sections **158***a* and **158***b* are also disposed on opposing sides of upper arm **136** to facilitate separation of cover portion **112** from base portion **114**. Instructional indicia can be imprinted on upper arm **136** between patterned sections **158***a* and **158***b*.

In this embodiment, score line **142***b* is situated on hinge **116** to define two tabs **160***a* and **160***b* which are connected with lower arm **138**. Tabs **160***a*, **160***b* remain in place on hinge **116** until strip **118** is removed, as can be best viewed in FIGS. **21-23**. Tabs **160***a*, **160***b* extend from lower arm **138** to further facilitate gripping lower arm **138** and separation of cover portion **112** from base portion **114**.

FIGS. **24-26** illustrate other tamper-resistant/evident containers constructed in accordance with a preferred embodiment of the subject invention and designated generally by reference numeral **210**. Container **210** is rectangular in shape, but may be formed in other shapes, and has similar features to containers **10** and **110** described above. Container **210** includes, among other things, a base portion **214** and a cover portion **212** joined together by an integrally formed hinge **216** that defines a tamper-evident frangible pull strip **218**, which must be removed before cover portion **212** can be readily removed from base portion **214**. An upwardly projecting bead **234** is disposed on peripheral rim **222** of base portion **214**. Bead **234** is positioned to substantially surround the outer edge of flange **224** of cover portion **212** when container **210** is closed, thus physically blocking access by fingers or any other object that could be applied to the edge of peripheral flange **224** and rim **222** for leverage while attempting to pry cover portion **212** from base portion **214**.

In the embodiments of FIGS. **24-25** a plurality of supporting ribs **262***a-f*, each extending from about the enclosed bottom of base portion **214** to about extending rim **232** are positioned at the four corners (ribs **262***a-d*, respectively) of base portion **214** and the midpoints on hinge side wall **264** (rib **262***e*) and opposing side wall **266** (rib **262***f*) of base portion **214** to provide enhanced structural integrity. Supporting ribs **262***a-f* generally consist of multiple elongated, arcuate portions, each having a curved latitudinal cross-sectional profile, positioned adjacently with respect to one another.

In the embodiment disclosed in FIG. **26**, a multiplicity of ribs **262** are provided distributed about the bottom of base portion **214** as well as about the peripheral wall **214***a* of base portion **214**. Applicants have discovered that the disclosed arrangement of ribs **262** about base portion **214** provides particularly advantageous performance. Over two dozen containers were tested having various rib patterns. However, the container disclosed in FIG. **26** exhibited the most superior performance. By way of illustration only, the container depicted in FIGS. **24-25**, without the rib pattern of the container in FIG. **26** may be made, for example, from a thermoformable material such as polyethylene terephthalate sheet in a thickness range from about 12 mils to about 40 mils, and preferably from about 14 mils to about 25 mils, depending on the size of the container. For example, it may be desirable to form a smaller container from a thinner gage material than a larger container.

It has been discovered that the container depicted in FIG. **26** can be made from a substantially thinner gage of sheet material than that depicted in FIG. **25**. A 32 ounce container as depicted in FIG. **25** made of polyethylene terephtalate, for example, can be made from a 25 mil sheet. In contrast, an even stronger container as depicted in FIG. **26** can be made from a 22 mil sheet. It is further believed that such a container could be made of a 20 mil sheet of polyethylene terephtalate. This accordingly may result in a 20% material savings, which can result in significant cost reduction for making a container of a given size.

As further disclosed in these embodiments, a circumferential engagement sealing interface between cover portion **212** and base portion **214** is defined in part by a plurality of outwardly bowed arcuate portions **290**. As depicted, outwardly bowed arcuate portions **290** are connected by rounded corner portions **292**.

Container **210** may also include an additional independent, engaging mechanism that provides even further structural integrity, enhances security by urging flange **224** to remain in position against peripheral rim **222**, and facilitates the reattachment of cover portion **212** to base portion **214**, among other things. As depicted in FIGS. **24** and **25**, for example, male engaging member **268** projects upwardly from supporting rib **262***f* on side wall **266** which is received by a correspondingly sized female engaging member **270** defined on cover portion **212**.

Thus, when container **210** is closed, male engaging member **268** on base portion **214** and female engaging member **270** on cover portion **212** form an engagement which further secures base portion **214** to cover portion **212**. In addition to urging flange **224** against rim **222**, the aforementioned features increase the amount of force that would be necessary to pry cover portion **212** from base portion **214** in an unauthorized manner (i.e., without removal of strip **218**).

Also, the aforementioned engagement facilitates the reattachment of cover portion **212** with base portion **214** after

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container **210** is opened legitimately by a consumer. Container **210** can be reclosed after purchase by urging cover portion **212** onto base portion **214**, and in particular, this can be accomplished by pressing on the corners of cover portion **212**, as indicated by instructional indicia printed in the outer corner areas of cover portion **212** in this embodiment. In reclosing container **210**, the initial engagement of male member **268** with female member **270** facilitates the subsequent step of applying pressure on the corners of cover portion **212**, making it easier to reattach cover portion **212** to base portion **214**. It should be readily apparent to those skilled in the art that other engagement mechanisms, devices, engagements and container designs, and combinations thereof, could be incorporated in any embodiment in accordance with the present invention.

FIGS. **27-28** illustrate another tamper-resistant/evident container constructed in accordance with a preferred embodiment of the subject invention and designated generally by reference numeral **310**. Container **310** is generally round in shape, but may be formed in other shapes, and has similar features to containers **10**, **110** and **210** described above. Container **310** includes, among other things, a base portion **314** and a cover portion **312** joined together by an integrally formed hinge **316** that defines a tamper-evident frangible pull strip **318**, which must be removed before cover portion **312** can be readily removed from base portion **314**. An upwardly projecting bead **334** is disposed on peripheral rim **322** of base portion **314**. Bead **334** is positioned to substantially surround the outer edge of flange **324** of cover portion **312** when container **310** is closed, thus physically blocking access by fingers or any other object that could be applied to the edge of peripheral flange **324** and rim **322** for leverage while attempting to pry cover portion **312** from base portion **314**.

In this embodiment, a plurality of supporting gussets **362***a-h*, each extending from about the enclosed bottom of base portion **314** to about extending rim **332** are disposed proximate the eight corners of base portion **314** to provide enhanced structural integrity. Gussets **362** also define interior spaces **363** that can be used to facilitate fingers of a user to remove an object (such as a pie, for example) from container **310**. Container **310** can also be provided with lower and upper vents **364**, **365** respectively, disposed circumferentially proximate the top and bottom of the container **310** to facilitate defrosting or heating of the contents of container **310**. In the case of a frozen pie, for example, warm air can be drawn in through upper vents **365**. As air enters through upper vent **365**, it is cooled, and sinks out through lower vent **364**. If desired, vents **364** can be positioned proximate the lower portions of gussets **362**, whereby each gusset can act as an air duct to facilitate transport of air through the container. It will be appreciated that vents **364**, **365** can also operate to cool the contents of container **310**, whereby relatively cool ambient air can be drawn in through lower ducts **364** and out of upper ducts **365**, whereby the air is heated by the contents of the container to drive the flow. It will be appreciated that the location of vents **364**, **365** can be varied, as desired. As depicted, vents **365** are disposed in welled recesses that form ribs **372** in cover portion **312** of container **310**.

It was discovered through experimentation that it is desirable to have gussets **362** extend as close to the bottom **317** of base **314** as possible. This spreads out the load of the contents of container **310** over a larger area of containers **310** when containers **310** are stacked. It has also been discovered that it is desirable to have gussets **362** extend up to flange **375** to prevent flexure of container **310** to prevent flange **324** from being separated from bead **334**. These design features significantly help make container **310** more tamper resistant by making container **310** more resistant to flexure.

As depicted, bottom **317** of base **314** is generally octagonal, and is adapted and configured to nest within the octagonal recess **312***a* formed in cover portion **312**. The octagonal features permit directional stacking which can facilitate the alignment, transport, display and merchandizing of goods. It will be understood that other shapes besides octagonal can be used, as understood by those of skill in the art.

As depicted in FIG. **27**, gussets **362** are adapted and configured so that gussets **362** can act as guides for guiding container between parallel rails (the locations of which being represented by axes X) of a guiding device to move, stack, fill and/or close containers **310**, if desired.

As further disclosed in this embodiment, a circumferential engagement sealing interface between cover portion **312** and base portion **314** is defined in part by a rounded segment **390**, a relatively straight segment **392** and two rounded corner portions **394**. The shape of interface is adapted and configured to provide substantial resistance to ensure container **310** is relatively tamper resistant.

Container **310** also includes an additional independent, engaging mechanism that provides even further structural integrity, enhances security by urging flange **324** to remain in position against peripheral rim **322**, and facilitates the reattachment of cover portion **312** to base portion **314**, among other things. A plurality of male engaging members **368** project upwardly from base portion **314** disposed circumferentially about container **310**. Male engaging members **368** actually cooperate to urge flange **324** against peripheral rim **322**. This advantageously helps prevent tampering with the container. Members **368** also facilitate in guiding and aligning cover portion **312** with base portion to facilitate the reclosing of container **310** after it has been opened.

It will be understood that the cover portions **12**, **112**, **212** and **312** and base portions **14**, **114**, **214** and **314** can be made of different colored materials. For example, all or a part of the cover portions and/or base portions can be transparent while the rest of the container can be translucent or opaque. In accordance with one embodiment, two-tone sheeting is used (such as PET) wherein a dark opaque material is mated adjacently to a transparent segment. The separation between the two sections can be routed in the machine direction of the thermoforming machine used to make the containers. The transition area from transparent to opaque can be aligned with the tamper evident strip of the container so that the cover portion can be a different color than (or transparent or translucent compared to) the base portion.

Although exemplary and preferred aspects and embodiments of the present invention and forming methods have been described with a full set of features, it is to be understood that the disclosed container and method of manufacture may be practiced successfully without the incorporation of each of those features. The scope of the present invention is not limited only to the tamper-resistant/evident containers and methods of manufacture disclosed herein. Thus, it is to be understood that modifications and variations may be utilized without departure from the spirit and scope of the invention and method disclosed herein, as those skilled in the art will readily understand. Such modifications and variations are considered to be within the purview and scope of the appended claims and their equivalents.

What is claimed:

1. A method of thermoforming a tamper-resistant/evident container comprising:

a) providing a sheet of plastic material that is at least partially transparent;

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b) forming a cover portion from a portion of the sheet of plastic material, wherein the cover portion includes an outwardly extending peripheral flange;

c) forming a base portion from a portion of the sheet including an upper peripheral rim and a skirt depending downwardly therefrom, the upper peripheral rim extending substantially about the perimeter of the container and configured to substantially surround the outwardly extending peripheral flange of the cover portion to hinder access to the container when the container is closed;

d) forming a hinge from a portion of the sheet joining the cover portion with the base portion such that the vertical height of the hinge correlates with the height oft the skirt that depends downwardly from the base portion when the height of the skirt is substantially uniform around the perimeter of the container; and

e) forming a frangible portion in the hinge, the frangible portion defined by forming at least one line of weakness in the hinge, and wherein the frangible portion is formed in a manner that when the frangible portion is severed, at least one projection is formed extending from at least one of the base portion or cover portion for facilitating removal of the cover portion from the base portion to open the container, and wherein the cover portion, base portion, hinge and frangible portion are unitarily formed from the sheet of plastic material.

2. The method of claim **1**, wherein the container is formed from a material including at least one of polyethylene terephthalate, polyethylene, polypropylene and polyvinyl chloride.

3. The method of claim **1**, wherein the container is formed from a roll of polyethylene terephthalate subjected to a vacuum and pressure mold with plug assist.

4. The method of claim **1**, wherein the frangible portion is formed when the cover portion and base portion are formed.

5. The method of claim **1**, wherein the frangible portion is formed after the cover portion and base portion are formed.

6. The method of claim **5**, wherein the container is indexed to a station where one or more knives liberate the container and create the frangible portion.

7. The method of claim **1**, further comprising forming vents in the container to promote airflow therethrough.

8. The method of claim **1**, further comprising forming a first portion of a latch on a periphery of the base portion to project toward the cover portion when the container is closed.

9. The method of claim **8**, further comprising forming a second portion of the latch on a periphery of the cover portion to correspond to the position of the first portion of the latch when the container is closed, such that the first and second portions of the latch engage to form a non-permanent engagement when the container is closed.

10. The method of claim **1**, wherein the sheet of plastic material is two-tone sheeting having a first non-transparent segment mated adjacently to a second segment that is transparent, wherein the two segments meet at a transition area.

11. The method of claim **10**, wherein the non-transparent segment includes opaque material.

12. The method of claim **10**, wherein the container is formed by routing the sheet of plastic material through a thermoforming machine, wherein the transition area is aligned with a machine direction of the thermoforming machine.

13. The method of claim **12**, wherein the transition area from transparent to non-transparent material is aligned with the frangible portion of the container so that the cover portion is made from different material from the base portion.

14. The method of claim **1**, wherein the sheet of plastic material is two-tone sheeting having a first non-translucent segment adjacent to a second segment that is translucent, wherein the two segments meet at a transition area.

15. A method of thermoforming a tamper-resistant/evident container from a sheet of plastic material comprising:

providing a container formed from a sheet of plastic material that is at least partially transparent, the container including:

i) a cover portion formed at least in part from the sheet of plastic material, wherein the cover portion includes an outwardly extending peripheral flange;

ii) a base portion formed at least in part from the sheet of plastic material, the base portion including an upper peripheral rim and a skirt depending downwardly therefrom, the rim extending substantially about the perimeter of the container and configured to substantially surround the outwardly extending peripheral flange of the cover portion to hinder access to the container when the container is closed;

iii) a hinge joining the cover portion with the base portion such that the vertical height of the hinge correlates with and is substantially the same as the height of the skirt that depends downwardly from the base portion when the height of the skirt is substantially uniform around the perimeter of the container; and

iv) forming a frangible tear strip in the hinge defined by forming a plurality of lines of weakness, wherein the tear strip is formed in a manner that when the tear strip is severed, at least one projection is provided for facilitating removal of the cover portion from the base portion to open the container, and wherein the cover portion, base portion, hinge and tear strip are unitarily formed from the sheet of plastic material.

16. The method of claim **1**, wherein the frangible portion of the hinge is defined by forming a single line of weakness in the hinge.

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U.S. PATENT: *9,527,640*
ISSUE DATE: *December 27, 2016*

By Authority of the
Under Secretary of Commerce for Intellectual Property
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SYLVIA HOLLEY
Certifying Officer

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(12) **United States Patent**
Sellari et al.

(10) **Patent No.: US 9,527,640 B2**
(45) **Date of Patent: Dec. 27, 2016**

(54) **METHODS OF MANUFACTURING TAMPER-RESISTANT AND TAMPER EVIDENT CONTAINERS**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 347 days.

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B65D 55/02 (2006.01)
(Continued)

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CPC ***B65D 55/024*** (2013.01); ***B29D 22/003*** (2013.01); ***B65D 41/32*** (2013.01); ***B65D 43/0254*** (2013.01);
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(58) **Field of Classification Search**
CPC B29C 51/00; B29C 51/10; B29C 51/265; B29C 51/266
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

646,563 A 4/1900 Bontrager et al.
2,798,631 A 7/1957 Engel
(Continued)

FOREIGN PATENT DOCUMENTS

CA 2074836 A1 6/1992
DE 78 16 353 U1 11/1978
(Continued)

OTHER PUBLICATIONS

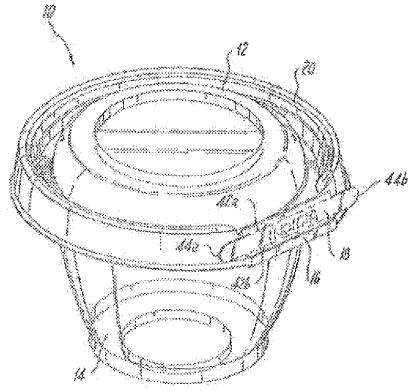
Transmittal of the International Search Report for PCT/US2007/15739 together with the Written Opinion of the International Searching Authority (ISA) dated Sep. 10, 2008 (7 pages).
(Continued)

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(57) **ABSTRACT**

A method of thermoforming a tamper-resistant/tamper-evident container includes forming a cover portion that includes an outwardly extending peripheral flange, forming a base portion including an upper peripheral rim and a skirt depending downwardly therefrom. The upper peripheral rim is configured to communicate with at least a portion of the outwardly extending peripheral flange of the cover portion to hinder access to the container when the container is closed. Forming a hinge joining the cover portion and the base portion such that the vertical height of the hinge correlates with the height of the skirt that depends downwardly from the base portion when the height of the skirt is substantially uniform around the perimeter of the container and forming at least one line of weakness in the hinge, the line of weakness is severed to facilitate removal of the cover portion from the base portion to open the container.

6 Claims, 13 Drawing Sheets



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Related U.S. Application Data

division of application No. 11/483,900, filed on Jul. 10, 2006, now abandoned, which is a continuation-in-part of application No. 11/065,681, filed on Feb. 24, 2005, now Pat. No. 7,073,680, which is a continuation-in-part of application No. 10/895,687, filed on Jul. 21, 2004, now Pat. No. 7,118,003.

(60) Provisional application No. 60/489,093, filed on Jul. 21, 2003.

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(56) **References Cited**

U.S. PATENT DOCUMENTS

2,915,214	A	12/1959	Frankel
3,164,478	A	1/1965	Bostrom
3,389,825	A	6/1968	Whiteford
3,511,433	A	5/1970	Andrews
3,536,251	A	10/1970	Edwards
3,669,606	A	6/1972	Brown
3,767,110	A	10/1973	Congleton
4,224,275	A	9/1980	Sauer
4,433,793	A	2/1984	Ingemann
4,535,889	A	8/1985	Terauds
4,555,043	A	11/1985	Bernhardt
4,576,330	A	3/1986	Schepp
4,576,370	A	3/1986	Jackson
4,742,935	A	5/1988	Schellenberg
4,771,934	A	9/1988	Kalmanides
4,886,204	A	12/1989	Kalmanides
4,986,438	A	1/1991	Borst
5,027,969	A	7/1991	Lesquir
5,040,695	A	8/1991	Adams et al.
5,046,659	A	9/1991	Warburton
5,052,574	A	10/1991	McKinnon et al.
5,092,479	A	3/1992	Wells
D328,705	S	8/1992	Krupa
5,219,087	A	6/1993	Christensson
5,287,959	A	2/1994	Hansen et al.
5,303,839	A	4/1994	Blumenschein
D352,000	S	11/1994	Hansen et al.
5,398,836	A	3/1995	Luch et al.
5,429,833	A	7/1995	Wyslotsky
5,507,406	A	4/1996	Urciuoli et al.
5,573,134	A	11/1996	Chenault et al.
5,584,408	A	12/1996	Orkisz
5,685,444	A	11/1997	Valley
5,758,791	A	6/1998	Mangla
5,860,530	A	1/1999	Simmons et al.
5,860,549	A	1/1999	Allers et al.
5,897,011	A	4/1999	Brilliant et al.
5,931,332	A	8/1999	Mygatt et al.
5,938,068	A	8/1999	Atkins et al.
5,979,687	A	11/1999	Hayes et al.
5,985,079	A	11/1999	Ellison
6,095,324	A	8/2000	Mullin
6,196,408	B1	3/2001	Setty et al.
6,220,529	B1	4/2001	Xu
6,517,242	B1	2/2003	Buchman
6,530,870	B2	3/2003	Buchman et al.
6,572,909	B1	6/2003	Bagwell et al.
6,609,623	B2	8/2003	Chou
6,625,955	B2	9/2003	Aylward
6,715,632	B2	4/2004	Baker
7,073,680	B2	7/2006	Boback et al.
8,240,505	B1	8/2012	Chen
8,261,933	B2	9/2012	Kidd et al.
8,640,914	B2	2/2014	Meyer et al.
8,684,212	B2	4/2014	Stone et al.
8,795,580	B2	8/2014	Sellari et al.
8,925,755	B2	1/2015	Lesquir et al.
9,242,769	B2	1/2016	Gartz et al.
9,278,786	B2	3/2016	Vovan et al.
2003/0051350	A1	3/2003	Harrold
2003/0052125	A1	3/2003	Hayes et al.
2003/0052133	A1	3/2003	Hayes et al.
2005/0017007	A1	1/2005	Sellari et al.
2006/0289541	A1	12/2006	Boback et al.
2007/0045317	A1	3/2007	Rosender et al.
2009/0120937	A1	5/2009	Vovan
2009/0134180	A1	5/2009	Kidd et al.
2009/0206082	A1	8/2009	Vovan
2010/0072217	A1	3/2010	Parikh et al.
2010/0276422	A1	11/2010	Vovan et al.
2011/0000929	A1	1/2011	Brown et al.
2012/0005994	A1	1/2012	Tidball et al.
2012/0103990	A1	5/2012	McCumber
2013/0020325	A1	1/2013	Stone et al.
2013/0160406	A1	6/2013	Johnston
2013/0320015	A1	12/2013	Dyble et al.
2014/0041343	A1	2/2014	Corbett et al.
2014/0069922	A1	3/2014	Boback et al.
2014/0138383	A1	5/2014	Lisowy et al.
2014/0367383	A1	12/2014	Sellari et al.
2015/0028033	A1	1/2015	Samuel
2015/0060455	A1	3/2015	Chou
2015/0083725	A1	3/2015	Sinha et al.
2015/0225139	A1	8/2015	Baker
2015/0266611	A1	9/2015	Dow et al.
2015/0298853	A1	10/2015	Chen
2015/0329249	A1	11/2015	Gingras et al.
2015/0367987	A1	12/2015	Clark et al.
2016/0016707	A1	1/2016	Sellari et al.
2016/0023815	A1	1/2016	Siskindovich et al.

FOREIGN PATENT DOCUMENTS

DE	4418935	A1	12/1995
DE	1999-083197		8/1999
EP	0 752 374	A1	1/1997
GB	2219284	A	12/1989
GB	2257118	A	1/1993
JP	1-114536	U	8/1989
JP	2-144531	U	12/1990
JP	7-267275	A	10/1995
JP	2002012283		1/2002
WO	WO-9513222	A2	5/1995
WO	WO-2005009857	A1	2/2005

OTHER PUBLICATIONS

Search Report and Written Opinion for PCT/2004/023473 dated Nov. 15, 2004.

European Communication for EP 04 778821.1 dated May 12, 2006.

European Communication for EP 04 778821.1 dated Jan. 25, 2007.

European Communication for EP 06003237.2 dated Feb. 13, 2008.

Extended European Search Report for EP 06003237.2 dated Jun. 7, 2006.

Russian Office Action dated Jun. 17, 2008 for RU 2006105207/12 (005627).

Russian Office Action dated Mar. 11, 2010 for RU 2006105515/12 (005971).

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(56) **References Cited**

OTHER PUBLICATIONS

Translation of Ukrainian Office Action dated Oct. 5, 2009 for UA 2006 01701/I.
Translation of Ukrainian Office Action dated Sep. 3, 2008 for UA 2006 00913/M.
Canadian Office Action dated Jan. 30, 2013 for CA 2,533,236.
Canadian Office Action dated Aug. 20, 2010 for CA 2,533,046.
Canadian Office Action dated Jul. 14, 2011 for CA 2,533,046.
Canadian Protest dated Apr. 11, 2012 for CA 2,533,046 submitted by Bereskin & Parr LLP.
Canadian Office Action dated Oct. 31, 2012 for CA 2,533,046.
Canadian Protest dated Aug. 19, 2013 for CA 2,533,046 submitted by Bereskin & Parr LLP.
Chinese Office Action dated Jun. 27, 2008 for CN 200480024304.6.
Translation of Chinese Office Action for CN200610057668.5 dated Mar. 2009.
EasyPak, LLC's Motion for Leave to File Amended Invalidity Contentions dated Nov. 12, 2013.
Memo in Support of EasyPak, LLC's Motion for Leave to File Amended Invalidity Contentions dated Nov. 12, 2013.
Defendant's Reply in Support of Its Motion to File Amended Invalidity Contentions dated Dec. 6, 2013.
Plaintiff's Opposition to EasyPak's Motion for Leave to File Amended Invalidity Contentions dated Nov. 26, 2013.
Canadian Patent Ofice Office Action dated Feb. 5, 2014 issued in Canadian Patent Application No. 2,533,046.
CanadianProtest dated Oct. 7, 2014 filed by Bereskin & Parr in Canadian Application No. 2,533,046.
Canadian Office Action dated Apr. 15, 2015 issued in Canadian Patent application No. 2,533,046.
Canadian Office Action dated Apr. 1, 2016 issued in Canadian Application No. 2,533,046.

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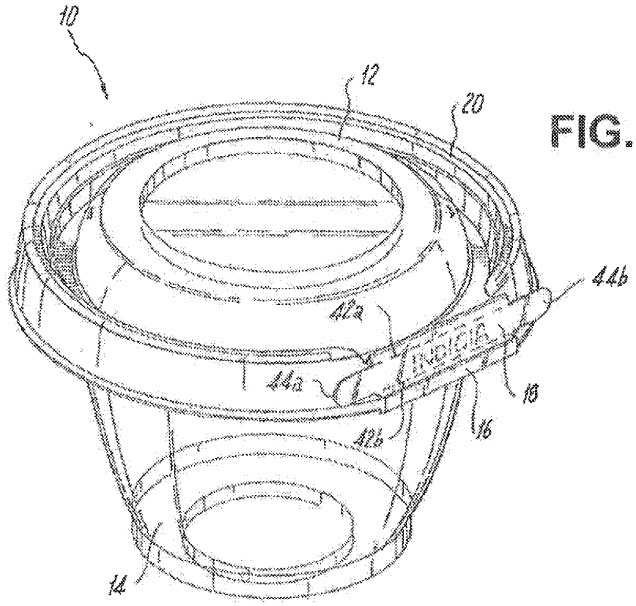


FIG. 1

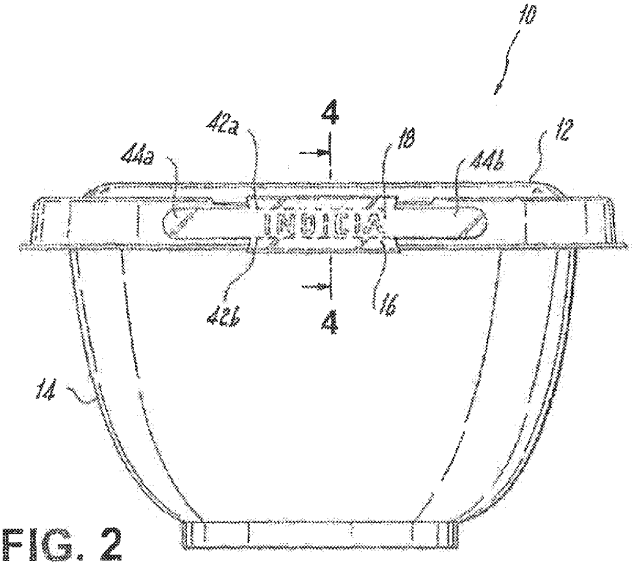


FIG. 2

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FIG. 3

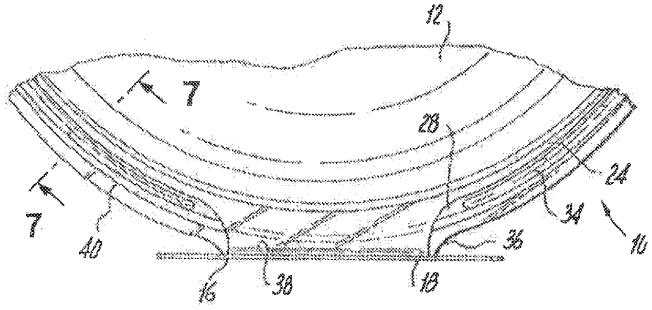
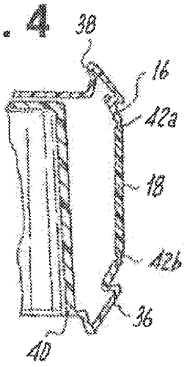


FIG. 4



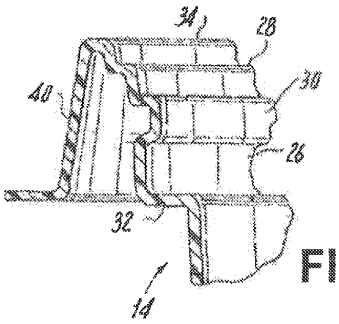


FIG. 5

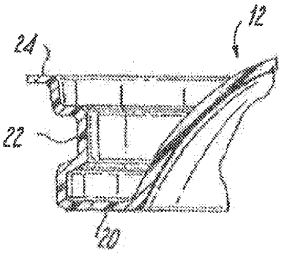


FIG. 6

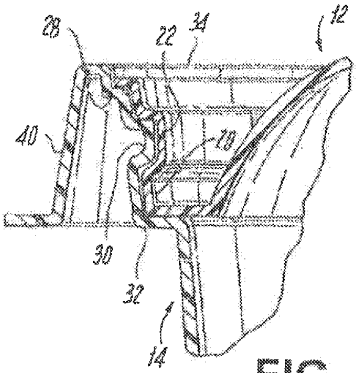


FIG. 7

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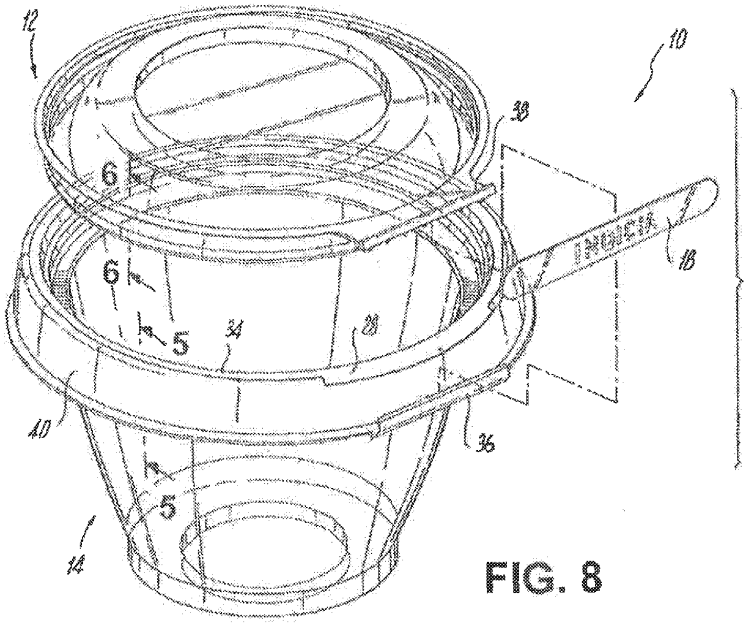


FIG. 8

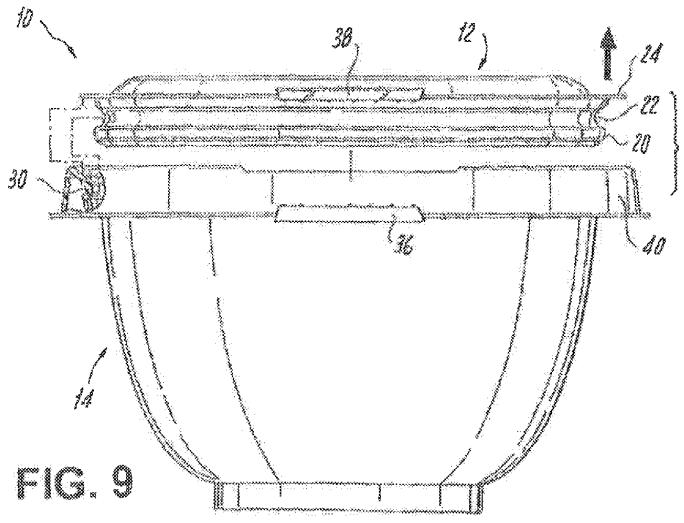


FIG. 9

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FIG. 10

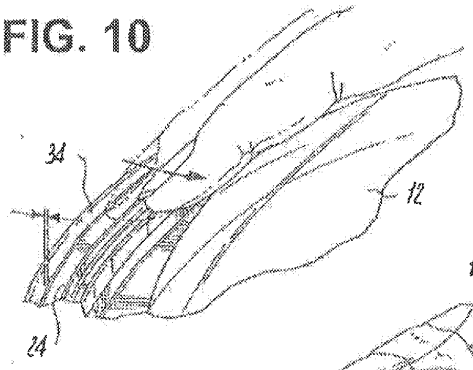
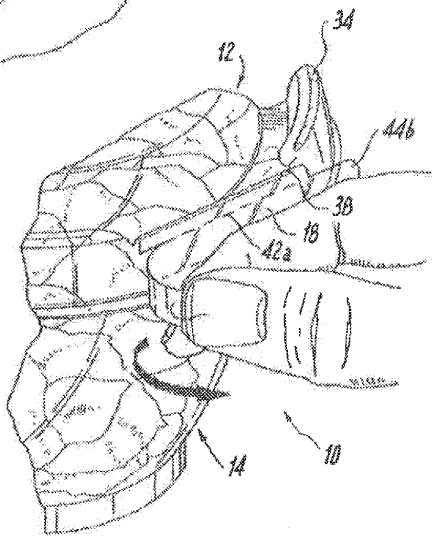


FIG. 11



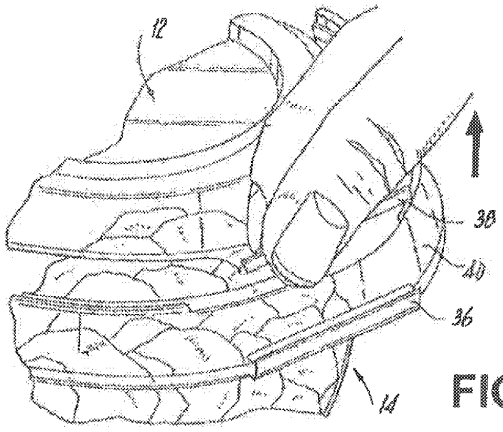


FIG. 12

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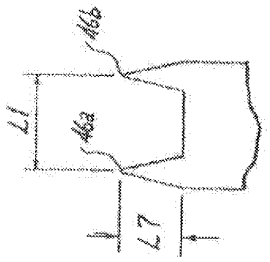


FIG. 13

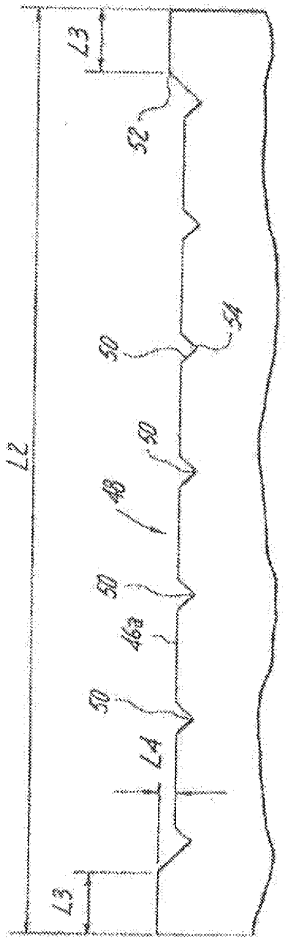


FIG. 15

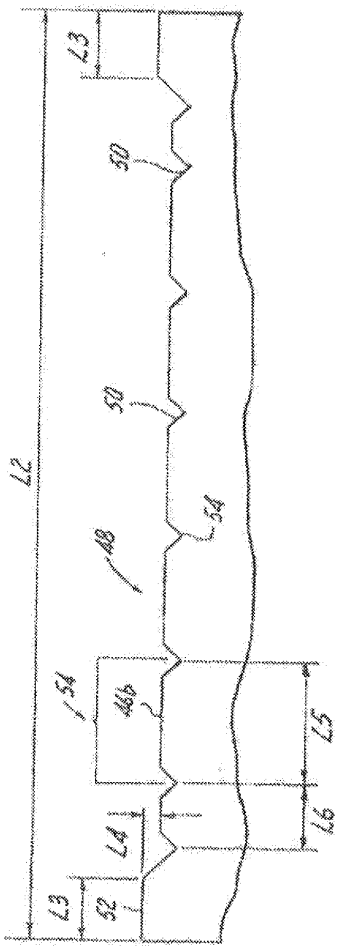
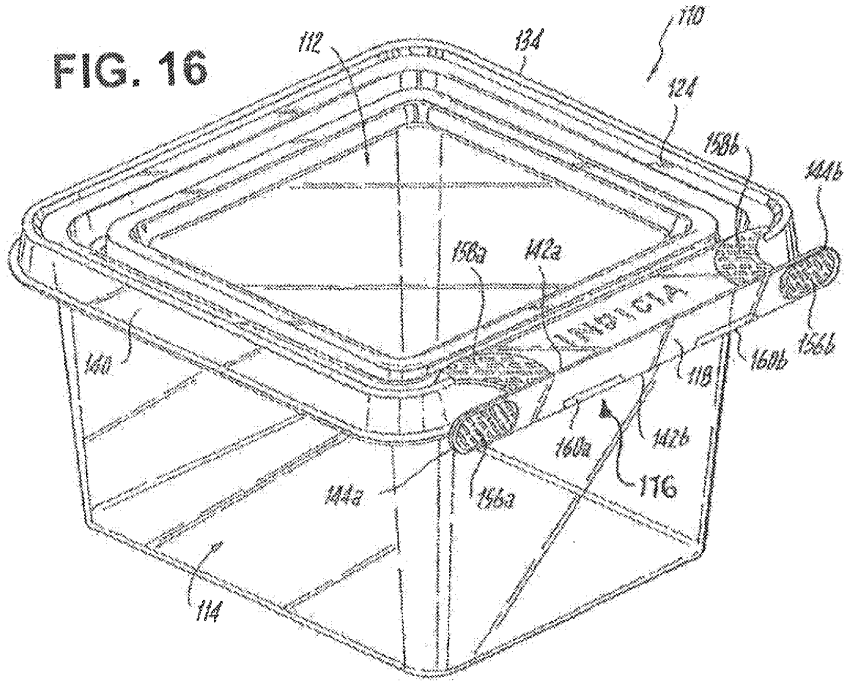


FIG. 14

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FIG. 16



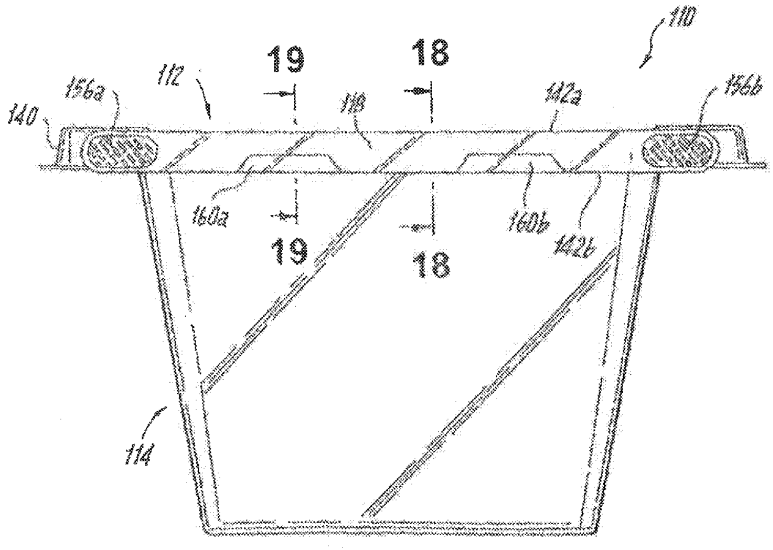


FIG. 17

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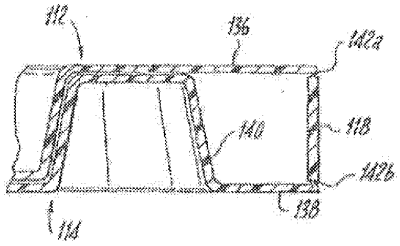


FIG. 18

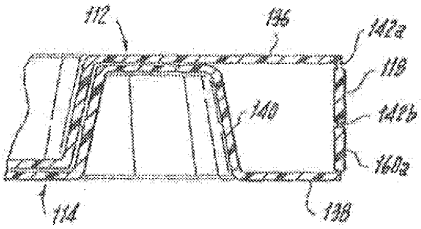


FIG. 19

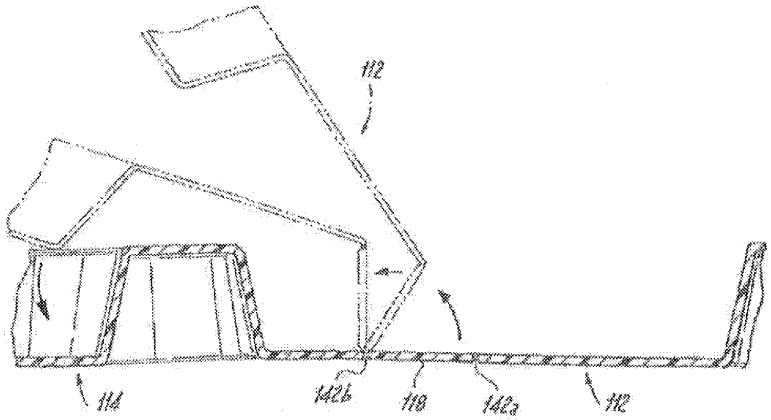


FIG. 20

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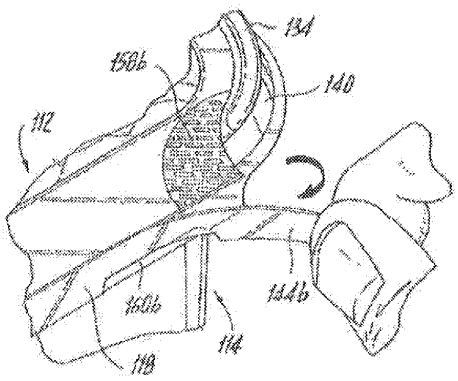


FIG. 21

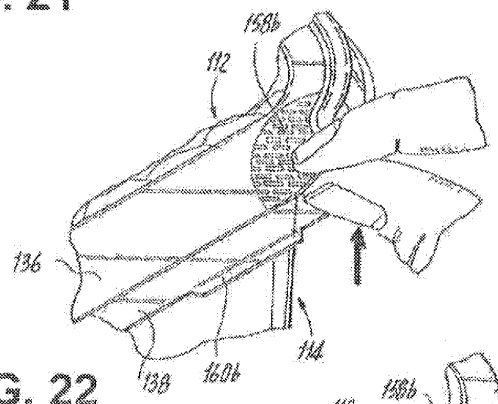


FIG. 22

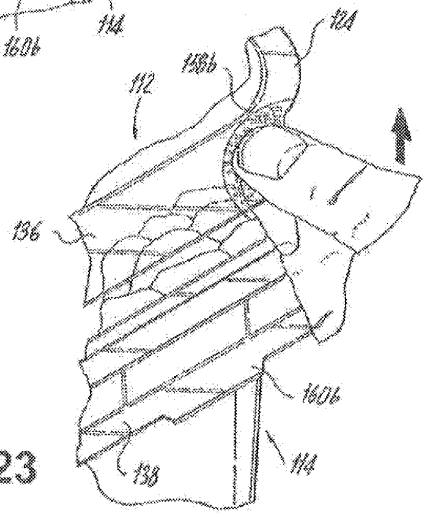


FIG. 23

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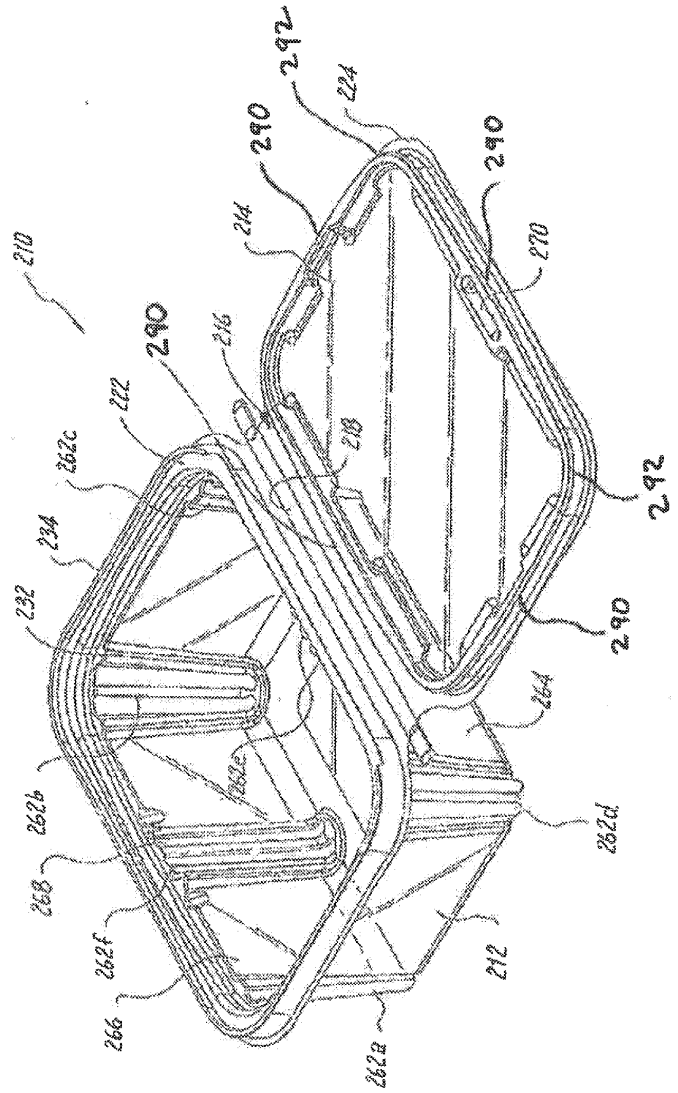


FIG. 24

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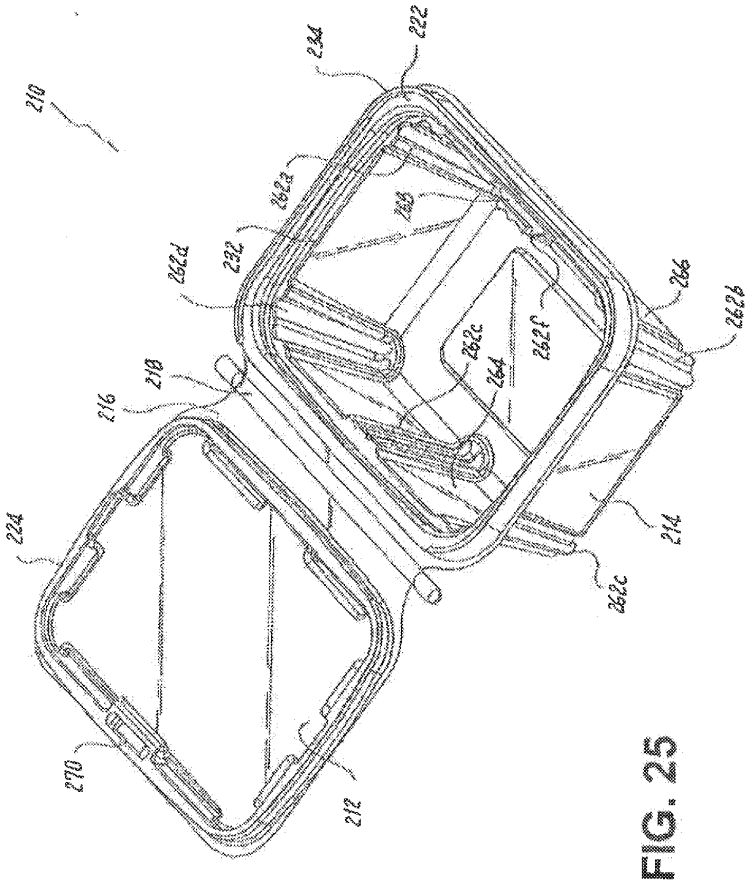


FIG. 25

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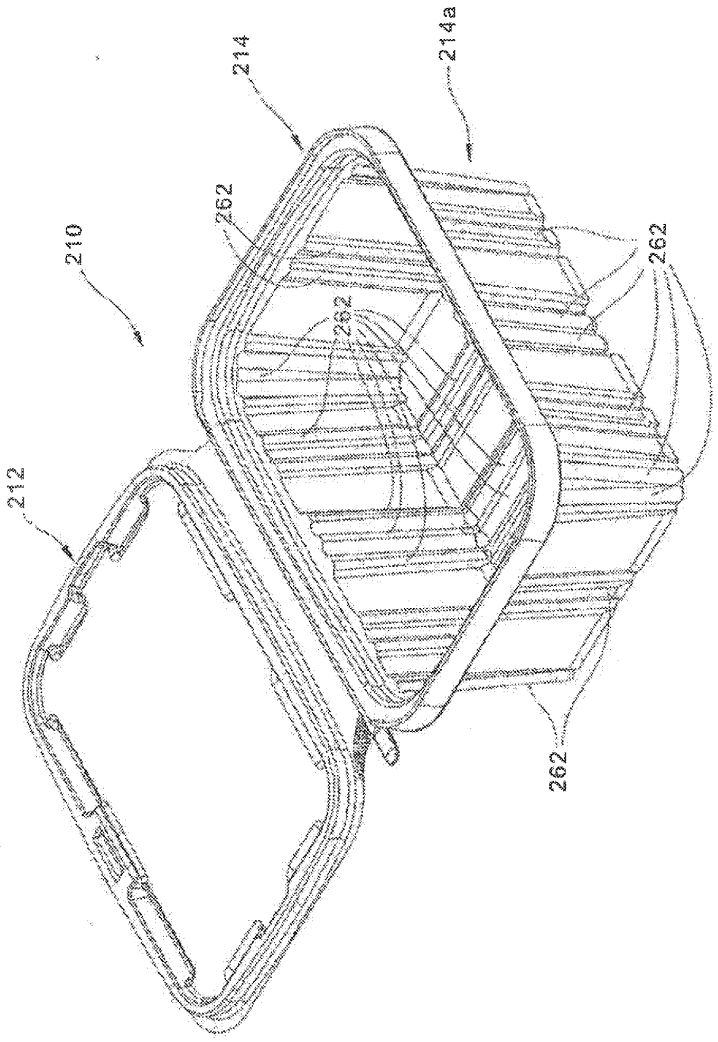


FIG. 26

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Trial Exhibit 5.15

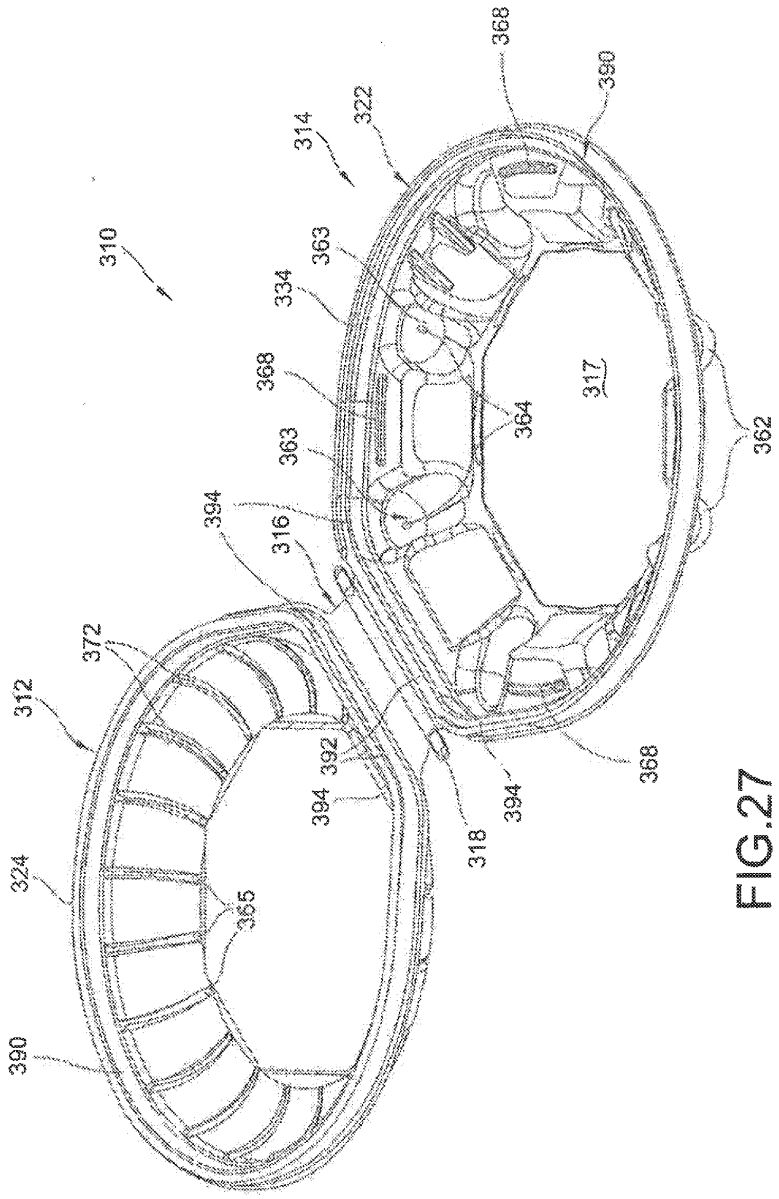


FIG.27

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Trial Exhibit 5.16

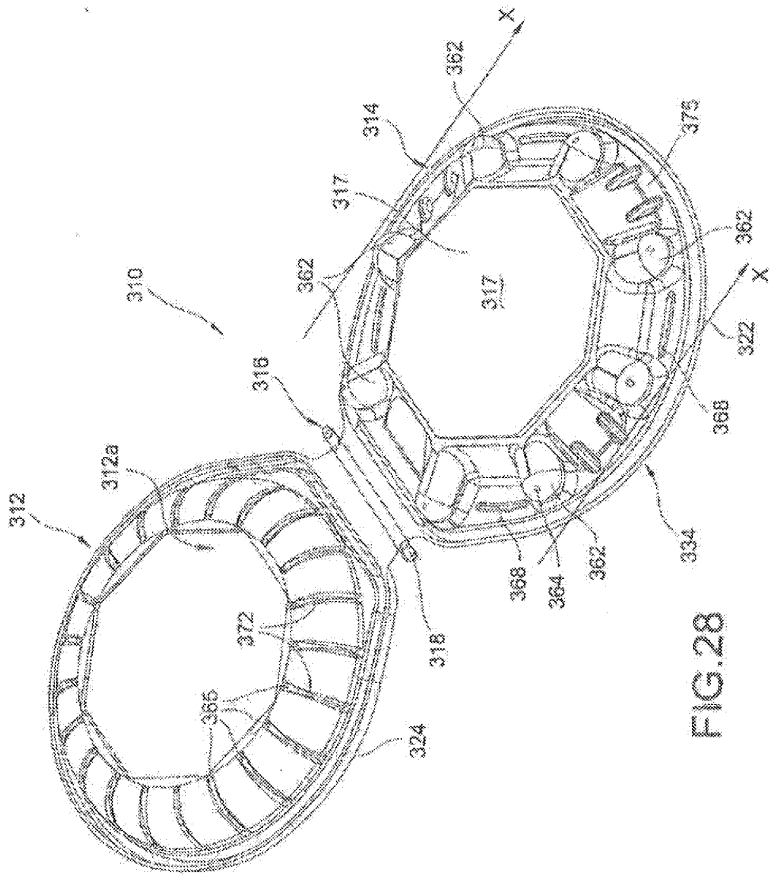


FIG.28

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Trial Exhibit 5.17

METHODS OF MANUFACTURING TAMPER-RESISTANT AND TAMPER EVIDENT CONTAINERS

CROSS-REFERENCE TO RELATED APPLICATION(S)

The subject application is continuation of U.S. patent application Ser. No. 13/044,776, filed Mar. 10, 2011, which is a division of U.S. patent application Ser. No. 11/483,900 filed Jul. 10, 2006, which is a continuation in part of U.S. patent application Ser. No. 11/065,681, filed Feb. 24, 2005, now U.S. Pat. No. 7,073,680, which is a continuation in part of U.S. patent application Ser. No. 10/895,687 filed Jul. 21, 2004, now U.S. Pat. No. 7,118,003, which claims the benefit of priority to U.S. Provisional Patent Application Ser. No. 60/489,093 filed Jul. 21, 2003, the disclosure of each being incorporated by reference herein in its entirety.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The subject invention is directed to containers and packaging, and more particularly, to containers and packaging that incorporate tamper-resistant and tamper-evident features.

2. Background of the Related Art

Disposable containers for packaging, distributing, displaying or otherwise housing consumer items, especially perishable foods, are becoming increasingly important. Historically, perishable products had to be brought to market and sold quickly before exposure to the atmosphere caused the products to lose their freshness.

The advent of plastics resulted in many products being wrapped or packaged in plastic, both in the form of flexible plastic bags and solid plastic containers. The use of plastics in the modern-day convenience food industry has significantly improved the "shelf life" of perishable products, allowing both merchants and their customers to store the products for longer periods of time, resulting in substantial savings.

It has been found that consumers like recloseable packages, particularly for comestible products, especially in circumstances where more than one serving of a comestible product is contained therein, in order to reduce drying out or other deterioration of the comestible food product. In addition, consumers prefer to visually inspect the food product within such containers prior to purchase. Thus, fabricating containers from clear see-through plastics is desirable. For example, packaging provided for bakery goods has often been in the form of clear, plastic clamshell packaging, because, among other things, such clear, plastic clamshell packaging, provides a baked-on-the-premises image which grocery retailers have found to be especially appealing to consumers.

Typically, plastic containers will include a fairly rigid lid and base, although they may be subject to some amount of flexure. The lid provided must be capable of properly and effectively sealing the container, yet the container must be constructed so that the lid is relatively easy to remove, and even replace, since it is expected that the container and lid would normally be reused.

In addition to the aforementioned consumer design preferences, it is desirable to fabricate containers that include features which either deter unauthorized tampering or clearly indicate whether unauthorized tampering has occurred, or both. These tamper-resistant/tamper-evident

features typically include structural elements which, when the container is tampered with or opened without authorization, enable the consumer to easily visually recognize such tampering so that the product can then be rejected. Such tamper-resistant/tamper-evident elements are important for, among other things, deterring theft and preventing the loss of product and income for the seller, as well as instilling consumer confidence in the integrity of the contents within the container and confidence in the ability of the seller and/or manufacturer to provide and maintain quality goods.

Thus, there is a compelling interest in the development of containers having consumer-preferable design elements, such as recloseability features which are reliable and easy to operate, along with tamper-resistant/tamper-evident features that deter tampering and clearly indicate whether tampering has occurred, and which are also reliable without being burdensome to the legitimate consumer. Accordingly, the present invention is directed to a container that meets these needs.

SUMMARY OF THE DISCLOSURE

The present invention meets the aforementioned needs, while also improving upon and solving problems associated with previous containers by providing, among other things, a tamper-resistant container with tamper-evident features (also referred to herein as a "tamper-resistant/tamper-evident container") that includes a cover portion defining an outwardly extending peripheral flange and a base portion defining an upper peripheral edge. The upper peripheral edge of the base portion includes, at least in part, an upwardly projecting bead extending substantially about the perimeter of the base portion. This bead is configured and dimensioned to render the outwardly extending flange of the cover portion relatively inaccessible when the container is closed thereby providing a tamper-resistant container.

The container can further include a hinge joining the outwardly extending flange of the cover portion with the base portion. The hinge preferably includes a frangible portion, which upon severing, facilitates removal of the cover portion from the base portion.

In another embodiment, the container includes a skirt which depends downwardly from the upper peripheral edge of the base portion. Preferably, the hinge extends from the lower edge of the skirt to the outwardly extending flange of the cover portion.

These and other aspects of the present invention will become more readily apparent to those having ordinary skill in the art from the following detailed description of the invention taken in conjunction with the drawings.

BRIEF DESCRIPTION OF THE FIGURES

So that those having ordinary skill in the art to which the subject invention pertains will more readily understand how to make and use the tamper-resistant/tamper-evident evident package disclosed herein, embodiments thereof will be described in detail below with reference to the drawings, wherein:

FIG. 1 is a perspective view of a tamper-resistant/tamper-evident evident container constructed in accordance with the present invention in an exemplary circular configuration having a base portion and cover portion connected to each other by a hinge having a frangible section;

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FIG. **2** is a side view of the container shown in FIG. **1**, illustrating in particular the hinge having a frangible section or strip, and a suitable location for indicia to be printed thereon;

FIG. **3** is a partial top view of the container shown in FIG. **1**, illustrating in particular the hinge having a frangible section or strip and projection associated therewith that extends beyond the upwardly projecting bead associated with the upper peripheral surface of the base portion;

FIG. **4** is a partial cross sectional view of the container shown in FIG. **1**, taken along line **4-4** of FIG. **2**, illustrating in particular the hinge having a frangible section and upper and lower projections or arms extending from the cover portion and base portion of the container;

FIG. **5** is a partial cross sectional view of the container shown in FIG. **1**, taken along line **5-5** of FIG. **8**, illustrating in particular the configuration of the base portion and the structural elements that facilitate a releasable/recloseable engagement with the cover portion;

FIG. **6** is a partial cross sectional view of the container shown in FIG. **1**, taken along line **6-6** of FIG. **8**, illustrating in particular the configuration of the cover portion and the structural elements that facilitate a releasable/recloseable engagement with the base portion;

FIG. **7** is a partial cross sectional view of the container shown in FIG. **1**, taken along line **7-7** of FIG. **3**, illustrating in particular the configuration of the base portion and cover portion when the container is closed and including the structural elements that facilitate a releasable/recloseable engagement between the base and cover portions;

FIG. **8** is an exploded perspective view of the container shown in FIG. **1**, illustrating in particular the operative association between the cover portion, base portion and frangible section;

FIG. **9** is a side view of the container shown in FIG. **1**, in which the frangible section has been removed, illustrating the manner in which the cover portion is separated from the base portion and the upper and lower projections or arms associated with the cover and base portions, respectively;

FIG. **10** is a partial perspective view of the container shown in FIG. **1**, illustrating in particular the manner in which the upwardly projecting bead on the base portion physically prevents access to the outer edge of the cover portion, making it difficult to separate the cover portion from the base portion;

FIG. **11** is a partial perspective view of the container shown in FIG. **1**, illustrating in particular the manner in which the frangible section can be removed from the hinge;

FIG. **12** is a partial perspective view of the container shown in FIG. **1**, illustrating in particular the upper and lower projections formed by removal of the frangible section and the manner in which the upper and lower projections facilitate separation of the cover portion from the base portion;

FIG. **13** is a side view of a two blade knife that can be used to form the frangible section of a container constructed in accordance with an embodiment of the present invention;

FIG. **14** is a front plan view of a first blade of the two blade knife of FIG. **13**, illustrating the position of the nicks and cutting surfaces that can form a first score line of a frangible section of a container constructed in accordance with an embodiment of with the present invention;

FIG. **15** is a front plan view of a second blade of the two blade knife of FIG. **13**, illustrating the position of the nicks, cutting surfaces and offset that can form a second score line of a frangible section of a container constructed in accordance with an embodiment of with the present invention;

FIG. **16** is perspective view of a tamper-resistant/tamper-evident evident container constructed in accordance with the present invention in an exemplary rectangular configuration having a base portion and cover portion connected to each other by a hinge having a frangible section;

FIG. **17** is a side view of the container shown in FIG. **16**, illustrating in particular the hinge having a frangible section or strip, patterned sections on opposing ends thereof, and tabs defined by the frangible section score line;

FIG. **18** is a partial cross sectional view of the container shown in FIG. **16**, taken along line **18-18** of FIG. **17**, illustrating in particular the configuration of the hinge, upper and lower projections and frangible section;

FIG. **19** is a partial cross sectional view of the container shown in FIG. **16**, taken along line **19-19** of FIG. **17**, illustrating in particular the configuration of the hinge, upper and lower projections, frangible section, and score line defining a tab associated with the lower projection;

FIG. **20** is a partial cross sectional view of the container shown in FIG. **16**, illustrating in particular the manner in which the cover portion is closed on the base portion;

FIG. **21** is a partial perspective view of the container shown in FIG. **16**, illustrating in particular the manner in which the frangible section is removed from the hinge;

FIGS. **22-23** are partial perspective views of the container shown in FIG. **1**, illustrating in particular the manner in which the separation of the cover portion from the base portion is facilitated by clasping the patterned section disposed on the upper projection or arm associated with the cover portion which is formed upon removal of the frangible section;

FIG. **24** is a perspective view of another embodiment of a tamper-resistant/tamper-evident container constructed in accordance with the present invention having an additional engagement mechanism and support structure for providing enhanced structural integrity and further securing the base portion and cover portion, among other things; and

FIG. **25** is another perspective view of the tamper-resistant/tamper-evident container shown in FIG. **24**.

FIG. **26** is a perspective view of another embodiment of a tamper-resistant/tamper-evident evident container similar to that depicted in FIGS. **24-25**, but including a further variation of a pattern of reinforcing ribs.

FIGS. **27-28** are perspective views of another embodiment of a tamper-resistant/tamper-evident evident container made in accordance with the invention. FIG. **27** is a view of the interior of such an open container, and FIG. **28** is a view of the exterior of the container.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The advantages of a tamper-resistant/tamper-evident evident container constructed in accordance with the present invention will become more readily apparent to those having ordinary skill in the art from the following detailed description of certain preferred and exemplary embodiments taken in conjunction with the drawings which set forth representative embodiments thereof, but are not intended to limit the scope of the present invention.

Unless otherwise apparent, or stated, directional references, such as "right," "left," "upper," "lower," "outward," "inward," etc., are intended to be relative to the orientation of a particular embodiment of the invention as shown in the first numbered view of that embodiment. In addition, a given reference numeral indicates the same or similar structure

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when it appears in different figures and like reference numerals identify similar structural elements and/or features of the subject invention.

In accordance with an exemplary embodiment of the subject invention illustrated in FIGS. **1** and **2**, the container **10** includes a generally circular cover portion **12** and a generally bowl-shaped base portion **14** joined together by a hinge **16**. Hinge **16** includes a tamper-evident frangible section or pull strip **18**, which, upon its removal, severs the integral connection between cover portion **12** and base portion **14**.

In use, container **10** would be filled with the contents for which consumer protection is desired and cover portion **12** would be engaged with base portion **14**. In accordance with the present invention, cover portion **12** and base portion **14** may include structural features that facilitate the formation of a non-permanent engagement between cover portion **12** to base portion **14**.

In this embodiment, the non-permanent engagement between cover portion **12** and base portion **14** is facilitated by, among other things, a peripheral locking shoulder **20** and an radially inward circumferential groove **22** formed below an outwardly extending peripheral flange **24** on cover portion **12**, which can be seated within a corresponding mating circumferential recess **26** on base portion **14**. Circumferential recess **26** on base portion **14** is formed below an upper peripheral rim **28** and includes a radially inward projecting rib **30** and a radially inwardly extending rim **32**.

When cover portion **12** is closed on base portion **14**, projecting rib **30** mates with circumferential groove **22** on cover portion **12** and extending rim **32** mates with locking shoulder **20** on cover portion **12**. In addition, outwardly extending peripheral flange **24** on cover portion **12** abuts upper peripheral rim **28** on base portion **14**.

Container **10** incorporates features which are intended to prevent and deter opening container **10** without first removing frangible strip **18** from hinge **16**. In this embodiment, container **10** includes an upwardly projecting bead **34** on base portion **14** that extends substantially about the perimeter of peripheral rim **28** and is positioned to surround the outer edge of flange **24** of cover portion **12** when container **10** is closed. The position and upward extension of bead **34** is configured to hinder the relatively easy method of removing a cover from conventional containers that may resemble or have characteristics in common with container **10**. As can be best viewed in FIG. **10**, bead **34** physically blocks access to the edge of peripheral flange **24** on cover portion **12** from fingers or any other object that might normally be used for leverage to pry cover portion **12** from base portion **14**.

Hinge **16** includes an upper outwardly projecting arm **36** connected to base portion **14**, and a similar lower outwardly projecting arm **38**, which is connected to cover portion **12**. In particular, upper arm **36** is connected with a skirt **40** that projects downward from upper peripheral rim **28** and radially outward with respect to base portion **14**. Lower arm **38** is connected with the peripheral flange **24**. Upper and lower arms **36** and **38** are joined together by a common attachment to frangible strip **18** to form hinge **16**.

Preferably, frangible strip **18** is delimited at least in part by a pair of parallel score lines **42***a*, **42***b* or areas that have been weakened or stressed during the forming process. Frangible strip **18** may be further delimited by a plurality of spaced apart areas in which material has been removed associated with the score lines, by a plurality of spaced apart depressions associated with the score lines, or by perforation lines. The width and depth of the areas and/or depressions can vary to control the tear resistance offered by frangible strip **18**. Alternatively, the integral hinge **16** could be formed with a single score line or perforation line, rather than a pair of score lines. In this instance, the single score line could be severed to create a pair of projections which would be used to open the container.

In this embodiment, strip **18** includes laterally opposed grasping tabs **44***a* and **44***b* to provide a convenient location for gripping strip **18**. Preferably, instructional indicia is imprinted on strip **18** to facilitate its removal from hinge **16** and/or consumer understanding of the significance of its removal as it relates to product tampering. Strip **18** and/or the instructional indicia preferably thereon can be colored or embossed, or otherwise fabricated to direct attention thereto.

As can be best viewed in FIGS. **11** and **12**, detaching frangible strip **18** from hinge **16** of container **10** leaves behind upper and lower arms **36** and **38** on cover portion **12** and base portion **14**, respectively. Upper and lower arms **36** and **38** extend outwardly from container **10** and can be used to facilitate removal of cover portion **12** from base portion **14**, once strip **18** has been removed, by applying sufficient opposing force to disengage locking shoulder **20** from within circumferential recess **26**.

The presence of bead **34** prevents unauthorized access to the contents of container **10** by making it difficult to pull cover portion **12** from base portion **14**. If access to container **10** is desired, strip **18** must be removed so that upper and lower arms **36** and **38** are free to be used to leverage cover portion **12** from base portion **14**. Cover portion **12** may be replaced on base portion **14** after container **10** is opened. Strip **18**, however, once removed, is not replaceable. Thus, removal of strip **18** functions as a clear indicator of possible tampering, in that if strip **18** is partially or fully removed prior to purchase, it is readily apparent to a consumer that someone may have already gained access to the contents of container **10**.

FIGS. **13-15** illustrate an exemplary configuration for a double scoring blade having blades **46***a*, **46***b*, which can be used in a punch press system or the like to form score lines **42***a*, **42***b* in accordance with one embodiment of the present invention. Various dimensions of blades **46***a*, **46***b* are also provided herein as a non-limiting example.

The lateral separation L1 between blades **46***a*, **46***b* is in this embodiment about 0.36 inches. The length L2 of blades **46***a*, **46***b* is about 2.25 inches. Blades **46***a*, **46***b* include an offset recessed portion **48** with a series of substantially similar nicks **50** cut therein between cutting edges **52**. The width L3 of cutting edges **52** is preferably 0.36 inches. Preferably, the offset L4 between recessed portion **48** and cutting edges **52** is approximately 0.001 inches.

In this embodiment, blade **46***a* includes seven (7) nicks **50** while blade **46***b* includes eight (8) nicks **50**. The nicks **50** on blade **46***a* are offset with respect to the nicks **50** on blade **46***b*, which results in a desirable zipper-like effect when removing strip **18**. Preferably, nicks **50** are triangular shaped, about 0.010 inches deep and about 0.020 inches wide, and define an approximately 90 degree angle at its deepest convergence point **54**. The length L5 between nicks **50**, as measured between the respective convergence points **54** of adjacent nicks **50**, is approximately 0.252 inches. The length L6 between the respective convergence points **54** of adjacent offset nicks **50** on blade **46***b* is about 0.126 inches. The length L7 of blades **46***a*, **46***b* is about 0.1 inches, and each blade edge defines an angle of about 45 degrees.

It should be readily understood that a container constructed in accordance with the present invention, which is preferably a plastic container used for carrying edible items, can be manufactured in a variety of shapes and sizes, and can

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be formed from resins or plastic materials such as polyethylene, polypropylene, polyvinyl chloride or polyethylene terephthalate ("PETE"), as well as other suitable materials or combinations thereof. The forming process can also vary to include methods such as thermo-forming, injection molding or blow molding. The container can be transparent or translucent, and may be colored in either instance. Also, vents can be provided in the container to promote airflow therethrough, if appropriate based on the intended contents of the container.

Preferably, container **10** is formed from a roll of PETE subjected to a vacuum and pressure mold with plug assist. During manufacture, blades **46***a*, **46***b* of FIGS. **13-15** are preferably applied to a newly formed container **10** to impart score lines **42***a*, **42***b* thereon. Cutting edges **52** cut substantially through the material used to make container **10**. Preferably, the configuration of blades **46***a*, **46***b* are designed so that a desirable amount of force is necessary to remove strip **18**, as determined by consumer trials for example. Those skilled in the art will readily appreciate that the configuration of blades **46***a*, **46***b* can be adjusted for a variety of reasons, and the above dimensions are exemplary of one embodiment of the present invention.

For example, various other methods can be employed to form frangible strip **18** of hinge **16**. For example, score lines, nicks or penetrations can be created with the molding tool itself during the forming step. Alternatively, a high die forming process can be employed where, after the forming step, the container is indexed to a trim station, where one or more knives liberate the container and create the score lines or perforations. Also, an intermittent cutter can be employed between the forming step or the trim step, a progressive punch and die operation can be employed, or a numerically controlled laser can be employed to create the nicks. It is also envisioned that electro-mechanical, ultra-sonic or hydrodynamic systems can be employed in the forming process.

Container **10** could also be formed with locking arrangements known in the art other than the tamper-resistant/tamper-evident evident closure of the subject invention, such as traditional male and female locking features.

Referring to FIGS. **16-23**, there is illustrated another tamper-resistant/tamper-evident evident container constructed in accordance with a preferred embodiment of the subject invention and designated generally by reference numeral **110**. Container **110** is similar to container **10** described above except that container **110** is rectangular in configuration rather than circular. Container **110** thus includes a base portion **114** and a cover portion **112** joined together by an integrally formed hinge **116** that defines a tamper-evident frangible pull strip **118**, which must be removed before cover portion **112** can be readily removed from base portion **114**.

Container **110** includes embossed or raised patterned sections **156***a* and **156***b* on opposing tabs **144***a* and **144***b* of strip **118**, respectively, to facilitate removal of strip **118**. Patterned sections **158***a* and **158***b* are also disposed on opposing sides of upper arm **136** to facilitate separation of cover portion **112** from base portion **114**. Instructional indicia can be imprinted on upper arm **136** between patterned sections **158***a* and **158***b*.

In this embodiment, score line **142***b* is situated on hinge **116** to define two tabs **160***a* and **160***b* which are connected with lower arm **138**. Tabs **160***a*, **160***b* remain in place on hinge **116** until strip **118** is removed, as can be best viewed in FIGS. **21-23**. Tabs **160***a*, **160***b* extend from lower arm **138** to further facilitate gripping lower arm **138** and separation of cover portion **112** from base portion **114**.

FIGS. **24-26** illustrate other tamper-resistant/tamper-evident evident containers constructed in accordance with a preferred embodiment of the subject invention and designated generally by reference numeral **210**. Container **210** is rectangular in shape, but may be formed in other shapes, and has similar features to containers **10** and **110** described above. Container **210** includes, among other things, a base portion **214** and a cover portion **212** joined together by an integrally formed hinge **216** that defines a tamper-evident frangible pull strip **218**, which must be removed before cover portion **212** can be readily removed from base portion **214**. An upwardly projecting bead **234** is disposed on peripheral rim **222** of base portion **214**. Bead **234** is positioned to substantially surround the outer edge of flange **224** of cover portion **212** when container **210** is closed, thus physically blocking access by fingers or any other object that could be applied to the edge of peripheral flange **224** and rim **222** for leverage while attempting to pry cover portion **212** from base portion **214**.

In the embodiments of FIGS. **24-25** a plurality of supporting ribs **262***a-f*, each extending from about the enclosed bottom of base portion **214** to about extending rim **232** are positioned at the four corners (ribs **262***a-d*, respectively) of base portion **214** and the midpoints on hinge side wall **264** (rib **262***e*) and opposing side wall **266** (rib **262***f*) of base portion **214** to provide enhanced structural integrity. Supporting ribs **262***a-f* generally consist of multiple elongated, arcuate portions, each having a curved latitudinal cross-sectional profile, positioned adjacently with respect to one another.

In the embodiment disclosed in FIG. **26**, a multiplicity of ribs **262** are provided distributed about the bottom of base portion **214** as well as about the peripheral wall **214***a* of base portion **214**. Applicants have discovered that the disclosed arrangement of ribs **262** about base portion **214** provides particularly advantageous performance. Over two dozen containers were tested having various rib patterns. However, the container disclosed in FIG. **26** exhibited the most superior performance. By way of illustration only, the container depicted in FIGS. **24-25**, without the rib pattern of the container in FIG. **26** may be made, for example, from a thermoformable material such as polyethylene terephthalate sheet in a thickness range from about 12 mils to about 40 mils, and preferably from about 14 mils to about 25 mils, depending on the size of the container. For example, it may be desirable to form a smaller container from a thinner gauge material than a larger container.

It has been discovered that the container depicted in FIG. **26** can be made from a substantially thinner gauge of sheet material than that depicted in FIG. **25**. A 32 ounce container as depicted in FIG. **25** made of polyethylene terephthalate, for example, can be made from a 25 mil sheet. In contrast, an even stronger container as depicted in FIG. **26** can be made from a 22 mil sheet. It is further believed that such a container could be made of a 20 mil sheet of polyethylene terephtalate. This accordingly may result in a 20% material savings, which can result in significant cost reduction for making a container of a given size.

As further disclosed in these embodiments, a circumferential engagement sealing interface between cover portion **212** and base portion **214** is defined in part by a plurality of outwardly bowed arcuate portions **290**. As depicted, outwardly bowed arcuate portions **290** are connected by rounded corner portions **292**.

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Container **210** may also include an additional independent, engaging mechanism that provides even further structural integrity, enhances security by urging flange **224** to remain in position against peripheral rim **222**, and facilitates the reattachment of cover portion **212** to base portion **214**, among other things. As depicted in FIGS. **24** and **25**, for example, male engaging member **268** projects upwardly from supporting rib **262***f* on side wall **266** which is received by a correspondingly sized female engaging member **270** defined on cover portion **212**.

Thus, when container **210** is closed, male engaging member **268** on base portion **214** and female engaging member **270** on cover portion **212** form an engagement which further secures base portion **214** to cover portion **212**. In addition to urging flange **224** against rim **222**, the aforementioned features increase the amount of force that would be necessary to pry cover portion **212** from base portion **214** in an unauthorized manner (i.e., without removal of strip **218**).

Also, the aforementioned engagement facilitates the reattachment of cover portion **212** with base portion **214** after container **210** is opened legitimately by a consumer. Container **210** can be reclosed after purchase by urging cover portion **212** onto base portion **214**, and in particular, this can be accomplished by pressing on the corners of cover portion **212**, as indicated by instructional indicia printed in the outer corner areas of cover portion **212** in this embodiment. In reclosing container **210**, the initial engagement of male member **268** with female member **270** facilitates the subsequent step of applying pressure on the corners of cover portion **212**, making it easier to reattach cover portion **212** to base portion **214**. It should be readily apparent to those skilled in the art that other engagement mechanisms, devices, engagements and container designs, and combinations thereof, could be incorporated in any embodiment in accordance with the present invention.

FIGS. **27-28** illustrate another tamper-resistant/tamper-evident evident container constructed in accordance with a preferred embodiment of the subject invention and designated generally by reference numeral **310**. Container **310** is generally round in shape, but may be formed in other shapes, and has similar features to containers **10**, **110** and **210** described above. Container **310** includes, among other things, a base portion **314** and a cover portion **312** joined together by an integrally formed hinge **316** that defines a tamper-evident frangible pull strip **318**, which must be removed before cover portion **312** can be readily removed from base portion **314**. An upwardly projecting bead **334** is disposed on peripheral rim **322** of base portion **314**. Bead **334** is positioned to substantially surround the outer edge of flange **324** of cover portion **312** when container **310** is closed, thus physically blocking access by fingers or any other object that could be applied to the edge of peripheral flange **324** and rim **322** for leverage while attempting to pry cover portion **312** from base portion **314**.

In this embodiment, a plurality of supporting gussets **362***a-h*, each extending from about the enclosed bottom of base portion **314** to about extending rim **332** are disposed proximate the eight corners of base portion **314** to provide enhanced structural integrity. Gussets **362** also define interior spaces **363** that can be used to facilitate fingers of a user to remove an object (such as a pie, for example) from container **310**. Container **310** can also be provided with lower and upper vents **364**, **365** respectively, disposed circumferentially proximate the top and bottom of the container **310** to facilitate defrosting or heating of the contents of container **310**. In the case of a frozen pie, for example, warm air can be drawn in through upper vents **365**. As air enters through upper vent **365**, it is cooled, and sinks out through lower vent **364**. If desired, vents **364** can be positioned proximate the lower portions of gussets **362**, whereby each gusset can act as an air duct to facilitate transport of air through the container. It will be appreciated that vents **364**, **365** can also operate to cool the contents of container **310**, whereby relatively cool ambient air can be drawn in through lower ducts **364** and out of upper ducts **365**, whereby the air is heated by the contents of the container to drive the flow. It will be appreciated that the location of vents **364**, **365** can be varied, as desired. As depicted, vents **365** are disposed in welled recesses that form ribs **372** in cover portion **312** of container **310**.

It was discovered through experimentation that it is desirable to have gussets **362** extend as close to the bottom **317** of base **314** as possible. This spreads out the load of the contents of container **310** over a larger area of containers **310** when containers **310** are stacked. It has also been discovered that it is desirable to have gussets **362** extend up to flange **375** to prevent flexure of container **310** to prevent flange **324** from being separated from bead **334**. These design features significantly help make container **310** more tamper resistant by making container **310** more resistant to flexure.

As depicted, bottom **317** of base **314** is generally octagonal, and is adapted and configured to nest within the octagonal recess **312***a* formed in cover portion **312**. The octagonal features permit directional stacking which can facilitate the alignment, transport, display and merchandizing of goods. It will be understood that other shapes besides octagonal can be used, as understood by those of skill in the art.

As depicted in FIG. **27**, gussets **362** are adapted and configured so that gussets **362** can act as guides for guiding container between parallel rails (the locations of which being represented by axes X) of a guiding device to move, stack, fill and/or close containers **310**, if desired.

As further disclosed in this embodiment, a circumferential engagement sealing interface between cover portion **312** and base portion **314** is defined in part by a rounded segment **390**, a relatively straight segment **392** and two rounded corner portions **394**. The shape of interface is adapted and configured to provide substantial resistance to ensure container **310** is relatively tamper resistant.

Container **310** also includes an additional independent, engaging mechanism that provides even further structural integrity, enhances security by urging flange **324** to remain in position against peripheral rim **322**, and facilitates the reattachment of cover portion **312** to base portion **314**, among other things. A plurality of male engaging members **368** project upwardly from base portion **314** disposed circumferentially about container **310**. Male engaging members **368** actually cooperate to urge flange **324** against peripheral rim **322**. This advantageously helps prevent tampering with the container. Members **368** also facilitate in guiding and aligning cover portion **312** with base portion to facilitate the reclosing of container **310** after it has been opened.

It will be understood that the cover portions **12**, **112**, **212** and **312** and base portions **14**, **114**, **214** and **314** can be made of different colored materials. For example, all or a part of the cover portions and/or base portions can be transparent while the rest of the container can be translucent or opaque. In accordance with one embodiment, two-tone sheeting is used (such as PETE) wherein a dark opaque material is mated adjacently to a transparent segment. The separation between the two sections can be routed in the machine direction of the thermoforming machine used to make the

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containers. The transition area from transparent to opaque can be aligned with the tamper evident strip of the container so that the cover portion can be a different color than (or transparent or translucent compared to) the base portion.

Although exemplary and preferred aspects and embodiments of the present invention and forming methods have been described with a full set of features, it is to be understood that the disclosed container and method of manufacture may be practiced successfully without the incorporation of each of those features. The scope of the present invention is not limited only to the tamper-resistant/tamper-evident evident containers and methods of manufacture disclosed herein. Thus, it is to be understood that modifications and variations may be utilized without departure from the spirit and scope of the invention and method disclosed herein, as those skilled in the art will readily understand. Such modifications and variations are considered to be within the purview and scope of the appended claims and their equivalents.

What is claimed is:

1. A method of thermoforming a tamper-resistant/tamper-evident container comprising:

forming a cover portion from a portion of a single sheet of at least partially transparent plastic material, wherein the cover portion includes an outwardly extending peripheral flange;

forming a base portion from a portion of the single sheet including an upper peripheral rim and a skirt depending downwardly therefrom, wherein, when the container is closed, the outwardly extending peripheral flange of the cover portion abuts the upper peripheral rim of the base portion and the upper peripheral rim of the base portion extends beyond an outer edge of the outwardly extending peripheral flange of the cover portion substantially about the perimeter of the container;

forming a hinge from a portion of the single sheet joining the cover portion and the base portion such that the vertical height of the hinge correlates with the height of the skirt that depends downwardly from the base portion when the height of the skirt is substantially uniform around the perimeter of the container; and

forming at least one line of weakness in the hinge, and wherein the at least one line of weakness is formed in a manner that the line of weakness is severed to facilitate removal of the cover portion from the base portion to open the container, wherein the cover portion, base portion, hinge and at least one line of weakness are formed from the single sheet of at least partially transparent plastic material.

2. The method of claim 1, wherein the single sheet of at least partially transparent plastic material is entirely transparent.

3. The method of claim 1, wherein the at least one line of weakness comprises two or more lines of weakness.

4. The method of claim 1, further comprising forming vents in the container to promote airflow therethrough.

5. The method of claim 1, wherein forming the base portion further comprises:

forming an upwardly projecting bead in the upper peripheral rim, the upwardly projecting bead extending substantially about the perimeter of the container and configured to substantially surround an edge of the outwardly extending peripheral flange of the cover portion to hinder access to the container when the container is closed.

6. The method of claim 1, wherein the at least one line of weakness includes a plurality of lines of weakness that form a frangible tear strip in the hinge, and wherein, when the frangible tear strip is severed at least one projection is provided for facilitating removal of the cover portion from the base portion to open the container.

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UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

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Case Number: 22-1954

Short Case Caption: Inline Plastics Corp. v. Lacerta Group, LLC

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