EXHIBIT 1

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United States Patent [19]

MacNeil

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[54] ANTISTACKING WARNING DEVICE AND STACKING DAMAGE DETECTOR

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[51] Int. Cl.[6] B65D 19/38

[52] U.S. Cl. 414/786; 206/459.1; 206/597

[58] Field of Search 116/203; 206/459.1, 206/597; 414/786

[56] References Cited

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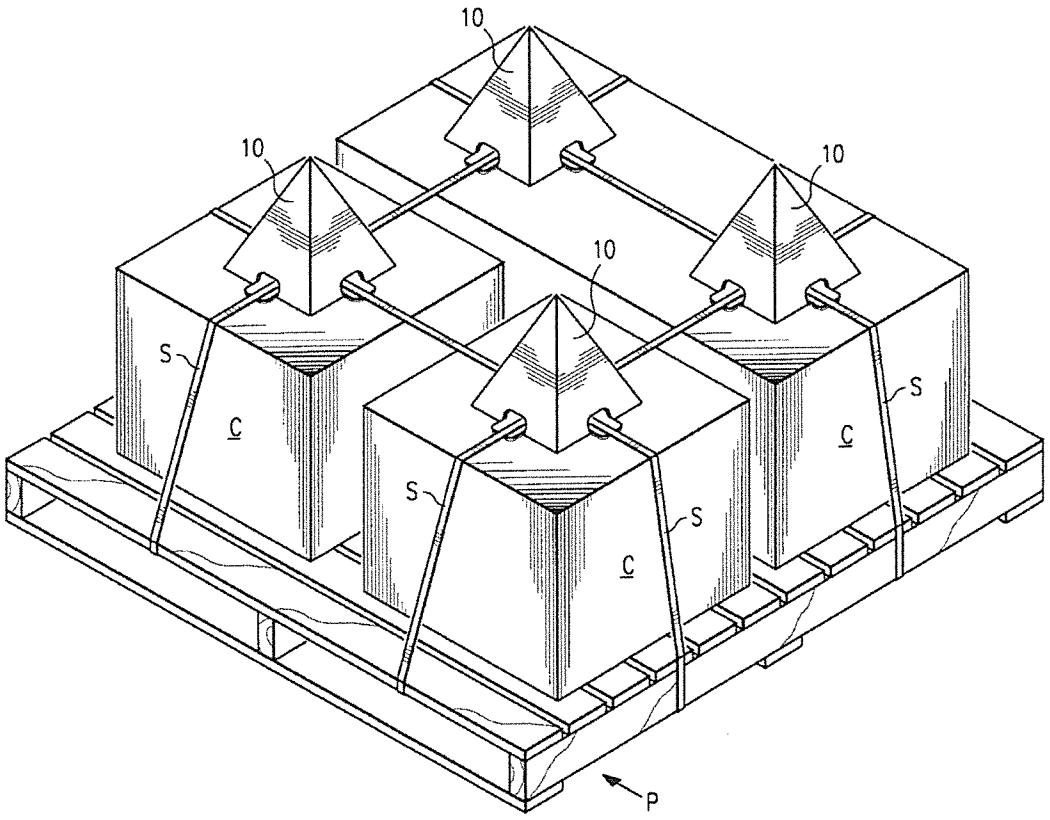
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Primary Examiner—Janice L. Krizek
Attorney, Agent, or Firm—Jefferson Perkins

[57] ABSTRACT

A combination stacking damage detector and antistacking warning device (**10**) is preferably affixed to the intersection of pallet tying straps (S) to the top of a pallet (P) of goods so as to provide a readily visible warning that a second pallet is not to be stacked upon the first, and also so as to provide a readily visible indication that stacking damage may have occurred. In a preferred embodiment, the device is formed of an integral blank of cardboard and is assemblable into a four-sided pyramid. Holes (**22**) are provided in the bottom of the sides (**14, 15**) of the device so that the tying straps (S) may be passed therethrough.

20 Claims, 6 Drawing Sheets



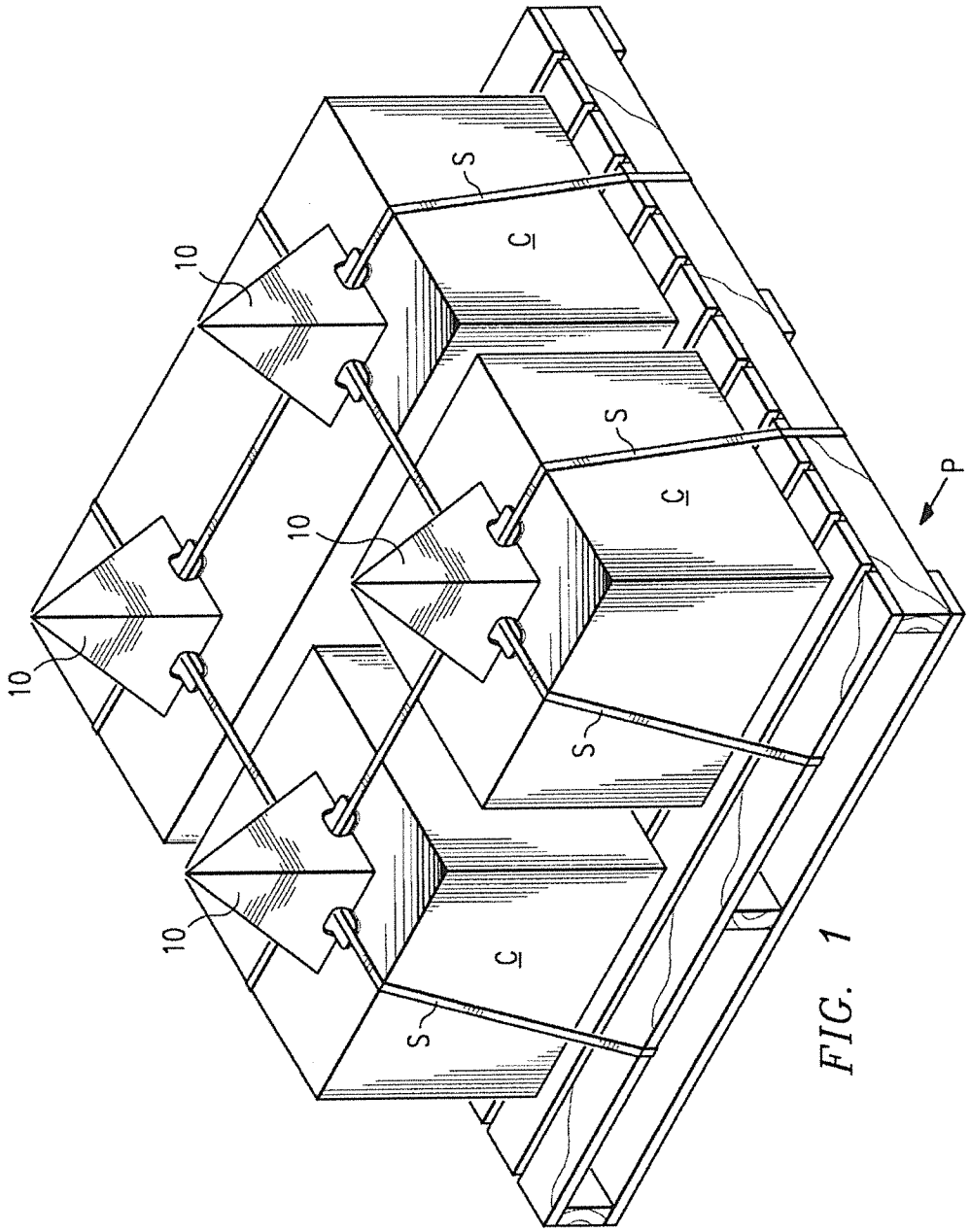


FIG. 1

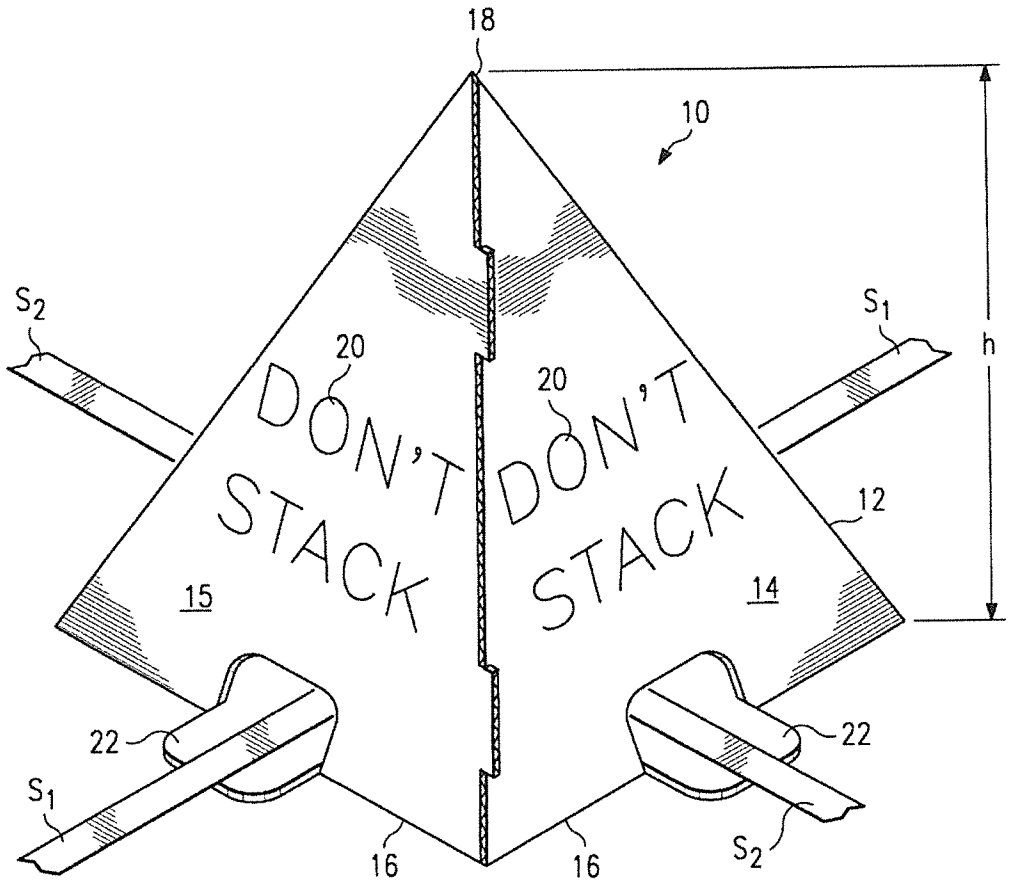


FIG. 2

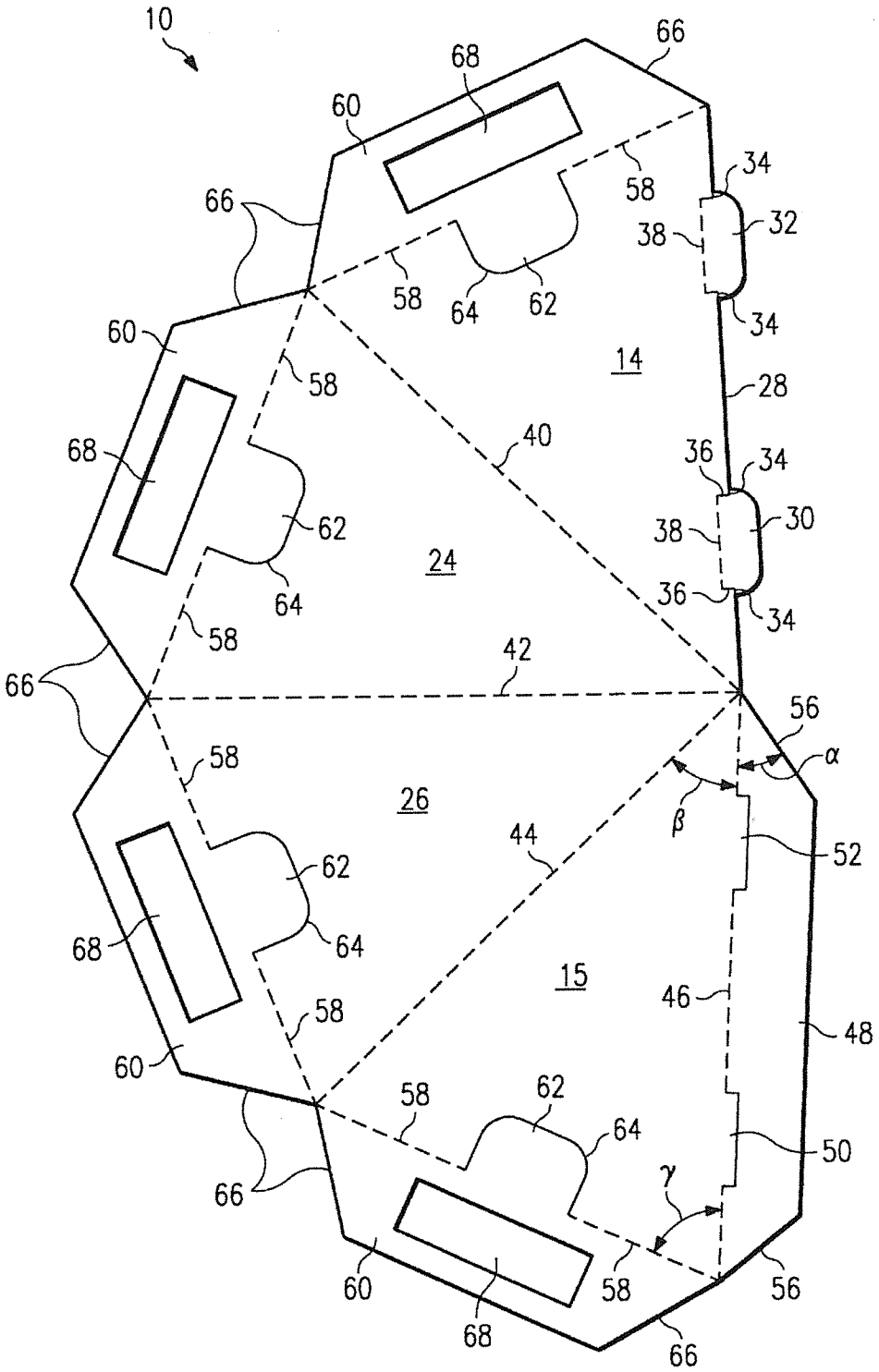

10
66
68
60
58
34
32
38
64
62
14
28
40
36
30
24
42
56
α
β
44
52
26
15
46
48
50
γ

FIG. 3

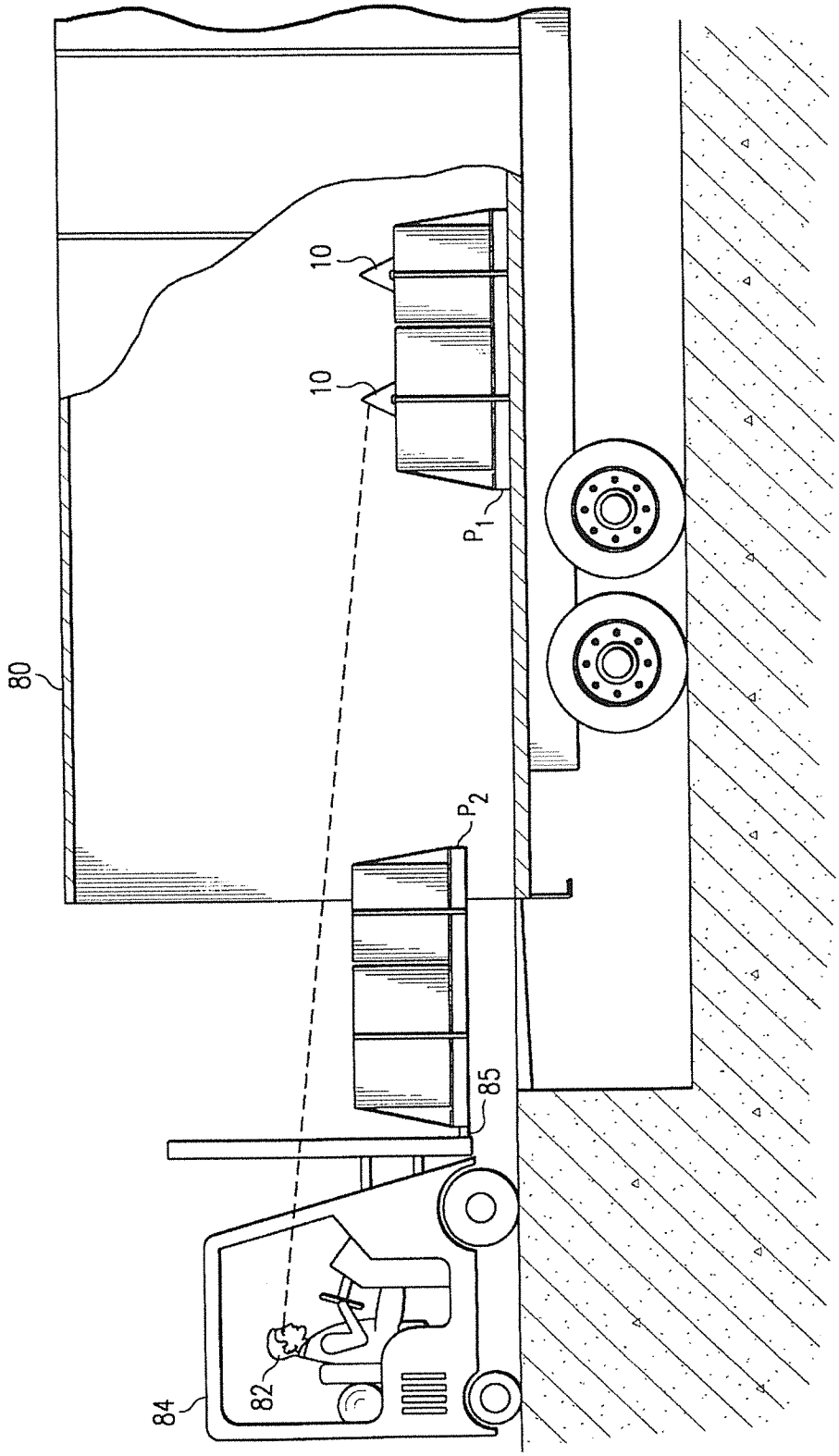


FIG. 4

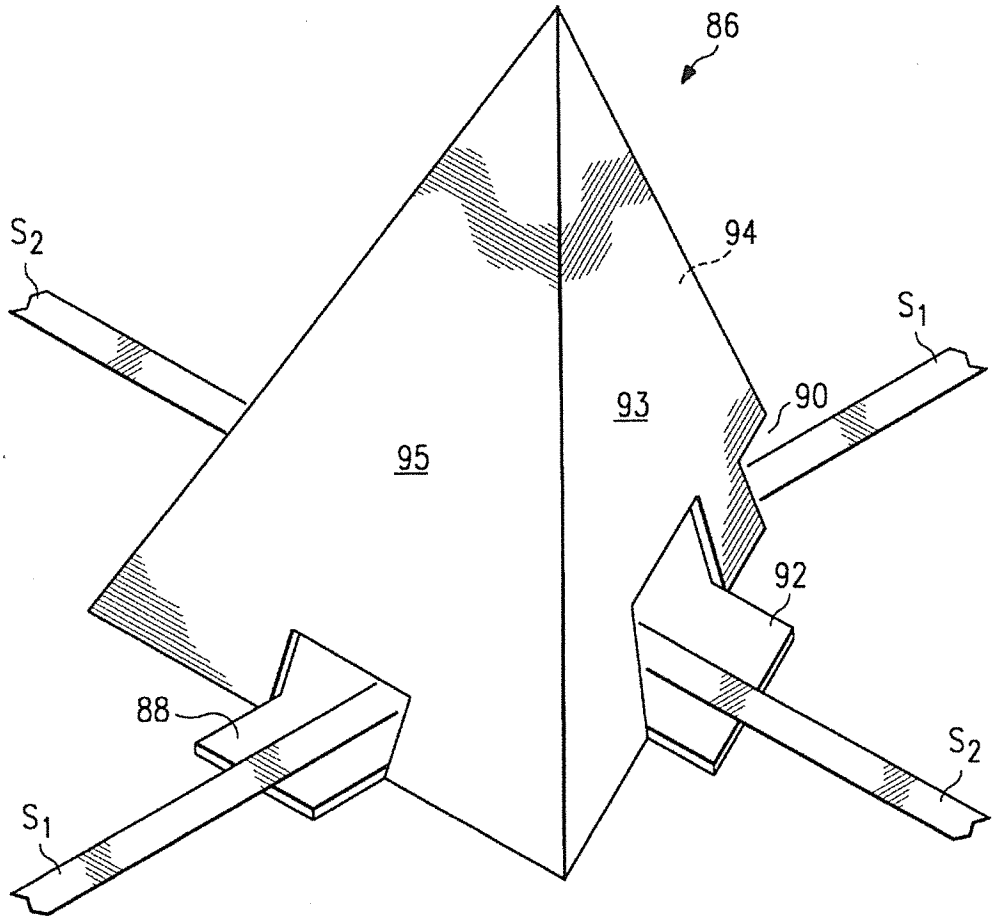


FIG. 5

FIG. 6

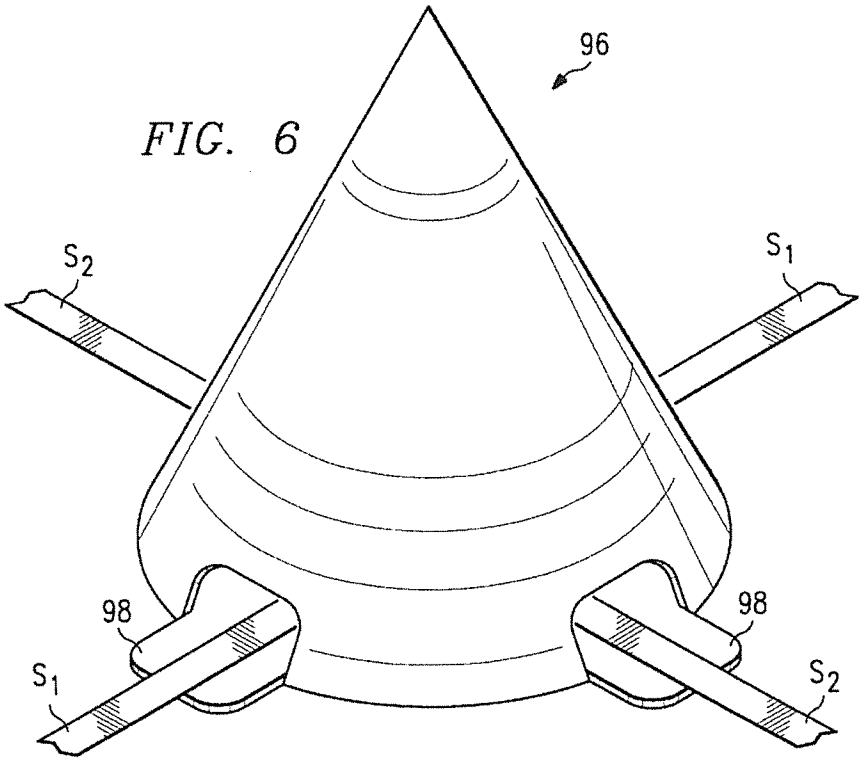
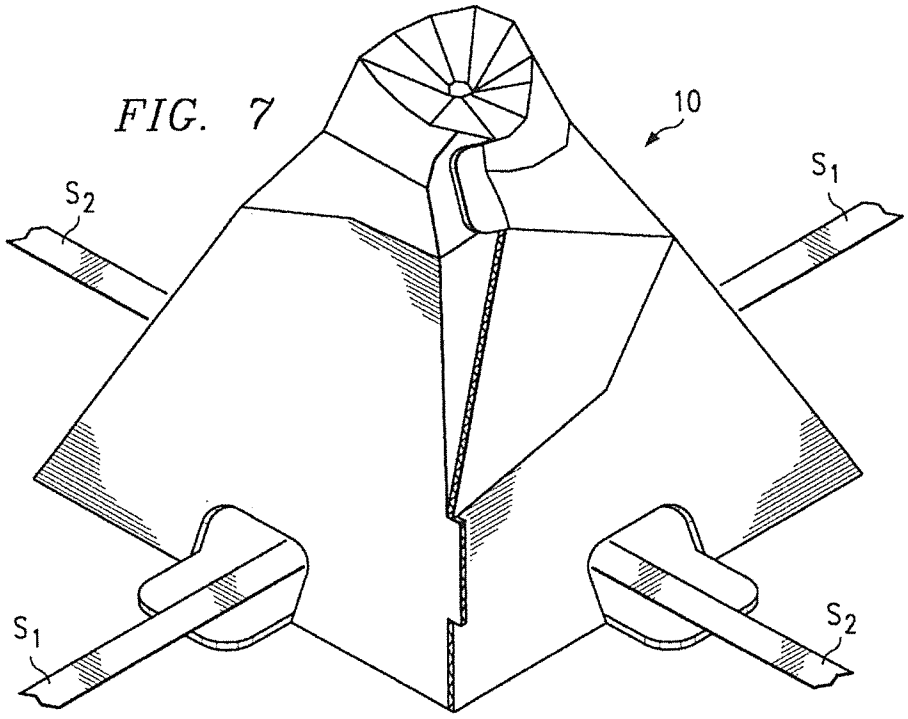


FIG. 7



ANTISTACKING WARNING DEVICE AND STACKING DAMAGE DETECTOR

TECHNICAL FIELD OF THE INVENTION

This invention relates in general to damage detection apparatus and antistacking warning devices, and more particularly to a combination antistacking damage detector and warning device for affixation to the top of a pallet of goods.

BACKGROUND OF THE INVENTION

A chronic problem in the shipping industry is the occurrence of damage due to shock or crushing force applied to goods being shipped. In conventional practice, goods are often affixed to a pallet, typically made of wooden crossmembers, and the pallet is then moved about and stored as a unit. The goods are usually affixed to the pallets by steel or plastic strapping which crisscrosses boxes of goods on top of the pallets, or by several sheets of plastic. Two prevalent modes of moving pallets of goods is by truck and rail. Where the goods are not significantly heavy, such as electronic equipment, computers and the like, there is an incentive for the shippers to fill a semitrailer or a rail car with as many pallets of such goods as the volume of the trailer or car permits. In the instance where the pallet of goods has a height that is less than half of the interior height of, e.g., a semitrailer, there is an incentive to stack one pallet of goods on top of another one already loaded into the semitrailer. Where the goods on the bottom pallet are fragile, this will often cause crushing damage to the packages or even to the goods themselves, which therefore causes an economic loss.

In a conventional attempt to prevent shippers from stacking one pallet of goods onto another pallet of goods, labels have been affixed to the fragile pallet of goods bearing a legend like "DON'T STACK". Unfortunately, it has been observed that these two-dimensional labels have been ineffective in preventing stacking in violation of such labels, causing stacking damage.

Numerous devices exist in the prior art for the detection of damage to goods. Most of these are in the nature of inertial detectors, which record a shock or, sharp acceleration felt by the package, and which require movement of one component relative to another component of the detector. Such detectors or impact indicators for containers are shown, for example, by U.S. Pat. No. 2,601,440 issued to J. P. Kerrigan; U.S. Pat. No. 3,369,521 issued to E. A. Meeder, Jr.; U.S. Pat. No. 3,373,716 issued to E. R. Williams; U.S. Pat. No. 3,515,091 issued to D. G. Smith; and U.S. Pat. No. 4,177,751 issued to U. R. Rubey.

U.S. Pat. No. 5,323,729 issued to Rubey discloses a crush indicating device which has a contrasting agent reservoir filled with a contrasting agent, an absorbing wick and a compressible wall. When excessive force is applied downward on top of the crush indicating device, the wick will pick up the contrasting agent, thereby changing the color of the device inside of a transparent window or cover sheet. The Rubey structure, however, is a relatively flat, disklike affair that is not readily visible from several feet away from the container to which it is affixed. Further, the Rubey '729 device shows no method of affixation taking advantage of the crisscrossing straps typically affixing goods to a pallet. A need therefore continues to persist in the shipping industry for an inexpensive, readily visible stacking damage indicator that also can act as an antistacking warning device.

SUMMARY OF THE INVENTION

The present invention provides a combination stacking damage detector and antistacking warning device which is visible from several feet away from a pallet of goods to which one or more of the devices is affixed. The device has a body and a means for affixing the bottom of the body to a top of a pallet of goods. For example, such affixation means can be one or more adhesive strips, or holes cut into the bottom of sides of the body for the receipt and passage therethrough of steel or plastic tying straps that are conventionally used to affix the packaged goods to the pallet. In its original, assembled condition, the body should stand up from the pallet by a distance of at least three inches to be readily visible from several feet away from the pallet; as such, the device will be visible from an operator of a forklift truck or the like.

When more than a predetermined amount of weight is applied to the top of the device, it will permanently deform, and will thus give a visual indication to the observer that an object has been stacked on top of the pallet of goods, When the addressee of the pallet of goods receives it, he or she will note the condition of the devices, and any damage to the goods occurring in shipment can be more readily attributed to the shipper.

According to another aspect of the invention, the antistacking device and damage detector can consist of a polyhedral solid with a plurality of faces. One or more of the sides of this polyhedron can have a wording or another indicium printed or painted thereon warning the shipper not to stack any objects on top of the pallet of goods, such as "DON'T STACK. " Preferably, the device takes the form of a three- or even more preferably a four-sided pyramid.

In a preferred embodiment, holes are formed in each of the sides of the device adjacent bottom margins of those sides. As an aid to forming the holes, bottom flaps are provided which can be folded under when the device is in an assembled condition.

The material from which the device is constructed should be more plastic than elastic, that is, when it deforms or crushes, it should stay that way at least to a readily apparent extent. Further, it is preferred that the device be built of materials which, when the device is crushed or misused, will not be able to be rehabilitated by a shipper. Cardboard is a preferred material for its compactness in a stored, unassembled condition, its ease of construction into the assembled form of the invention, and for its frangibility.

A principal technical advantage of the invention inheres in its combination of (1) an antistacking warning device which is visible from several feet away from the pallet, and (2) a damage detector. The antistacking warning device and stacking damage detector therefor provides a significant deterrent to mishandling of a pallet of goods during shipment.

BRIEF DESCRIPTION OF THE DRAWINGS

Further aspects of the invention and their technical advantages will be discerned with reference to the following detailed description when taken in conjunction with the drawings, in which like characters number like parts and in which:

FIG. 1 is an isometric view of a pallet of goods with several of the devices according to the invention affixed to the top thereof;

FIG. 2 is a close-up isometric view of a combination antistacking warning device and damage detector according to the invention;

FIG. 3 is a plan view of a cardboard blank, showing the device in an unassembled condition;

FIG. 4 is a part elevational, part sectional view showing the utility of the invention as an antistacking warning device;

FIG. 5 is an alternative embodiment of the invention, showing a triangular-based pyramid;

FIG. 6 is another alternative embodiment of the invention, showing a cone form; and

FIG. 7 is an antistacking device according to the invention which has been affixed to a pallet, showing one mode of failure caused by placing more than a predetermined weight on the top thereof.

DETAILED DESCRIPTION OF THE INVENTION

In FIG. 1 there is seen a pallet P of goods, on which have been placed cardboard containers C; typically, several such containers will be placed on a single pallet P. Conventionally, the containers C are affixed to the pallet P by straps S in both a lengthwise and a widthwise direction. The number of straps S will vary according to the size of the pallet and the tendency of the containers C to shift off of the pallet P. Typically, the straps S are formed of steel or plastic. In an alternative binding method, the containers C may be affixed to the pallet P by one or more sheets of plastic (not shown).

A plurality of combination antistacking warning and stacking damage detector devices **10** are shown affixed to the top of the pallet P at selected (here, all) intersections of the widthwise and lengthwise straps S. The number of devices **10** used on any particular pallet depends on its size. For small pallets P, only one antistacking device **10** may be necessary; for pallets P of a more typical size, four antistacking devices **10** should be employed. For particularly large pallets (not shown) P, one antistacking device should be affixed to the top of the pallet inside each unit of surface area to be protected; thus, for example, an antistacking device **10** may be affixed at that intersection of straps which is closest to each corner of the pallet, plus one device located in the middle of the pallet to prevent the stacking of a second pallet in a position such that it would not touch the four corner devices.

FIG. 2 illustrates one of the antistacking devices **10** in more detail. A preferred form of the antistacking device **10** is a pyramid, as shown. The antistacking device **10** has a body **12** with a plurality of faces **14** and **15** that extend from a bottom margin **16** to a top **18**. It is preferred that each of the faces **14** and **15** visible to handlers of the pallet have warning indicia **20** thereon in a prominent size. For example, as shown such indicia could be the words "DON'T STACK." In an alternative embodiment, the warning indicia **20** could be in several languages, one or more languages per face **14**, **15**. The languages of the warning phrases may be selected according to the probable nationalities of the shippers. For use in Mexico and the Southwestern United States, for example, warnings in English and Spanish may be printed; for use in Canada, warnings in French and English may be used; and for use on pallets that have overseas origins and/or destinations, the languages of the source and of the destination country may be used.

In an assembled condition, the body **12** has a height h, measured in a direction perpendicular to its base, which is preselected according to considerations of compactness of size as stored in an unassembled condition and, in a countervailing direction, visibility to the shipping personnel when the device is in an assembled condition. The height h should be at least 3 inches tall to accord it sufficient visibility from several feet away; it is preferred that the height h be between 8 and 12 inches, and in a particularly preferred embodiment h is approximately 9¾ inches.

As assembled, each of the faces **14**, **15** has a hole **22** formed in the bottom portion thereof adjacent its bottom margin **16**. These holes **22** are sized to receive a tying strap S_1 or S_2; the device **10** is affixed to the pallet at the time the containers are strapped thereto. Affixing the devices **10** to the top of the pallet P using the straps S_1 and S_2 is a particularly preferred method, as the devices **10** will not then be capable of being removed without their destruction, or at least not without extraordinary measures by the shippers. Thus, the antistacking devices **10** preserve the integrity of the shipment much in the way that a wax seal preserves the integrity of a sealed-shut document. The bottom of the device **10** (see FIG. **3**) may be affixed to the top of the pallet P by adhesive strips **68** or the like; such a method of affixation is useful where the affixation method used to affix the containers C to the pallet P is plastic wrap.

Preferably, the device **10** is assembled from a sheet of relatively thin, flat material, such as cardboard. Such a sheet of material is shown in FIG. **3**, which is a plan view of a device **10** in its unassembled condition. In the preferred embodiment, the device **10** takes the form of a four-sided pyramid which will thus have isosceles triangular faces **14**, **24**, **26** and **15**, respectively. A first side margin **28** of the triangular face **14** is equipped with a pair of tabs **30** and **32**; the size and extent of the tabs **30** and **32** can be varied according to the desired strength of the closure comprising them. Each of the tabs **30** and **32** has small slots **34** formed colinearly with margin **28** as is well known in cardboard joining practice. With respect to each of the tabs, two parallel cut lines **36** proceed inwardly from the generally linear margin **28** by a small distance, and a fold or score line **38** joins the terminus of these two cut lines **36**. The degree of recess of the fold lines **38** from the generally linear first side margin **28** is preferably the same as the thickness of the sheet of material from which the device **10** is to be constructed.

A second side margin **40** of the first face **14** is a score or fold line, and is also a first side margin of an intermediate triangular face **24**. An opposed, second side margin **42** of the intermediate triangular face **24** is also the first side margin of a fourth triangular face **26**; this in turn has a second side margin **44** that is the same as the first side margin of a last triangular face **15**. The margins **40**, **42** and **44** are score or fold lines to aid in the assembly of the flat, unassembled piece of material into a pyramidal shape as shown in FIG. **2**. A second side margin **46** of the triangular face **15** has a side closure flap **48** that extends at least by a distance sufficient to help define a pair of slots **50** and **52**, the position and number of which are selected to mate with respective ones of the tabs **30** and **32**. The slots **50** and **52** are formed to be adjacent the side margin **46** and their width and length are preselected such that tabs **30** and **32** will snap into them. In one embodiment, the side or closing flap **48** may be used as a gluing surface so that it may be affixed to one or the other sides of the triangular face **14**; where the flap **48** is to be glued to the triangular face **14**, the device will typically be preassembled prior to its distribution to prospective users. Because of their open bottoms, devices **10** may be preassembled and stacked on top of one another for ease in storage and distribution.

Side margins **56** of the side closing flap **48** are acutely angled, and form an angle a with the first side margin **46** of face **15** that is at least as acute and preferably is more acute than, the smaller of an apical angle β and a base angle γ of the faces **15** or **14**.

Each of the isosceles triangular faces **14, 24, 26** and **15** has a bottom margin **58** that joins the respective side margins **28, 40; 40, 42; 42, 44** and **44, 46** of the triangular faces. Adjacent each one of the bottom margins **58** is a bottom flap **60**. The bottom margins **58** are fold or score lines. Interrupting each one of the bottom margins **58** is a cutout **62** which is formed, for example, by a U-shaped cut **64**. Each cutout **62** is formed to be continuous with a respective bottom flap **60**. When each of these is punched out in the manner shown in FIG. **2** and the corresponding flap **60** folded, a hole **22** will result. One of the purposes of the bottom flaps **60** is to form a bottom limit of each hole. Each of the bottom flaps **60** has a side margin **66** at a sufficiently acute angle to a respective margin **58** such that, when the device is fully assembled and the flaps **60** are folded inward, there will be no overlap of margins **66**, but rather that the margins **66** will form an annular square or frame.

To cover the common instance where the device **10** will be used to protect the top surface of a pallet wrapped with plastic, the flaps **66** also preferably each have an adhesive strip **68** affixed thereto, which may be of a conventional peel-off type. Preferably, each of the adhesive strips **68** are of the padded type so as to provide adhesive surface area even on a somewhat nonplanar container surface. While the flaps **60** may be folded underneath the body **12**, as is shown in FIG. **2**, alternatively they may be folded outwardly such that an opposite side of them will be presented downward; such an alternative disposition would allow devices **10** to be stacked in a preassembled condition. In one embodiment, adhesive strips **68** would be affixed to both opposed faces of the flaps **60** so that the flaps may be turned inwardly or outwardly at the user's choice.

FIG. **4** shows the antistacking devices **10** in use. A pallet P_1 having a top to which several devices **10** have been affixed has already been loaded into a semitrailer **80**, a side of which has been broken away to show interior detail. A forklift operator **82** is sitting on a forklift **84** and is moving a second pallet P_2 of goods into the back of the semitrailer **80**. As explained above, the natural penchant of the operator **82** (or his or her employer) is to fill as much of the interior volume of the semitrailer **80** as possible; without the antistacking warning devices **10** being in place, his or her natural tendency would be to take the pallet P_2 and stack it immediately on top of the pallet P_1. However, from a position which is significantly remote (such as several feet) from the pallet P_1, the forklift operator **82** discerns the antistacking devices **10** and the NO-STACK indicia (see FIG. **2**) labelled thereon. He or she therefore knows not to place the pallet P_2 on top of the pallet P_1 but rather along side of it. In this way, stacking damage to the goods affixed to pallet $_1$, which goods may be relatively fragile items, is avoided. The usual interposition of the fork **85**, pallet P_2 and a portion of forklift **84** between operator **82** and pallet P_1 means that the antistacking devices must be large enough to be readily visible several feet away. Visibility from at least ten feet is recommended. The interiorly mounted and/or small devices shown in the prior art would be ineffective in preventing stacking damage; they typically only record the occurrence of such damage. This is why placement e.g. on top of pallet P_1 in a visibly prominent position is important.

FIG. **5** illustrates an alternative embodiment of the invention, in which an antistacking device indicated generally at **86** takes the form of a three-sided pyramid. It has cutouts **88, 90** and **92** positioned so as to receive intersecting straps S_1 and S_2 as before. Cutout **90** is formed at the intersection of two faces **93** and **94**. Cutout **88** is formed at the middle of the bottom margin of a third face **95**. Cutout **92** and a matching cutout (not shown) are formed on the bottom margin of faces **92** and **93** so as to be spaced from cutout **90**.

FIG. **6** illustrates yet another embodiment of the invention, this time a cone **96**. The cone **96** may be formed of a relatively flexible piece of material that may have bottom margins or flaps (not shown) that are of a sufficient size to define the bottom margins of respective holes **98**.

The device **10** is designed such that when it is in an assembled condition and as affixed to the top of a pallet, it will crush or fail upon the application of a predetermined amount of weight or force to its top.

There are several specifications of the devices which can be varied to determine the device's predetermined weight loading limits. For example, there will be an optimum slope of the pyramidal sides at which the devices may hold a maximum of weight without crushing. Increasing the height or decreasing the slope from this optimum angle may cause the antistacking device to fail more rapidly than it otherwise would. To weaken the device, and therefore lower its predetermined weight, the thickness of the material or its composition may be altered, or the methods of joining it together may be made less adequate, such as reducing the number of the tabs **30** and **32**. To increase the predetermined crushing weight limit of the antistacking device **10**, the thickness of the material can be increased and/or its methods of joining the isosceles triangular faces **14, 15, 24** and **26** (FIGS. **2–3**) may be augmented, such as increasing the number of the tabs **30** and **32** and/or gluing the side flap **48** to the face **14**. For a particularly strong antistacking device, provisions can be made for joining the bottom flaps **60** together so that there will be additional resistance to flattening out the pyramid shape.

FIG. **7** is an isometric view of a device **10'** in a failed condition. As explained above, it is preferred that the device **10** be formed of a plastic rather than an elastic material, such that any deformation that it suffers due to putting too much weight on it will cause irreversible and quickly visible damage. In one embodiment, the exterior face of the pyramidal device **10'** may have a coating on it (not shown) which splits when the surfaces **14, 15, 24** and **26** (FIGS. **2** and **3**) are deformed by more than a predetermined amount. As shown, the device **10'** will remain affixed to the pallet even after it has suffered damage; reinforcements can be made to the holes **22** to ensure that the device, as evidence, of maltreatment, remains. In one embodiment of the device, the lower portion thereof can be made of a quite rugged material that is very resistant to its removal, while the top thereof may be made of a relatively flimsy material that irreversibly collapses upon application of a predetermined force.

Other shapes of the device **10** may also be contemplated. For example, instead of the polyhedral or conical shapes shown, the device **10** can take the form of an upstanding figurine. Further, assembly of the device **10** out of a cardboard blank is only one of several fabrication methods; in another form (not shown) the device may be blow-molded or injection molded out of a suitable plastic material.

While the device of the invention has been described in terms of protecting a pallet of goods, it can as easily protect any other object to be shipped or group of objects, where such object or objects is liable to be damaged if other objects or goods are stacked on top of them.

In summary, a combination antistacking warning device and stacking damage detector has been shown and described. The device is affixable to the top of a pallet of goods at the intersection of tying straps, and may alterna-

tively be affixed thereto using adhesive tabs. The upstanding device is visible from several feet away so as to give a readily apparent warning to handlers of a pallet of goods and also to give a readily apparent indication that damage to the pallet of goods has been sustained in contravention of antistacking instructions.

While particular embodiments have been illustrated in the above detailed description, the invention is not limited thereto but only by the scope and spirit of the appended claims.

What is claimed is:

1. A combination stacking damage detector and antistacking warning device, comprising:

a body having a bottom and a top;

means for affixing the bottom of the body to a top of an object to be shipped;

a height of said body measured in a direction perpendicular to said bottom from said bottom to said top, said height being at least three inches, said body normally upstanding from said object when less than a predetermined force is applied on said top toward said bottom; and

said body having at least one upstanding wall between the top and the bottom, the upstanding wall permanently deforming responsive to at least said predetermined force being applied to said top toward said bottom, said body when deformed giving a visual indication to an observer located several feet away from said body that an item having a weight that equals or exceeds said predetermined force has been applied to said top of said object.

2. The device of claim 1, wherein said object is a pallet of goods.

3. The device of claim 1, wherein said height is selected from the range of about 8 inches to about 12 inches.

4. A combination stacking damage detector and antistacking warning device, comprising:

a body having a bottom and a top and at least one side, the side having a bottom margin, a bottom flap of the bottom joined to the bottom margin of the side;

the side and the bottom flap defining and bounding a hole at the junction of said bottom with said at least one side, said hole sized to receive a tying strap therethrough so as to affix said device to a top of an object to be shipped;

said body permanently crushing responsive to at least a predetermined force being applied to said top of said body toward said bottom, said body when crushed giving a visual indication that an item having a weight that equals or exceeds said predetermined force has been applied to said top of said object.

5. The device of claim 4, wherein said object is a pallet of goods, said typing strap used to affix at least one container to said pallet.

6. The device of claim 4, wherein said body is formed of cardboard.

7. The device claim 4, wherein said bottom flap is integral with said side.

8. The device of claim 4, wherein said body is formed of a plurality of sides including said at least one side, said body having at least two opposed holes including said hole for the passage therethrough of said tying strap.

9. A combination stacking damage detector and antistacking warning device formed from a single sheet of flat, relatively thin material, comprising:

a first triangular face having first and second side margins, a joining flap joined to said first side margin of said first triangular face;

a second triangular face having first and second side margins, said second side margin of said second triangular face mateable with said joining flap when said device is assembled;

at least one additional triangular face interposed on said single sheet between said first triangular face and said second triangular face, said at least one additional face having a side margin adjoining a preselected one of said second side margin of said first triangular face and said first side margin of said second triangular face;

at least said first and second triangular faces having a bottom margin, a bottom flap attached to each of said bottom margins, for each of said first and second triangular faces, a cutout formed in the triangular face adjacent a bottom margin thereof so as to create a hole adaptable to receive a tying strap therethrough; and

said device assemblable into a pyramidal solid having a bottom including said bottom flaps and a top, said device affixable to an object to be shipped by passing at least one tying strap through one or more of said holes, said device permanently crushing upon the application of at least a predetermined force to said top in the direction of said bottom to thereby indicate the possibility of stacking damage to said object.

10. The device of claim 9, wherein said object is a pallet of goods.

11. The device of claim 9, and further comprising a fourth triangular face, a first side margin of said fourth triangular face adjoining said second side margin of said first triangular face, a second side margin of said fourth triangular face adjoining a side margin of said additional triangular face.

12. The device of claim 9, wherein a respective bottom flap adjoins a bottom margin of each of said triangular faces, a respective cutout formed in each of said triangular faces to adjoin a respective one of said bottom flaps.

13. The device of claim 9, wherein at least one slot is formed on said first side margin of said first triangular face, a tab formed on said second side margin of said second triangular face which is insertable into said slot when said device is assembled.

14. The device of claim 13, wherein a plurality of said slots are formed on said first side margin of said first triangular face, a like plurality of tabs formed on said second side margin of said second side face which are insertable into respective ones of said slots upon assembly of said device.

15. A method for preventing stacking damage to a pallet of goods and for indicating such damage, comprising the steps of:

providing an upstanding body of a device which will crush upon the application of at least a predetermined force on a top of the body toward a bottom thereof;

forming antistacking warning indicia on at least one upstanding side of the body;

affixing the device to a top of the pallet of goods such that the body will be clearly visible to a handler of the pallet of goods; and

if an object of more than a predetermined weight is placed on top of the pallet of goods, crushing the body of the device in response to said weight to give an indicium of damage.

16. A combination stacking damage detector and antistacking warning device, comprising:

a body having a bottom and a top and taking the form of a polyhedron, at least one side of the polyhedron having warning indicia placed thereon;

means for affixing the bottom of the body to the top of an object to be shipped;

a height of said body measured in a direction perpendicular to said bottom from said bottom to said top, said height being at least three inches, said body normally upstanding from said object when less than a predetermined force is applied on said top toward said bottom; and

said body permanently deforming responsive to at least said predetermined force being applied to said top toward said bottom, said body when deformed giving a visual indication to an observer located several feet away from said body that an item having a weight that equals or exceeds said predetermined force has been applied to said top of said object.

17. The device of claim **16**, wherein said body is a pyramid.

18. The device of claim **17**, wherein said body is a three-sided or a four-sided pyramid.

19. A combination stacking damage detector and antistacking warning device, comprising:

a body having a bottom and a top;

adhesive strips, affixed to the bottom of the body, for affixing the bottom of the body to the top of an object to be shipped;

a height of said body measured in a direction perpendicular to said bottom from said bottom to said top, said height being at least three inches, said body normally upstanding from said object when less than a predetermined force is applied on said top toward said bottom; and

said body permanently deforming responsive to at least said predetermined force being applied to said top toward said bottom, said body when deformed giving a visual indication to an observer located several feet away from said body that an item having a weight that equals or exceeds said predetermined force has been applied to said top of said object.

20. A combination stacking damage detector and antistacking warning device, comprising:

a body having a bottom and a top, at least one side adjoining said bottom;

means for affixing the bottom of the body to the top of an object to be shipped comprising a hole formed in said at least one side adjacent said bottom, said hole sized to receive a tying strap therethrough;

a height of said body measured in a direction perpendicular to said bottom from said bottom to said top, said height being at least three inches, said body normally upstanding from said object when less than a predetermined force is applied on said top toward said bottom; and

said body permanently deforming responsive to at least said predetermined force being applied to said top toward said bottom, said body when deformed giving a visual indication to an observer located several feet away from said body that an item having a weight that equals or exceeds said predetermined force has been applied to said top of said object.

* * * * *

EXHIBIT 2

Int. Cl.: 16
Prior U.S. Cls.: 2, 5, 22, 23, 29, 37, 38 and 50
United States Patent and Trademark Office
Corrected

Reg. No. 2,254,391
Registered June 15, 1999
OG Date July 18, 2000

TRADEMARK
PRINCIPAL REGISTER

NO STACK

MACNEIL, DAVID F. (UNITED STATES CITIZEN)
2435 WISCONSIN STREET
DOWNERS GROVE, IL 60515

NO CLAIM IS MADE TO THE EXCLUSIVE RIGHT TO USE "STACK", APART FROM THE MARK AS SHOWN.

FOR: GEOMETRICALLY SHAPED HOLLOW CARDBOARD STRUCTURES FOR USE AS STACKING DETERRENT AND DETECTION DEVICES FOR AFFIXATION TO THE TOPS OF SHIPPING PALLETS, IN CLASS 16 (U.S. CLS. 2, 5, 22, 23, 29, 37, 38 AND 50).

FIRST USE 11-12-1997; IN COMMERCE 11-12-1997.

SER. NO. 75-370,390, FILED 10-8-1997.

In testimony whereof I have hereunto set my hand and caused the seal of The Patent and Trademark Office to be affixed on July 18, 2000.

COMMISSIONER OF PATENTS AND TRADEMARKS

EXHIBIT 3


NO STACK
PLEASE DON'T STACK ANYTHING ON TOP OF THIS PALLET.
FRAGILE
NO STACK
PLEASE DON'T STACK ANYTHING ON TOP OF THIS PALLET.
FRAGILE

EXHIBIT 4A

U.S. PATENT # 5769598

EXHIBIT 4B


NO
STACK®
PLEASE DON'T
STACK ANYTHING
ON TOP OF THIS PALLET.
FRAGILE

EXHIBIT 5


NO
STACK
FRAGILE
Tape all four flaps
to top of pallet or strap