IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

MAM BABYARTIKEL GMBH, and BAMED AG,	)	
Plaintiffs,	)	
v.	)	C.A. No. 07-608 - ***
LUV N' CARE, LTD. and MUNCHKIN INC.,	)	JURY TRIAL DEMANDED
Defendants.	)	

ANSWER, DEFENSES AND COUNTERCLAIMS OF DEFENDANT MUNCHKIN, INC.

Defendant Munchkin, Inc. ("Munchkin"), by and through undersigned counsel, hereby files its Answer, Defenses and Counterclaims to Plaintiffs' Complaint (the "Complaint").

THE PARTIES

1. Munchkin is without knowledge or information sufficient to form a belief as to the truth of the averments contained in paragraph 1 of the Complaint and therefore denies the same.

2. Munchkin is without knowledge or information sufficient to form a belief as to the truth of the averments contained in paragraph 2 of the Complaint and therefore denies the same.

3. Munchkin is without knowledge or information sufficient to form a belief as to the truth of the averments contained in paragraph 3 of the Complaint and therefore denies the same.

4. Munchkin is without knowledge or information sufficient to form a belief as to the truth of the averments contained in paragraph 4 of the Complaint and therefore denies the same.

5. Admitted.

6. Admitted.

JURISDICTION AND VENUE

7. Munchkin admits that the claims that are pled in the complaint arise under the patent laws of the United States of America, but denies that Plaintiffs' contentions have evidentiary support or are warranted by existing law.

8. Munchkin admits that this Court has subject matter jurisdiction under 28 U.S.C. §§ 1331 and 1338.

9. Admitted.

10. Munchkin is without knowledge or information sufficient to form a belief as to the truth of the averments contained in paragraph 10 of the Complaint and therefore denies the same.

11. Munchkin admits that venue is proper in this district.

THE PATENTS-IN-SUIT

12. Munchkin admits that United States Design Patent No. D441,083 ("the '083 Patent") is titled "Pacifier," and that the '083 Patent issued on April 24, 2001. Munchkin admits that a copy of the '083 Patent was attached as Exhibit 1 to Plaintiffs' complaint. Otherwise, Munchkin is without knowledge or information sufficient to form a belief as to the truth of the averments contained in paragraph 6 of the Complaint and therefore denies the same.

13. Munchkin admits that the face of the '083 patent indicates an assignment of the '083 patent to "Mam Babyartikel Gesellschaft m.b.H." Otherwise, Munchkin is without knowledge or information sufficient to form a belief as to the truth of the averments contained in paragraph 13 of the Complaint and therefore denies the same.

14. Munchkin admits that United States Patent No. 6,514,275 ("the '275 Patent") is titled "Pacifier," and that the '275 Patent issued on February 4, 2003. Munchkin admits that a copy of the '275 Patent was attached as Exhibit 2 to Plaintiffs' complaint. Otherwise, Munchkin is without knowledge or information sufficient to form a belief as to the truth of the averments contained in paragraph 14 of the Complaint and therefore denies the same.

15. Munchkin admits that the face of the '275 patent indicates an assignment of the '275 patent to "Bamed AG." Otherwise, Munchkin is without knowledge or information sufficient to form a belief as to the truth of the averments contained in paragraph 15 of the Complaint and therefore denies the same.

16. Admitted.

BACKGROUND

17. Munchkin is without knowledge or information sufficient to form a belief as to the truth of the averments contained in paragraph 17 of the Complaint and therefore denies the same.

18. Munchkin admits that Munchkin sells pacifiers, including BLING brand pacifiers. Munchkin denies that any of the pacifiers that it sells or has sold infringe either of the patents in suit. Otherwise, Munchkin is without knowledge or information sufficient to form a belief as to the truth of the averments contained in paragraph 18 of the Complaint and therefore denies the same.

19. Munchkin admits that Munchkin sells pacifiers, including BLING brand pacifiers, within the United States. Otherwise, Munchkin is without knowledge or information sufficient to form a belief as to the truth of the averments contained in paragraph 19 of the Complaint and therefore denies the same.

20. Munchkin is without knowledge or information sufficient to form a belief as to the truth of the averments contained in paragraph 20 of the Complaint and therefore denies the same.

21. Munchkin is without knowledge or information sufficient to form a belief as to the truth of the averments contained in paragraph 21 of the Complaint and therefore denies the same.

COUNT I- ALLEGATIONS OF INFRINGEMENT OF THE '083 PATENT

22. The incorporation by reference is acknowledged.

23. Denied.

24. Munchkin admits that it received a letter from Plaintiffs' Austrian counsel in late 2006 (attached as Exhibit 1) alleging that Munchkin was infringing the '083 patent. In January 2007, Munchkin's intellectual property counsel sent Plaintiffs' Austrian counsel a detailed letter in response (attached as Exhibit 2) explaining under applicable U.S. law why Munchkin can not reasonably be considered to have infringed the '083 patent. Munchkin specifically denies that it has infringed the '083 patent. Otherwise, Munchkin is without knowledge or information sufficient to form a belief as to the truth of the averments contained in paragraph 24 of the Complaint and therefore denies the same. The phrase "such pacifiers" in particular is unclear.

25. Munchkin specifically denies that it has infringed the '083 patent. Munchkin is presently selling pacifiers. Otherwise, Munchkin is without knowledge or information sufficient

to form a belief as to the truth of the averments contained in paragraph 25 of the Complaint and therefore denies the same.

26. Denied.

27. Denied.

COUNT 2- ALLEGED INFRINGEMENT OF THE '275 PATENT

28. The incorporation by reference is acknowledged.

29. Denied.

30. Denied as to Munchkin. Otherwise, Munchkin is without knowledge or information sufficient to form a belief as to the truth of the averments contained in paragraph 30 of the Complaint and therefore denies the same.

31. Munchkin admits that it received a letter from Plaintiffs' Austrian counsel in late 2006 (attached as Exhibit 1) alleging that Munchkin was infringing the '275 patent. In January 2007, Munchkin's intellectual property counsel sent Plaintiffs' Austrian counsel a detailed letter in response (attached as Exhibit 2) explaining under applicable U.S. law that (1) several claims of the '275 patent were invalid in view of prior art; (2) the remaining claims were not infringed by Munchkin; and (3) that relevant prior art that was cited by the Patent Examiner of the '083 design patent was improperly withheld by Bamed AG's attorneys from the Patent Examiner of the '275 patent. Munchkin specifically denies that it has infringed the '275 patent. Otherwise, Munchkin is without knowledge or information sufficient to form a belief as to the truth of the averments contained in paragraph 31 of the Complaint and therefore denies the same. The phrase "such pacifiers" in particular is unclear.

32. Munchkin specifically denies that it has infringed the '275 patent. Munchkin is presently selling pacifiers. Otherwise, Munchkin is without knowledge or information sufficient

to form a belief as to the truth of the averments contained in paragraph 32 of the Complaint and therefore denies the same.

DEFENSES TO PLAINTIFFS' COMPLAINT

Without altering the burdens of proof, Munchkin asserts the following affirmative and other defenses. Munchkin has not yet had sufficient time and opportunity to collect and review all of the information that may be relevant to the matters raised herein and, furthermore, discovery of the Plaintiffs has not yet begun. Munchkin reserves the right to modify and/or expand these defenses and to take further positions and raise additional defenses as discovery proceeds in this case.

FIRST DEFENSE

1. Plaintiffs have failed to state any claim upon which relief may be granted as to Munchkin.

SECOND DEFENSE

2. On information and belief, the '083 patent and the '275 patent (collectively "the patents in suit") are both invalid for failure to comply with one or more of the conditions and requirements of patentability as set forth in the United States Patent Laws, Title 35 U.S.C. §§ 101, 102, 103 and/or 112, and the rules and regulations, and laws pertaining thereto.

THIRD DEFENSE

3. Plaintiffs' claims are barred in whole or in part by the doctrine of laches.

FOURTH DEFENSE

4. Munchkin has not infringed, contributorily infringed, and/or induced infringement of either the '083 patent or the '275 patent and is not liable for infringement thereof.

FIFTH DEFENSE

5. Upon information and belief, Plaintiffs knew or should have known that the design and use of the Munchkin accused products does not infringe any of the claims of either of the patents in suit, and nevertheless brought the present action against Munchkin for the purpose of wrongfully excluding Munchkin from the market for pacifiers; by initiating and maintaining the present action, Plaintiffs have engaged in patent misuse and vexatious litigation, which should bar Plaintiffs from any relief herein.

SIXTH DEFENSE

6. Plaintiffs withheld information from the U.S. Patent and Trademark Office of which it was aware that would have been highly material to the examination of the application that matured into the '275 patent, including United States Design Patent D430,675, which was of record in the design patent application that issued as the '083 patent. A copy of United States Design Patent D430,675 is attached as Exhibit 3. The '275 patent is, therefore, unenforceable due to defendant's inequitable conduct and fraud upon the Patent and Trademark Office during prosecution and invalid due to the issuance of said patent in violation of 35 U.S.C. §§ 101, 102 and 103.

SEVENTH DEFENSE

7. Upon information and belief, Plaintiffs have failed to give notice to the public as permitted by 35 U.S.C. §287(a) that their products are patented, either by fixing thereon the word "patent" or the abbreviation "pat.", together with the number of the patent, or when, from the character of the article, this cannot be done, by fixing to it, or to the package wherein one or more of them is contained, a label containing a like notice. Accordingly, Plaintiffs are precluded from recovering any damages for infringement of either the '083 or the '275 patent from

Munchkin based on any act or event occurring prior to Munchkin's receipt of actual notification of infringement from Plaintiffs.

EIGHTH DEFENSE

8. Plaintiffs' request for injunctive relief is barred by the doctrine of unclean hands.

NINTH DEFENSE

9. Plaintiffs are not entitled to equitable relief because there is an adequate remedy at law.

TENTH DEFENSE

10. Plaintiffs' request for injunctive relief is barred because there exists no immediate and irreparable harm.

REQUEST FOR RELIEF

WHEREFORE, Munchkin respectfully requests that the Court grant it the following relief:

a. That Plaintiffs take nothing by their Complaint and that this Court enter a judgment in favor of Defendant Munchkin and against Plaintiffs on all claims for relief contained in Plaintiffs' Complaint;

b. That the Court enter a judgment awarding Munchkin its attorneys' fees and costs; and

c. That the Court awards Defendant Munchkin any other relief the Court deems just and proper.

DEMAND FOR JURY TRIAL

Defendant Munchkin hereby demands a trial by jury as provided by Rule 38(a) of the Federal Rules of Civil Procedure.

MUNCHKIN'S COUNTERCLAIMS

For its Counterclaims against Plaintiffs MAM Babyartikel GmbH and Bamed AG Defendant/Counterclaimant Munchkin, Inc. (hereinafter "Munchkin"), alleges as follows:

THE PARTIES

1. Counterclaim Plaintiff Munchkin is a Delaware Corporation having a principal place of business at 16689 Schoenborn Street, North Hills, California 91343.

2. Plaintiff/Counterclaim Defendant MAM Babyartikel GmbH has alleged in its Complaint that it is a corporation organized and existing under the laws of Austria with its principal place of business at Lorenz-Mandi-Gasse 50, 1160 Wien, Austria.

3. Plaintiff/Counterclaim Defendant Bamed AG has alleged in its Complaint that it is a corporation organized and existing under the laws of Switzerland with its principal place of business at Wilenstrasse 17, 8832 Wollerau, Switzerland.

JURISDICTION AND VENUE

4. This is a counterclaim for a declaratory judgment that United States Patent 6,514,275 ("the '275 patent") and United States Design Patent No. D441,083 ("the '083 patent") are both invalid and unenforceable and not infringed by Munchkin, either directly or as an inducing or contributory infringer.

5. This Court has personal jurisdiction over both Plaintiffs by virtue of the fact that both Plaintiffs have submitted themselves to such jurisdiction by filing the complaint in this action.

6. This Court has jurisdiction over the subject matter of these Counterclaims pursuant to 28 U.S.C. §§ 1331, 1338(a), 2201, and 2202. Venue is proper in this district pursuant to 28 U.S.C. §§ 1391 and 1400.

COUNT 1
DECLARATORY JUDGMENT FOR PATENT NONINFRINGEMENT

7. Munchkin incorporates by reference, as if fully set forth herein the preceding paragraphs of this Answer.

8. Munchkin promotes, markets, offers for sale, and sells infant pacifiers.

9. The Plaintiffs have commenced the present action for patent infringement against Munchkin in this Court. An actual and justiciable controversy therefore exists between the parties.

10. Munchkin's BLING brand pacifiers do not infringe the '275 patent.

11. Munchkin's BLING brand pacifiers do not infringe the '083 design patent.

12. In order for a U.S. design patent to be infringed, it must be considered whether, in the eye of an ordinary observer, giving such attention as a purchaser usually gives, the patented and accused designs are substantially the same, and the resemblance is such to deceive the observer, inducing him or her to purchase one supposing it to be the other. This is known as the "ordinary observer" or the "substantial similarity" test. In addition, the accused design must appropriate the novelty in the patented design that distinguishes the patent design from the prior art. It is the ornamental, not the functional aspects of the patented and accused designs that are pertinent to determinations of infringement.

13. Munchkin's BLING brand pacifiers are designed and marketed to be reminiscent of a piece of expensive jewelry. Their appearance is dominated by a knob having a transparent cover that reveals a studded pattern of gemstones and would not appear to be substantially the same as the patented design in the '083 design patent in the eye of an ordinary observer.

14. A purchaser of pacifiers would not be likely to purchase the Munchkin product presuming that it is the product patented in the '083 design patent.

15. The '083 design patent depicts a pacifier that is substantially identical in shape to the pacifier that is depicted in prior art United States Design Patent D430,675, except for the shape of the shield. A copy of United States Design Patent D430,675 is attached as Exhibit 3. Accordingly, if there is novelty in the patented design of the '083 design patent, it would reside only in the shield.

16. The shield that is depicted in the '083 design patent has recesses or indentations in both the top and bottom surfaces and in the two side surfaces. This feature is also disclosed in the prior art Design Patent D430,675, so it does not represent a point of novelty of the patented design.

17. The patented design in the '083 design patent is also characterized by large holes that are provided on each side of the pacifier knob within the shield. Such holes, however, are shown in a 1998 First Years advertisement (attached as Exhibit 4), so they do not represent a point of novelty.

18. If there is a point of novelty in the patented design in the '083 design patent, it must reside in the distinct shape of the top of the shield.

19. The top of the shield in the '083 design patent is characterized by a relatively flat upper surface that transitions to a radiused edge on the outermost portion of the shield and that has a distinct beveled or chamfered inner ledge having an innermost surface that defines the large hole in the shield.

20. The Munchkin product is also characterized by a shield having a relatively flat upper surface that transitions to a smooth inner radius and a smooth outer radius. There is no distinct beveled or chamfered inner ledge as is depicted in the '083 design patent.

21. The upper surface of the Munchkin shield would not be substantially the same as the patented design in the '083 design patent in the eye of an ordinary observer.

22. Munchkin's BLING brand pacifiers do not include first and second shield frame parts having an approximately U-shaped cross sectional profile or an equivalent thereof as claim 5 of the '275 patent requires. For this and other reasons they do not infringe claim 5.

23. Munchkin's BLING brand pacifiers do not include first and second shield frame parts having an approximately C-shaped cross sectional profile or an equivalent thereof as claim 6 of the '275 patent requires. For this and other reasons they do not infringe claim 6.

24. Munchkin's BLING brand pacifiers do not include first and second shield frame parts having an approximately C-shaped cross sectional profile or an equivalent thereof as claim 6 of the '275 patent requires nor a rounded web side oriented in the direction of a nipple as claim 7 requires. For this and other reasons they do not infringe claim 7.

COUNT 2
DECLARATORY JUDGMENT FOR PATENT INVALIDITY

25. Munchkin incorporates by reference, as if fully set forth herein, the preceding paragraphs of this Answer.

26. United States Patent 6,514,275 ("the '275 patent") and United States Design Patent No. D441,083 ("the '083 patent") are both invalid for failure to comply with the requirements of Part II of Title 35, United States Code.

27. Claim 1 of the '275 patent is anticipated by the 1998 First Years catalog (attached as Exhibit 4) and is therefore invalid under 35 USC §102(b).

28. Claims 2 and 3 of the '275 patent are both invalid under 35 USC §103(a) based on the combined disclosures of United States Design Patent D430,675 (Exhibit 3) and the First Years catalog extract (Exhibit 4).

29. Claim 4 of the '275 patent is invalid under either 35 USC §102(b) or 35 USC §103(a) based on the combined disclosures of United States Design Patent D430,675 (Exhibit 3) and the First Years catalog extract (Exhibit 4).

30. Claims 8-10 of the '275 patent are anticipated or obvious in view of the 1998 First Years catalog (Exhibit 4) and are therefore invalid under 35 USC §102(b) or 35 USC §103.

31. Claims 11 and 12 of the '275 patent are either anticipated or obvious in view of the 1998 First Years catalog (Exhibit 4), either alone or in view of US Patent 5,772,684 to Shrock (attached as Exhibit 5) and are therefore invalid under 35 USC §102(b) or 35 USC §103.

32. Claim 13 of the '275 patent is invalid under 35 USC §112, fourth paragraph because it fails to further limit any of the claims from which it depends.

33. Claim 13 of the '275 patent is invalid is further invalid under 35 USC §102(b) or 35 USC §103.

COUNT 3
DECLARATORY JUDGMENT FOR INEQUITABLE CONDUCT AND FRAUD ON THE U.S. PATENT AND TRADEMARK OFFICE

34. Munchkin incorporates by reference, as if fully set forth herein, the preceding paragraphs of this Answer.

35. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the U.S. Patent and Trademark Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability.

36. The duty to disclose information exists with respect to each pending claim until the claim is cancelled or withdrawn from consideration, or the application becomes abandoned.

37. Peter Roehrig (anglicized from the German Röhrig) is the sole inventor listed on both the '275 patent and the '083 design patent and was therefore associated with the filing and prosecution of both patent applications.

38. The patent application that led to the '083 design patent was filed in the U.S. Patent and Trademark Office on August 2, 2000.

39. On November 8, 2000 the U.S. Patent and Trademark Office mailed an Office Action to Mr. Roehrig's attorneys that enclosed several prior art references that were identified in a prior art search that was conducted by Examiner Stella Reid. These references included U.S. Design Patent D430, 675 (Exhibit 3)(in which Mr. Roehrig was also listed as the inventor), U.S. design patent D334,064 to Fitzpatrick and U.S. Patent 5,693,073 to Glick et al.

40. The patent application that led to the '275 patent was filed in the U.S. Patent and Trademark Office on November 29, 2000, which is 21 days after the November 8, 2000 Office Action was mailed.

41. The patent application that led to the '275 patent was directed to essentially the same product as the patent application that led to the '083 design patent.

42. Mr. Roehrig's attorneys in the patent application that led to the '275 patent failed to advise the U.S. Patent and Trademark Office of the existence of the patent application that led to the '083 design patent.

43. Mr. Roehrig's attorneys in the patent application that led to the '275 patent failed to advise the U.S. Patent and Trademark Office of at least three of the prior art references that were identified by Examiner Reid in the Office Action that was mailed on November 8, 2000.

44. The information that was withheld from the Examiner of the patent application that led to the '275 patent was highly material to patentability.

REQUEST FOR RELIEF

WHEREFORE, Munchkin respectfully requests that the Court enter judgment that:

A. United States 6,514,275 ("the '275 patent") and United States Design Patent No. D441,083 ("the '083 patent") are both invalid, unenforceable and not infringed by Munchkin;

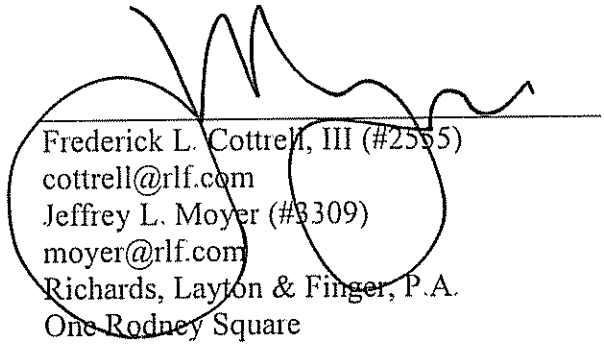
B. Munchkin has not committed any act of infringement of either the '275 patent or the '083 patent with respect to products made, used or sold by Munchkin since issuance of such patent;

C. The Plaintiffs and all of their officers, agents, employees, representatives and counsel, and all persons in active concert or participation with any of them, directly or indirectly, be enjoined from charging infringement or instituting any action for infringement of either the '275 patent or the '083 patent against Munchkin or any of its customers and contractors;

D. The Plaintiffs and all of their officers, agents, employees, representatives and counsel, and all persons in active concert or participation with any of them, directly or indirectly, be enjoined as a matter of equity from charging infringement or instituting any action for infringement of any patent related to either the '275 patent or the '083 patent, including but not limited to any patent that may issue from any continuation, continuation-in-part or divisional application claiming priority to either the '275 patent or the '083 patent, that may issue in the future against Munchkin or any of its customers and contractors;

E. This is an exceptional case, pursuant to 35 U.S.C. § 285. Munchkin therefore specifically requests that the Court increase its damage award by a factor of three and award Munchkin its reasonable attorney's fees, expenses and costs in this action; and

F. Munchkin be granted such other and further relief as the Court deems just and proper.



Frederick L. Cottrell, III (#2555)
cottrell@rlf.com
Jeffrey L. Moyer (#3309)
moyer@rlf.com
Richards, Layton & Finger, P.A.
One Rodney Square
920 North King Street, P.O. Box 551
Wilmington, DE 19899
(302) 651-7700
Attorneys for Defendant Munchkin, Inc.

OF COUNSEL:

John L. Knoble
Knoble Yoshida & Dunleavy LLC
Eight Penn Center, Suite 1350
1628 John F. Kennedy Boulevard
Philadelphia PA, 19103 USA

Dated: November 28, 2007

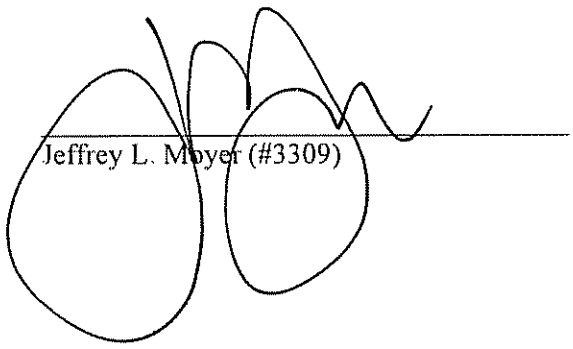
UNITED STATES DISTRICT COURT
DISTRICT OF DELAWARE

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on November 28, I electronically filed the foregoing document with the Clerk of Court using CM/ECF and caused the same to be served on the plaintiff at the address and in the manner indicated below:

BY HAND DELIVERY

Adam Wyatt Poff
Young, Conaway, Stargatt & Taylor
The Brandywine Building
1000 West Street, 17th Floor
Wilmington, DE 19899-0391



Jeffrey L. Moyer (#3309)

EXHIBIT 1

SONN & PARTNER
SINCE 1851

European and Austrian Patent,
Trademark & Design Attorneys

Riemergasse 14
1010 Wien, Austria
T +43 (0) 1-512 84 05
F +43 (0) 1-512 88 05

office@sonn.at
www.sonn.at

DI Helmut Sonn
DI Arnulf Weinzinger
DI Peter Pawlov
Mag. Dr.rer.nat. Daniel Alge
DI Dr.techn. Georg Heger
DI Dr.techn. Rainer Beetz, LL.M.

Dr.phil. Heinrich Pawlov
DI Johann Kohler-Pavlik

Munchkin, Inc
16689 Schoenborn Street
North Hills, CA 91343

Your Ref:
Our Ref: J 3288/1, RB/cs

Vienna, 07.11.2006

US Patent 6, 514,275 B2
US Patent D441,083 S

Dear Sirs,

our client Blamed AG is proprietor of US-patents 6,514,275 B2 and US D441,083 S.

Our client has become aware of your newly-offered pacifiers which comprise a lemniscate shaped shield provided with retractions on its longer sides and having lateral openings provided on each side of a central shield opening for fastening a nipple reaching to an edge of said shield while merely leaving a shield frame portion on each side of the central opening. Additionally the shield frame comprises indentations located in the middle of each shorter shield side.

The offer for sale of such patented pacifiers infringes our client`s exclusive patent rights. Thus, our clients would be entitled to a seize and desist order, damages etc.

Thus, we ask you to inform us whether in your opinion there are any reasons for neglecting our client's patent rights.

We are looking forward to receive your response until

27 November 2006.

Kind regards

Rainer Beetz
Patent Attorney

EXHIBIT 2

LAW OFFICES

KNOBLE YOSHIDA & DUNLEAVY LLC

INTELLECTUAL PROPERTY ATTORNEYS

EIGHT PENN CENTER, SUITE 1350
1628 JOHN F. KENNEDY BOULEVARD
PHILADELPHIA, PENNSYLVANIA 19103-2119

TELEPHONE (215) 599-0600
FACSIMILE (215) 599-0601
www.patentwise.com

John L. Knoble

Email: JKnoble@Patentwise.com

January 10, 2007

Dr. Rainer Beetz
SONN & PARTNER PATENTANWÄLTE
Riemergasse 14
1010 Wien
AUSTRIA

Re: Your Reference re: J3288/1
Our Reference MBI-1259COR

Dear Dr. Beetz:

Further to our telephone conversation and my e-mail message to you on November 17, 2006, we have completed our review of the issues that were raised in your letter to our client Munchkin, Inc. ("Munchkin") with respect to United States Utility Patent 6,514,275 ("the '275 patent") and United States Design Patent D441,083 ("the '083 patent") and Munchkin's line of Bling™ gem-studded pacifiers.

1. The '083 Design Patent

The test for infringement of a design patent is in the United States is two-pronged. First, it must be considered whether, in the eye of an ordinary observer, giving such attention as a purchaser usually gives, the patented and accused designs are substantially the same, and the resemblance is such to deceive the observer, inducing him or her to purchase one supposing it to be the other.[1] This is known as the "ordinary observer" or the "substantial similarity" test.

We believe that a typical purchaser of pacifiers would pay quite a bit of attention to the details of the product being considered for purchase, considering the welfare and comfort of their children may be involved. In addition, the availability of a multiplicity of similar products in this market sector would cause of the hypothetical prospective purchaser to be attentive to the individual design details of each product.

[1] *Gorham Co. v. White*, 81 U.S. (14 Wall.) 511, 530 (1872). See also *Unette Corp. v. Unit Pack Co.*, 785 F.2d 1026, 228 U.S.P.Q. 933 (Fed. Cir. 1986)

Second, the accused design must also appropriate the novelty in the patented design that distinguishes the patent design from the prior art.[2] This is known as the "point of novelty" test.

It is the ornamental, not the functional aspects of the patented and accused designs that are pertinent to determinations of infringement.[3]

Although the accused design does not have to be identical to the patented design to infringe the patent, the range of equivalents is narrow, especially in an art that is crowded with such designs[4]. As renowned patent jurist Hon. Giles S. Rich put it in the 1988 Federal Circuit decision *In re Mann*: "Design patents have almost no scope."[5]

The '083 patent depicts a pacifier that is substantially identical in shape to the pacifier that is depicted in prior art United States Design Patent D430,675, which was made of record by the patent examiner, other than the shape of the shield. Accordingly, if there is novelty in the patented design, it would reside only in the shield.

The shield that is depicted in the '083 patent has recesses or indentations in both the top and bottom surfaces and in the two side surfaces, but this feature is also disclosed in the prior art Design Patent D430,675, so it does not represent a point of novelty of the patented design. The patented design is also characterized by large holes that are provided on each side of the pacifier knob within the shield. Such holes, however, are shown in the 1998 First Years advertisement that I sent to you via e-mail, so they do not represent a point of novelty. If there is a point of novelty in the patented design, our judgment is that it would reside in the distinct shape of the top of the shield. The top of the shield is characterized by a relatively flat upper surface that transitions to a radiused edge on the outermost portion of the shield and that has a distinct beveled or chamfered inner ledge having an innermost surface that defines the large hole in the shield.

Munchkin's product is designed and marketed to be reminiscent of a piece of expensive jewelry. Its appearance is dominated by a knob having a transparent cover that reveals a studded pattern of gemstones. Accordingly, a typical purchaser of pacifiers would be extremely unlikely to purchase the Munchkin product presuming that it is your client's patented product.

The Munchkin product is also characterized by a shield having a relatively flat upper surface that transitions to a smooth inner radius and a smooth outer radius. There is no distinct beveled or chamfered inner ledge as is depicted in your client's design patent.

---

[2] *Unette Corp v Unit Pack Co*, 785 F.2d 1026, 228 U.S.P.Q.2d 933 (Fed. Cir. 1986).

[3] *Lee v Dayton-Hudson Corp*, 838 F.2d 1186, 1188, 5 U.S.P.Q.2d 1625, 1627 (Fed. Cir. 1988)

[4] *Litton Systems, Inc v Whirlpool Corp*, 728 F.2d 1423, 221 U.S.P.Q. 97 (Fed. Cir. 1984).

[5] *In re Mann*, 861 F.2d 1581, 8 U.S.P.Q.2d 2030 (Fed. Cir. 1988).

It is the ornamental, not the functional aspects of the patented and accused designs that are pertinent to determinations of infringement.[6]

The '275 utility patent makes it clear that the inventor's motivation for providing the two large holes in the shield was to gain a functional advantage, and was not influenced by aesthetics. Column 1, line 63 through column 2 line 20 of the '275 patent states:

> By providing but one lateral opening in the shield, on each side of the central opening of the shield, which opening reaches as far as to the shield edge such that only a relatively small frame part defines the edge of the shield, it will be ensured that the lateral openings are large-surface openings allowing for sufficient aeration and saliva drying. When using the pacifier, saliva can thus be drained and dried such that the sensitive skin in the region of the mouth of the infant will remain dry even during an extended use of the pacifier and no irritations, reddening or inflammations will occur.
>
> Since one respective lateral opening is provided on each of both sides of the central shield opening, the shield may be grasped in an extremely simple manner with the insertion of a finger into one of the large lateral openings being feasible. Since only one lateral opening is each provided per shield side and only a frame part of the shield is left, it is ensured that the lateral openings are sufficiently large to prevent the child's fingers from being squeezed in part of the pacifier shield. In case the pacifier is swallowed by an infant, the large lateral openings are also perfectly apt as emergency respiration openings allowing for continued breathing (emphasis added).

The distinct beveled or chamfered inner ledge having an innermost surface that defines the large holes in the shield is accordingly the only aspect of the patented design that might both be novel and possess some degree of ornamentality. Munchkin's product does not possess this feature. Accordingly, it is our considered position that Munchkin's product could not reasonably be considered to infringe your client's design patent.

2. The '275 Utility Patent

Claim 1 of the '275 patent reads as follows:

> 1. In a pacifier arrangement of the type including a generally lemniscate-shaped shield having two longer shield sides and two shorter shield sides and a central shield opening, retractions provided on said two longer shield sides in a middle thereof, and a nipple fastened in said central opening of said shield, the improvement wherein said shield comprises but one lateral opening each provided on one side of said central shield opening and reaching as far as to an edge of said shield while leaving a first shield frame part on one side of said central opening and a second shield frame part on the other side of said central opening.

This claim is clearly anticipated by the 1998 First Years catalog extract that I sent to you in the e-mail of November 17, 2006 and is therefore invalid under 35 USC §102(b).

---

[6] *Lee v. Dayton-Hudson Corp.*, 838 F.2d 1186, 1188, 5 U.S.P.Q.2d 1625, 1627 (Fed. Cir. 1988).

Claims 2 and 3 of the '275 patent read as follows:

> 2. A pacifier arrangement as set forth in claim 1, wherein said first and second shield frame parts on said two shorter shield sides each comprise an indentation.
>
> 3. A pacifier arrangement as set forth in claim 2, wherein said indentation is located in the middle of each respective shorter shield side.

The feature of the indentations on middle of the short sides of the shield frame is clearly disclosed in United States Design Patent D430,675,[7] Our position is that these claims are both invalid under 35 USC §103(a) based on the combined disclosures of the '675 design patent and the First Years catalog extract. There would have been clear motivation to a person having ordinary skill in the art to combine the teachings of these two references.

Claim 4 of the '275 patent reads as follows:

> 4. A pacifier arrangement as set forth in claim 1, further comprising a central circular shield part including said central shield opening for said nipple, and wherein said first and second shield frame parts join said central circular shield part in one piece.

This feature is disclosed in the 1998 First Years catalog extract, United States Design Patent D430,675 and in several other instances in the prior art. Our position is that this claim is invalid under either 35 USC §102(b) or 35 USC §103(a) based on the combined disclosures of that design patent and the First Years catalog extract.

Claims 5-7 of the '275 patent read as follows:

> 5. A pacifier arrangement as set forth in claim 1, wherein each of said first and second shield frame parts has an approximately U-shaped cross sectional profile.
>
> 6. A pacifier arrangement as set forth in claim 1, wherein each of said first and second shield frame parts has an approximately C-shaped cross sectional profile.
>
> 7. A pacifier arrangement as set forth in claim 6, wherein said C-shaped cross sectional profile has a rounded web side oriented in the direction of the nipple.

Munchkin's product does not have a U-shaped or a C-shaped profile and accordingly cannot infringe these claims.

Claims 8-10 of the '275 patent read as follows:

> 8. A pacifier arrangement as set forth in claim 1, wherein said lateral opening, in a direction parallel to said longer shield sides, has a length of about 10 mm to 30 mm and, transverse thereto, has a width of about 15 mm to 35 mm.

---

[7] We note that this prior art reference was relevant enough to have been made of record by the patent examiner of your client's design patent, but that your client failed to bring it to the attention of Examiner Hale during prosecution of the utility patent.

9. A pacifier arrangement as set forth in claim 1, wherein said lateral opening, in a direction parallel to said longer shield sides, has a length of about 15 mm to 20 mm and, transverse thereto, has a width of about 20 mm to 30 mm.

10. A pacifier arrangement as set forth in claim 1, wherein said lateral opening has a clear width of at least 14 mm over its entire periphery.

These dimensions are anticipated by the product that is disclosed in the First Years catalog extract. Claims 8-10 are therefore invalid under 35 USC §102(b). If for some reason they are not anticipated, the dimensions lack criticality and are therefore obvious.

Claims 11 and 12 of the '275 patent read as follows:

11. A pacifier arrangement as set forth in claim 1, further comprising an end bead provided on said nipple and a wedge-shaped plug inserted in said central shield opening to fasten said nipple to said shield in said central shield opening.

12. A pacifier arrangement as set forth in claim 11, further comprising a cap fastened to said shield to cover said plug and said end bead of said nipple.

The presence of an end bead was well known in the prior art. The product that is shown in the First Years catalog extract certainly would have possessed this feature, and so does US Patent 5,772,684 to Shrock that was made of record by the Examiner of the '275 patent. The cap that is claimed in claim 12 is also shown in both Schrock and the First Years catalog extract. Accordingly these claims are invalid either under 35 USC §102(b) or 35 USC §103(a).

Claim 13 of the '275 patent reads as follows:

13. A pacifier shield to be used in the pacifier arrangement set forth in claim 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 or 12.

This claim is invalid under 35 USC §112, fourth paragraph because it fails to further limit any of the claims from which it depends. We are surprised that the Examiner did not catch this. In any event, the claims adds nothing in terms of patentability and would be invalid based on prior art for the reasons stated above with respect to each claim from which it depends.

3. Conclusion

For the reasons explained above, it is our sincere reasoned conclusion that Munchkin's products do not infringe any valid patent rights that are owned by your client. If you disagree, we would of course be willing to consider your comments.

If you have any questions, please do not hesitate to contact me.

Very truly yours,

/JLK/

John L. Knoble

JLK:
Enclosure(s)

cc: Mr. Steven B. Dunn

EXHIBIT 3

US00D430675S

United States Patent [19]

Roehrig

[11] **Patent Number: Des. 430,675**

[45] **Date of Patent: ** Sep. 5, 2000**

[54] **PACIFIER**

[75] Inventor: **Peter Roehrig**, Vienna, Austria

[73] Assignee: **Mam Babyartikel Gesellschaft m.b.H.**, Vienna, Austria

[**] Term: **14 Years**

[21] Appl No : **29/116,552**

[22] Filed: **Jan. 5, 2000**

[30] **Foreign Application Priority Data**

Jul 13, 1999 [AT] Austria 2605/99

[51] **LOC (7) Cl.** **24-04**

[52] **U.S. Cl.** **D24/194**

[58] **Field of Search** D24/194, 193; 606/234, 235, 236

[56] **References Cited**

U S PATENT DOCUMENTS

D 249,161	8/1978	Rohrig	D24/194
D 328,647	8/1992	Hwang	D24/194
D. 340,525	10/1993	Rohrig	D24/194
D. 376,014	11/1996	McKenney	D24/194
D. 393,074	3/1998	Fields et al.	D24/194
5,403,349	4/1995	Rohrig	606/234
5,653,731	8/1997	Rohrig	606/234

Primary Examiner—Stella Reid
Attorney, Agent, or Firm—Abelman, Frayne & Schwab

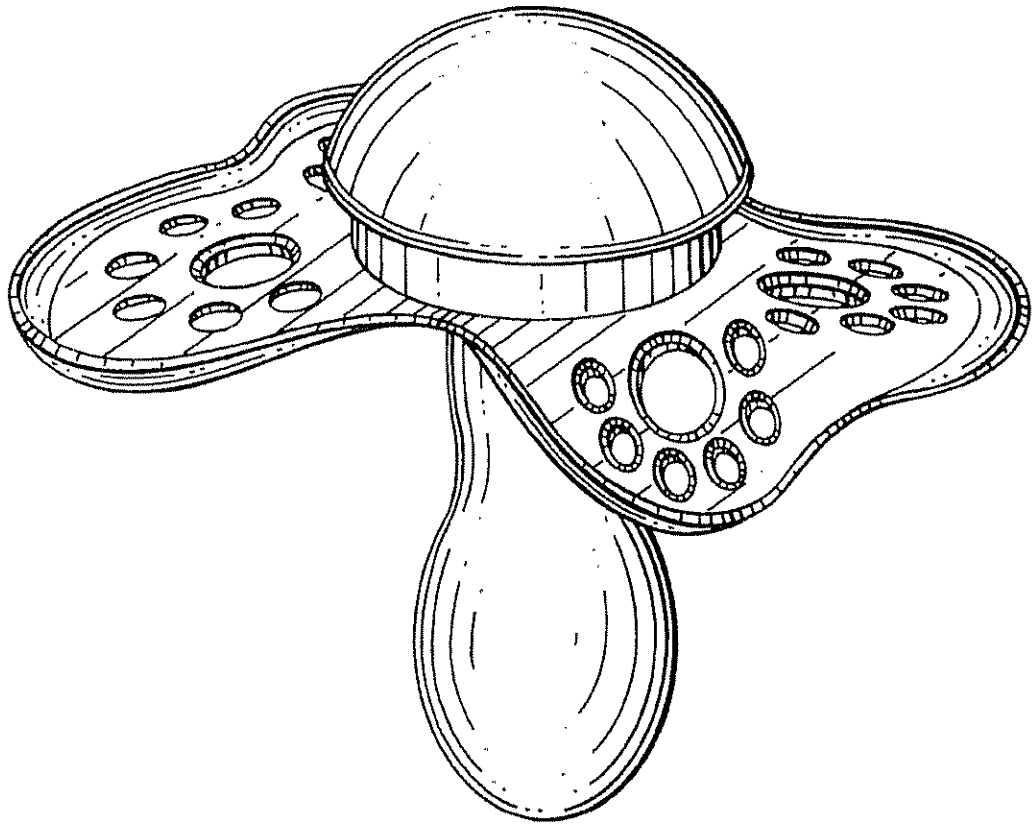
[57] **CLAIM**

The ornamental design for pacifier, as shown and described

DESCRIPTION

FIG 1 is a top plan view showing the new pacifier design;
FIG 2 is a bottom plan view thereof;
FIG 3 is a front view thereof;
FIG 4 is a rear view thereof;
FIG 5 is a left side view thereof;
FIG 6 is a right side view thereof; and,
FIG 7 is a perspective view thereof

1 Claim, 7 Drawing Sheets



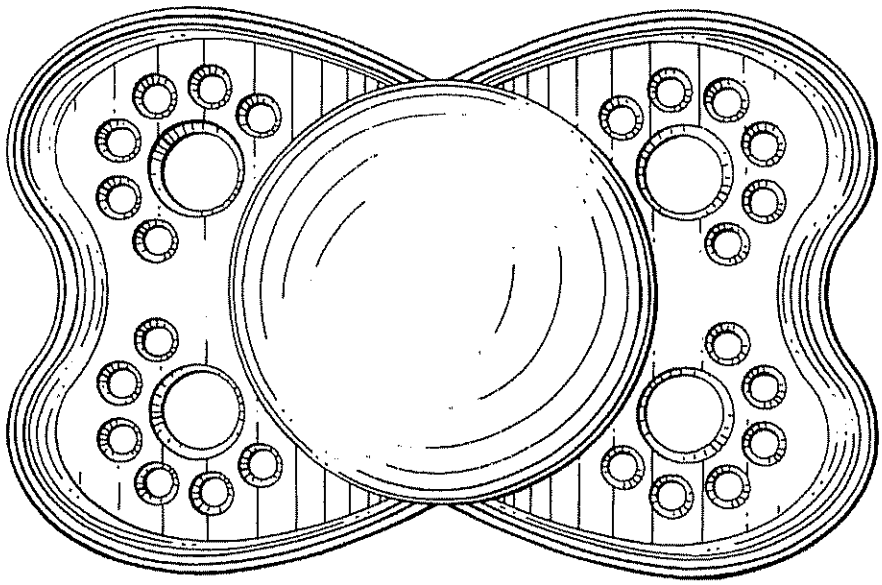


FIG. 1

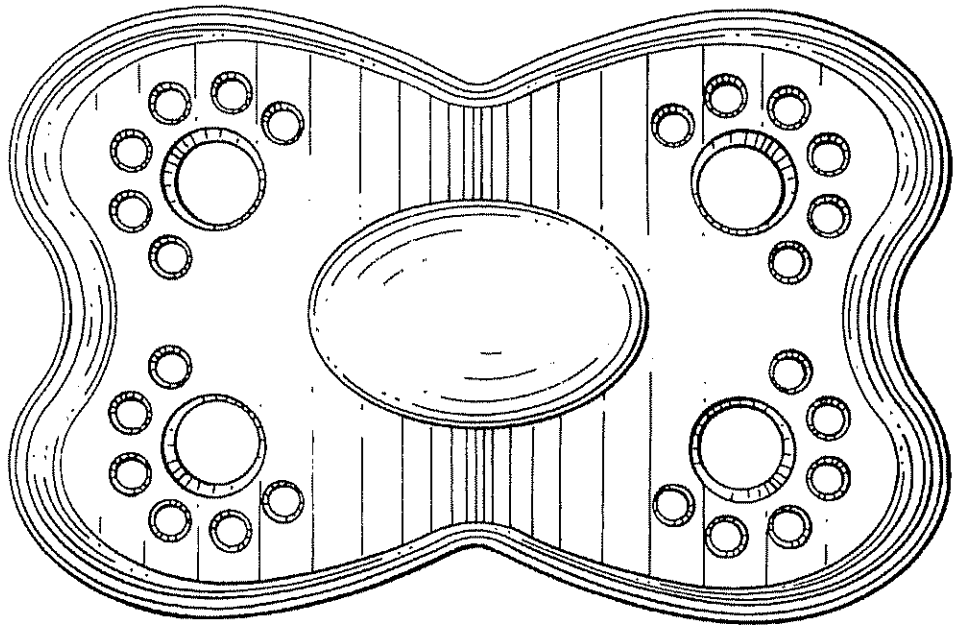


FIG. 2

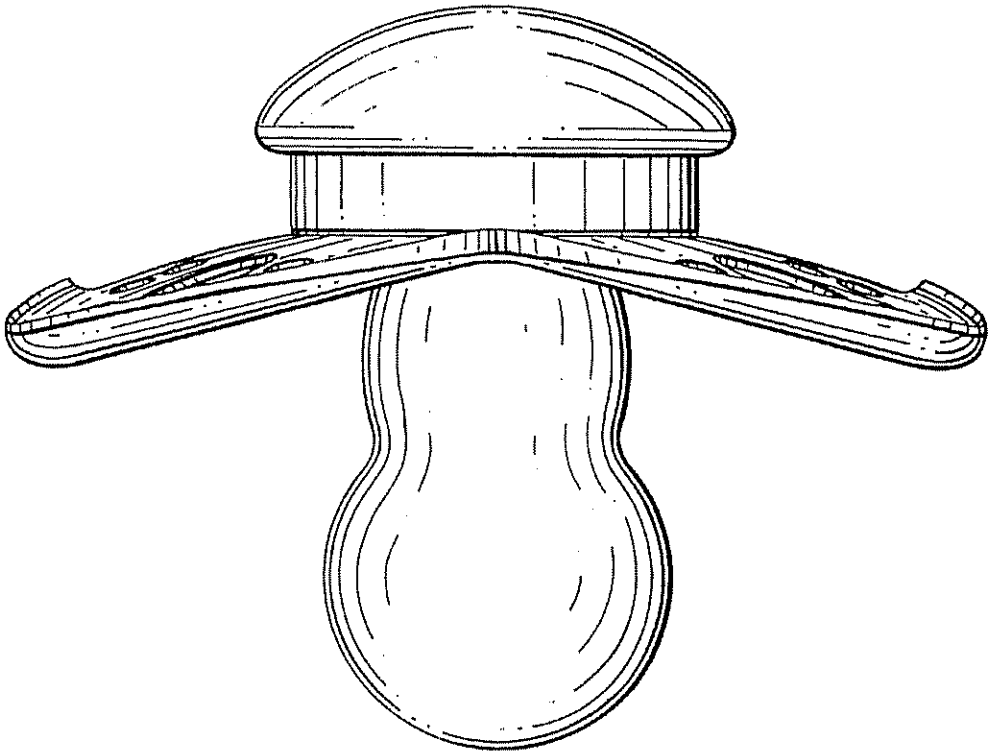


FIG. 3

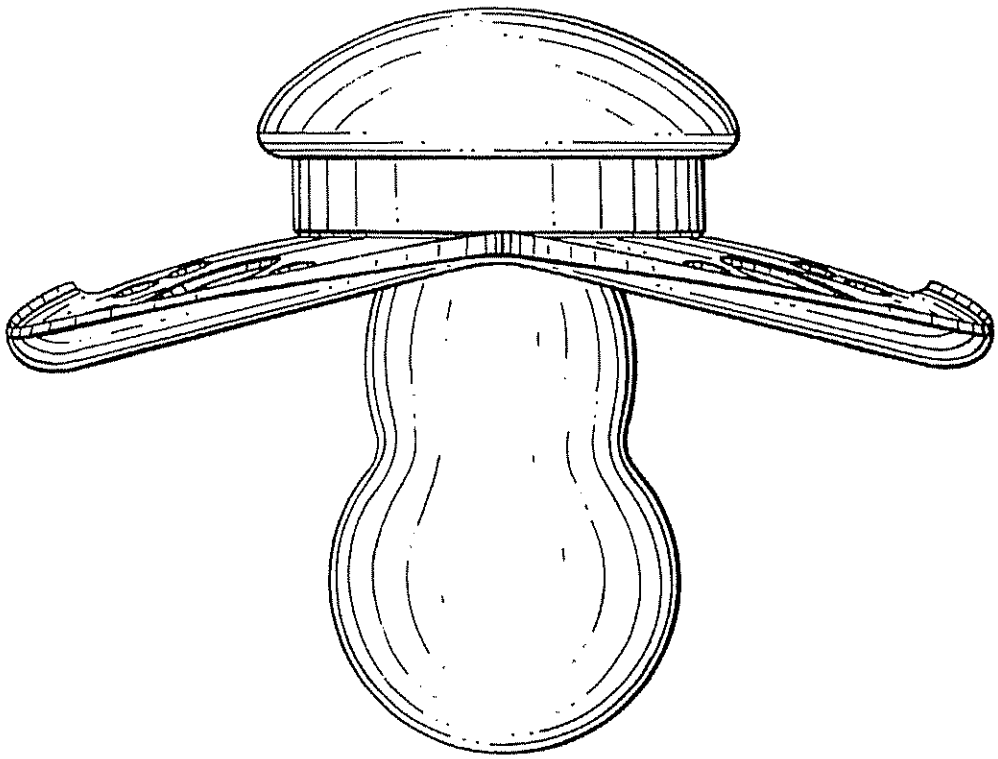


FIG. 4

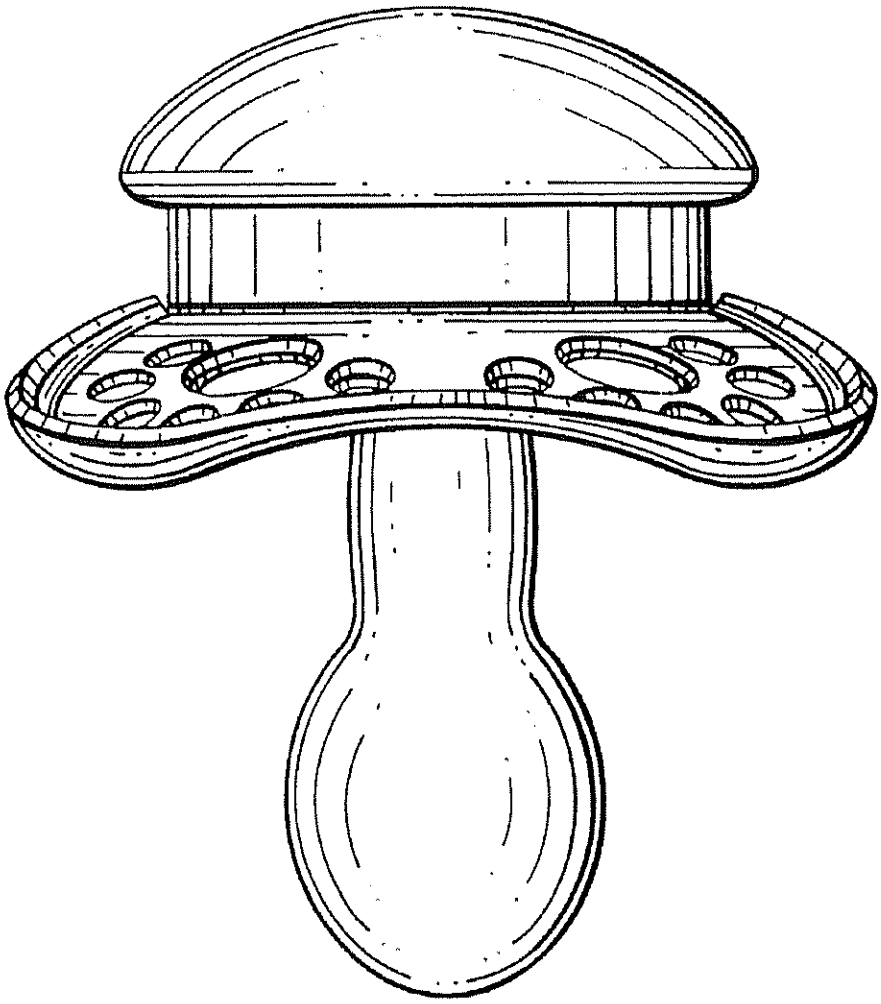


FIG. 5

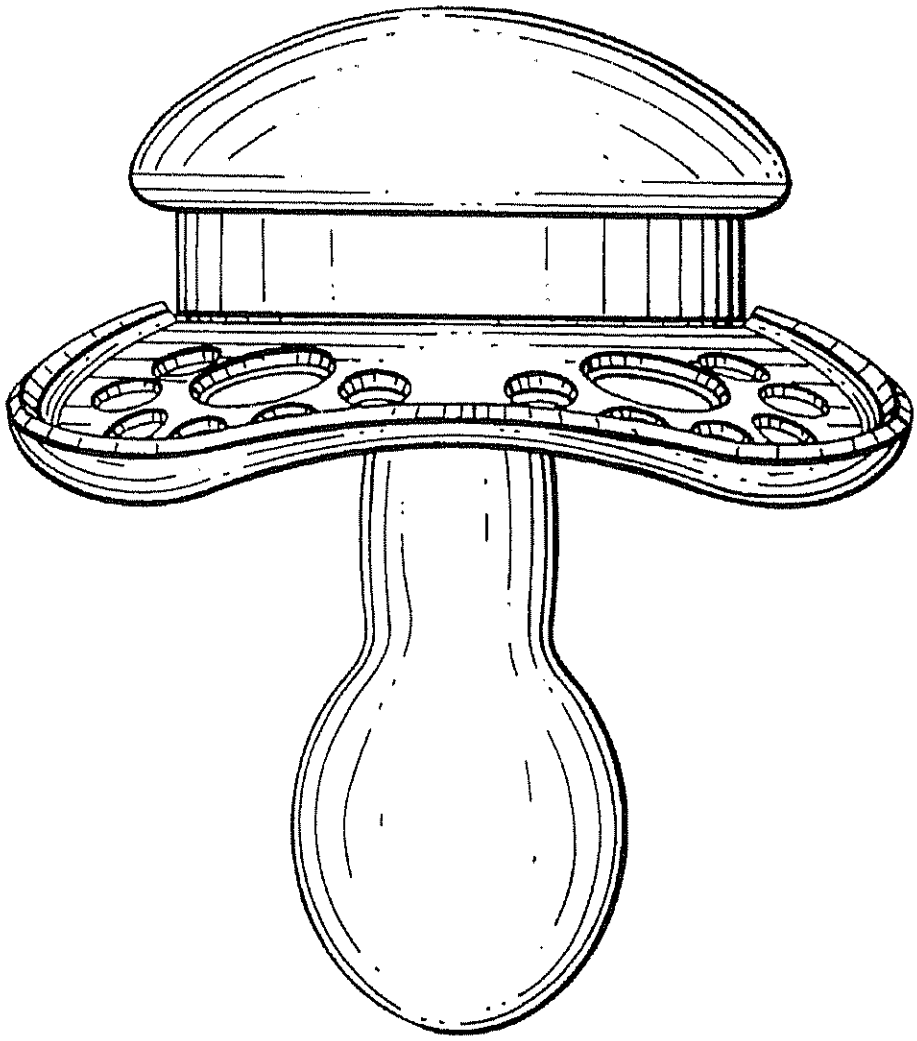


FIG.6

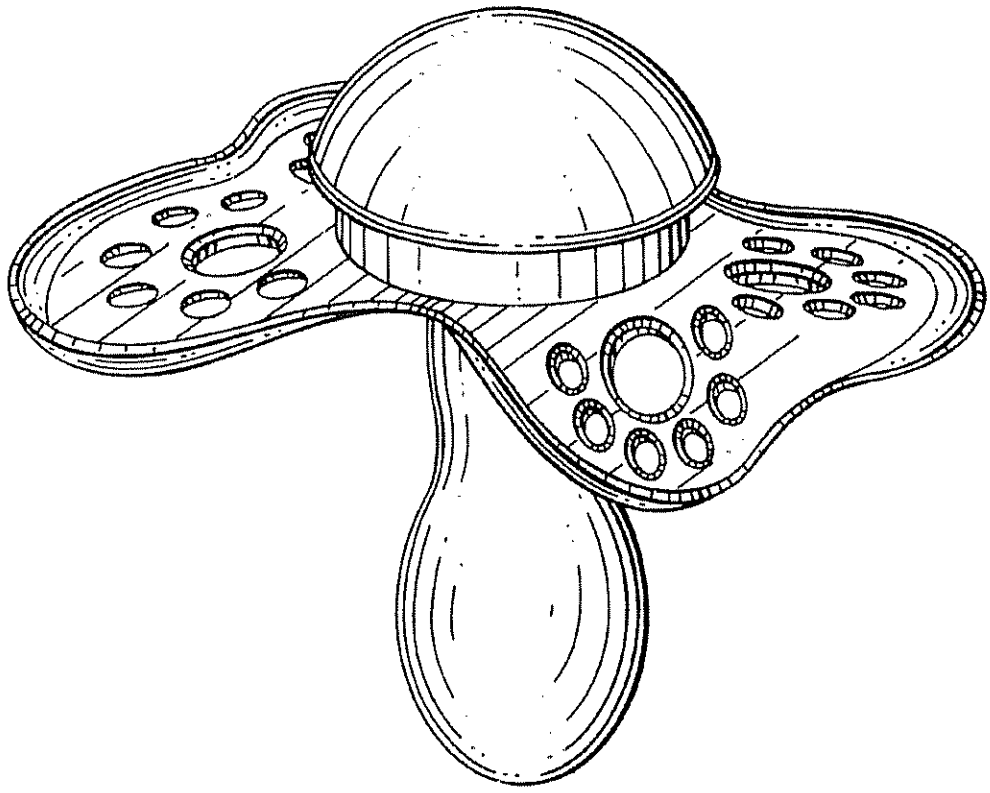
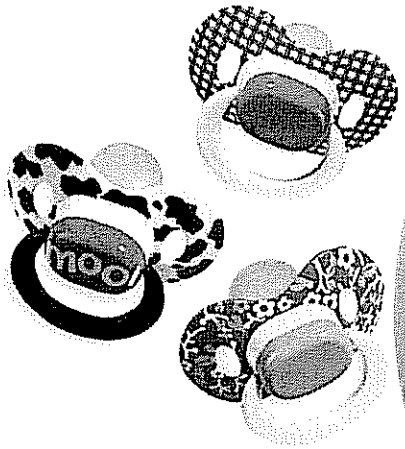


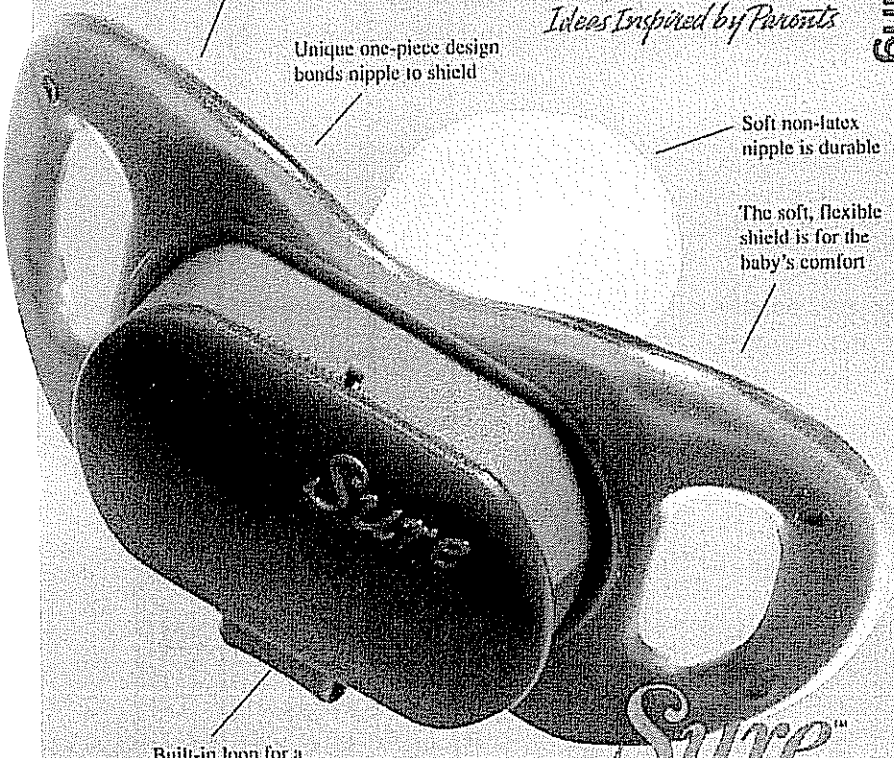
FIG. 7

EXHIBIT 4

the first years®
Ideas Inspired by Parents



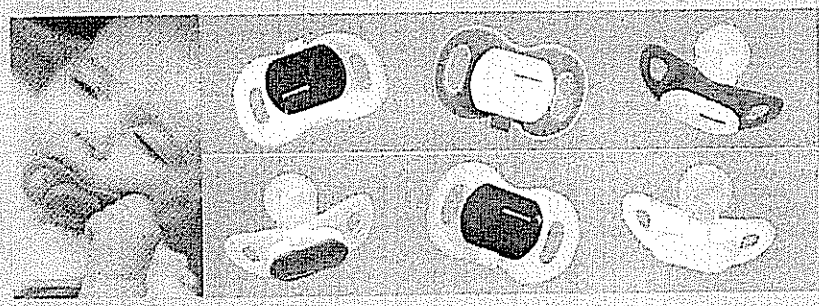
1231 Kip® Styles - Infant Size
High-quality Kip® pacifiers feature fresh designs that are cute, not cutesy. The selection of 6 patterns provides plenty of choice. *Infant size*

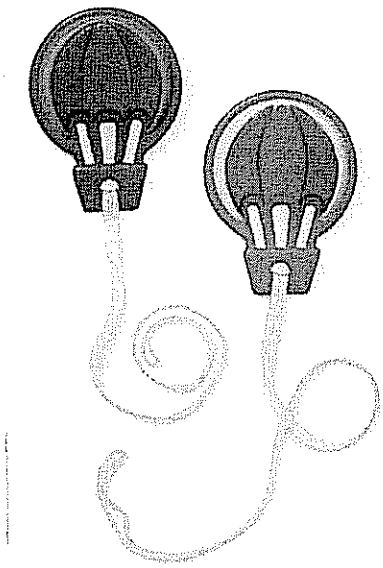


Sure™
A safer way to comfort

when a baby goes to pieces, this pacifier won't

1221 Newborn Sure Pacifier (2 pack),
1222 Infant Sure Pacifier (2 pack)
Parents are concerned with safety, and these deliver! Sure pacifiers have a unique uni-body design engineered to remain intact no matter how hard a child sucks on it. The orthodontic shape with extra-durable nipple encourages sucking while seamless nipple base prevents dirt and germs from getting trapped inside. Soft-coated shield to maximizes comfort. From birth.





1260 2 Soft Flex Pacifier Holders
Nobody likes to play hide 'n seek with the pacifier. These holders will keep pacifiers handy. From birth

EXHIBIT 5

US005772684A

United States Patent [19]

Shrock

[11] Patent Number: 5,772,684

[45] Date of Patent: Jun. 30, 1998

[54] MUSICAL PACIFIER

[76] Inventor: Richard A. Shrock, c/o JASB, Inc., 850 Church Rd., Elgin, Ill. 60123-9344

[21] Appl. No.: 457,615

[22] Filed: Jun. 1, 1995

[51] Int. Cl.[6] A61J 17/00

[52] U.S. Cl. 606/236; 606/234

[58] Field of Search 606/234–236; D24/194–199; 215/11.1–11.6; 200/512, 515

[56] References Cited

U.S. PATENT DOCUMENTS

4,554,919	11/1985	Hubert
4,586,621	5/1986	Dahan
4,726,376	2/1988	Dahan
4,768,510	9/1988	Leung
4,856,519	8/1989	Teves
5,109,864	5/1992	Lu
5,292,335	3/1994	Shin

FOREIGN PATENT DOCUMENTS

0185614 3/1990 European Pat. Off.

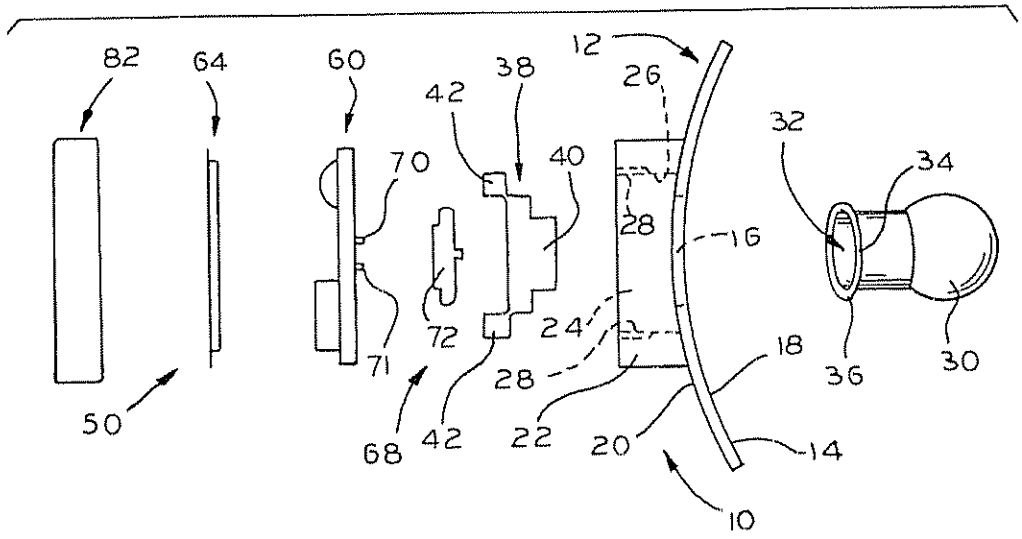
Primary Examiner—Glenn K. Dawson

Attorney, Agent, or Firm—Wood, Phillips, VanSanten, Clark & Mortimer

[57] ABSTRACT

A watertight, immersion proof musical pacifier includes a mouthpiece including a faceguard having a central opening defining an air passage to an integral sealed housing. A nipple has an interior space. A plug sealingly mounts the nipple to the mouthpiece with the interior space in communication with the housing through the air passage. A switch-actuated sound generating circuit disposed in the housing controllably reproduces audio signals. A pressure sensitive switch normally closes the air passage. The switch electrically actuates the sound generating circuit in response to pressure generated in the nipple. An air leakage path between the nipple interior space and the housing to maintain static pressure equilibrium between the nipple interior space and the housing.

22 Claims, 3 Drawing Sheets



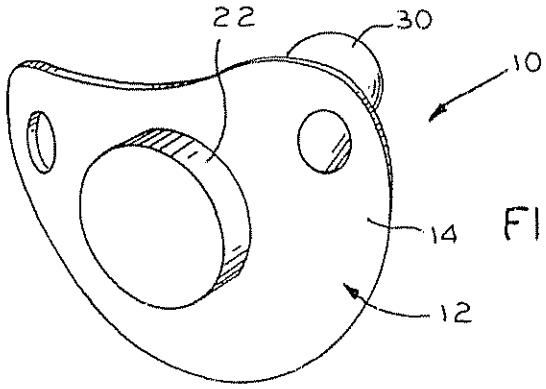


FIG. 1

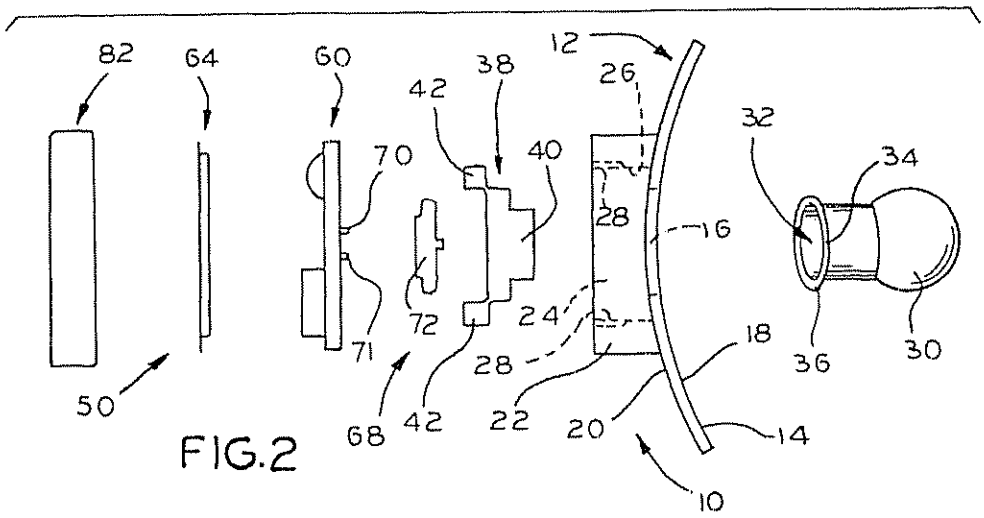


FIG. 2

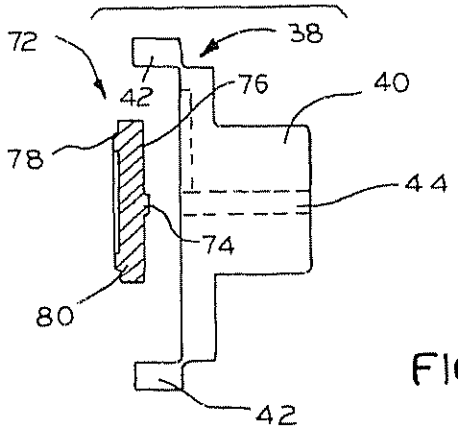


FIG. 3

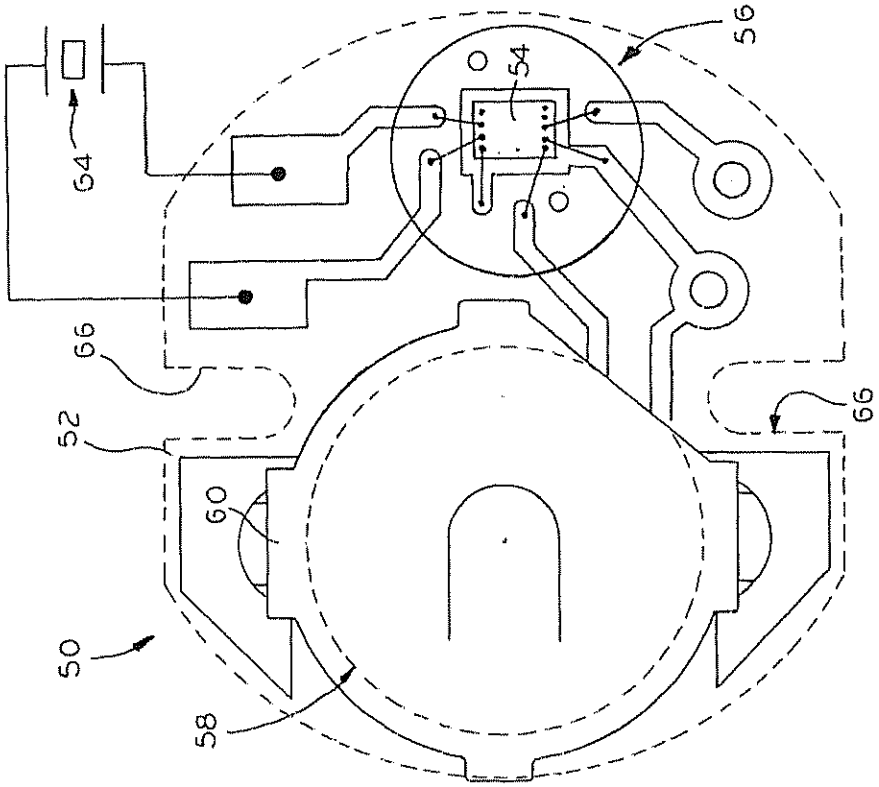


FIG.5

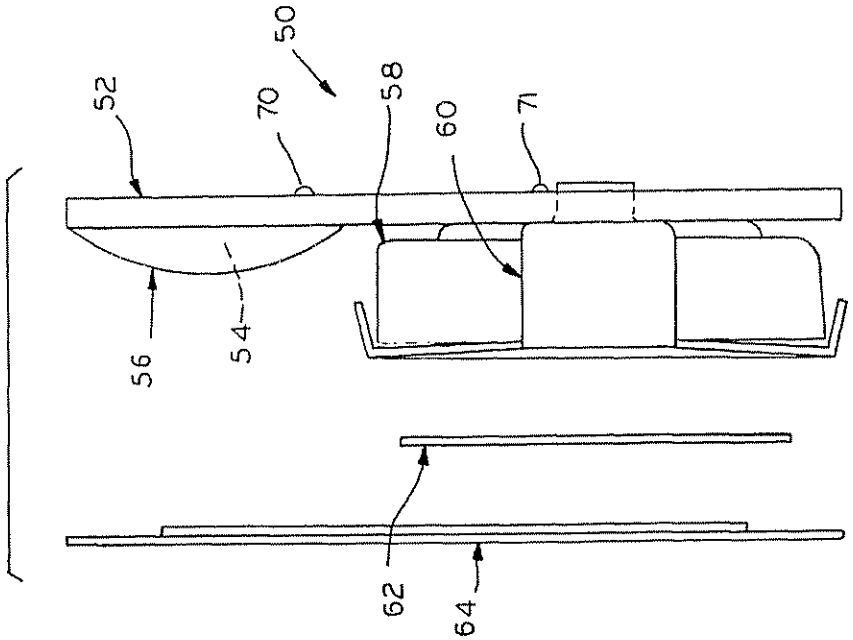


FIG.4

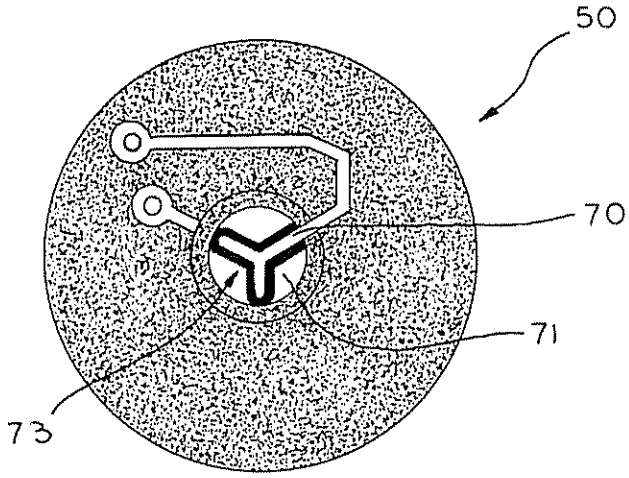


FIG. 6

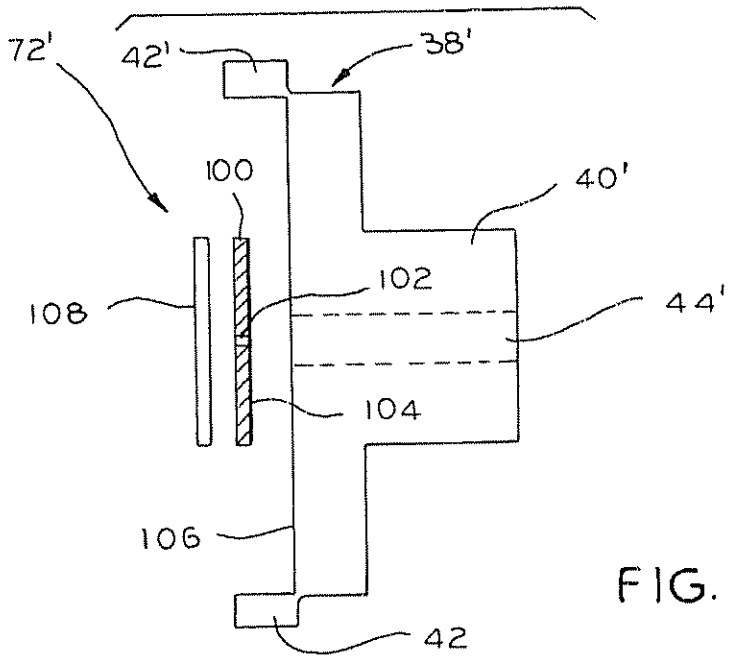


FIG. 7

MUSICAL PACIFIER

FIELD OF THE INVENTION

This invention relates to a musical pacifier and, more particularly, to a pacifier which maintains static pressure equilibrium between a nipple and a housing for an electronic circuit

BACKGROUND OF THE INVENTION

A pacifier, as its name suggests, is often used by parents to pacify an infant The typical pacifier includes a plastic mouthpiece having a faceguard A flexible nipple is secured to the faceguard A handle or the like is often provided for the infant or parent to grasp the pacifier

More recently, musical pacifiers have been developed in which the mouthpiece includes a casing or housing for an electronic programmed circuit which is switchable to produce an audible sound, such as a musical tune In one known form the switch comprises a diaphragm switch overlying an opening between the nipple and the housing As is known with diaphragm operation, a pressure differential causes movement of the diaphragm The pressure differential is produced when the infant sucks on the nipple, causing an increased pressure on the nipple side of the diaphragm resulting in movement of the diaphragm to close an electrical switch The switch closure triggers the programmed circuit to produce a musical tune played through a miniature speaker

An important concern with parents is cleanliness of an infant's pacifier It is not unusual for the pacifier to fall on the floor and thus become contaminated, or to be picked up by other persons which might transfer bacteria to the nipple A pacifier is typically sterilized by placing it in boiling water or into a dishwasher

With a musical pacifier, additional concerns exist with respect to sterilization due to possible damage to the electronic components Either the pacifier must be made watertight and immersion proof or be disposable If the pacifier is watertight and immersion proof, then it can be placed in water However, a diaphragm type switch may rupture if a large differential pressure develops across it This can occur if the air on one side of the diaphragm switch heats up faster than the air on the other side when the pacifier is boiled, sterilized, or washed in a dishwasher

Likewise, a change in atmospheric pressure or altitude will compress or expand the nipple and place a bias on the diaphragm switch The bias consists of a change in the distance of the conductive material on the diaphragm switch from the contacts on the printed circuit board The switch may then be harder to activate by the infant or the switch may be activated inadvertently for long periods of time, leading to premature battery failure

The present invention is directed to overcoming one or more of the problems discussed above in a novel and simple manner

SUMMARY OF THE INVENTION

In accordance with the invention there is disclosed a musical pacifier adapted to prevent damage from a large differential pressure across a switch and to prevent switch bias due to changes in ambient pressure and temperature

Broadly, there is disclosed herein a musical pacifier comprising a mouthpiece including a faceguard having a central opening defining an air passage to an integral housing A nipple is mounted to the mouthpiece and has an interior space in communication with the housing through the air passage A switch actuated sound generating circuit is disposed in the housing for controllably reproducing audio signals A pressure sensitive switch normally closes the air passage The switch electrically actuates the sound generating circuit in response to pressure generated in the nipple Means defining an air leakage path between the nipple interior space and the housing maintains static pressure equilibrium between the nipple interior space and the housing

In accordance with one aspect of the invention the switch comprises a diaphragm switch The diaphragm switch is a flexible, electrically conducting element spaced a select distance from contacts associated with the sound generating circuit The element includes a raised annular ridge normally spacing the element from the contacts

In accordance with another aspect of the invention, the housing comprises a sealed housing

In accordance with a further aspect of the invention, a plug secures the nipple in the central opening of the mouthpiece The plug includes a through opening defining an air passage between the nipple and the housing which is normally closed by the switch The air leakage means comprises a channel in the plug defining a bypass path around the switch

In accordance with another aspect of the invention, the air leakage means comprises a through opening in the switch

In accordance with a further aspect of the invention there is disclosed a watertight, immersion proof musical pacifier comprising a mouthpiece including a faceguard having a central opening defining an air passage to an integral sealed housing. A nipple has an interior space. Means sealingly mount the nipple to the mouthpiece with the interior space in communication with the housing through the air passage A switch-actuated sound generating circuit disposed in the housing controllably reproduces audio signals A pressure sensitive switch normally closes the air passage. The switch electrically actuates the sound generating circuit in response to pressure generated in the nipple Means defining an air leakage path between the nipple interior space and the housing equalizes pressure in the nipple interior space and the housing

Further features and advantages of the invention will be readily apparent from the specification and from the drawing

BRIEF DESCRIPTION OF THE DRAWING

FIG 1 is a perspective view of a musical pacifier according to the invention;

FIG 2 is an exploded plan view of the pacifier of FIG. 1;

FIG 3 is an exploded view, partially in section, of a plug and diaphragm of the pacifier of FIG 1 illustrating an air bypass path;

FIG 4 is a partial exploded view illustrating details of an electronic sound generating circuit of the pacifier of FIG 1;

FIG 5 is a top plan view of the printed circuit board of FIG 4;

FIG 6 is a bottom plan view of the printed circuit board of FIG 4 illustrating electrical contacts that form part of a diaphragm switch; and

FIG 7 is an exploded view, partially in section, similar to FIG 3 of an alternative plug and diaphragm illustrating an alternative air bypass path

DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawings and more particularly FIGS. 1 and 2, there is shown generally at 10 a musical pacifier according to the present invention

The pacifier 10 includes a mouthpiece 12. The mouthpiece 12 has a faceguard 14 with central opening 16. The faceguard 14 is of a conventional shape for pacifier faceguards having an inner surface 18 configured to be complementary to the face of an infant. Integrally connected to an outer surface 20 of the faceguard 14 is a generally cylindrical wall 22 defining a housing 24. The wall 22 is coaxial with the opening 16. The cylindrical wall 22 includes an inner cylindrical surface 26 having a pair of opposite notches 28 spaced 180° apart.

A nipple 30 of conventional shape has an interior space 32 accessible via an opening 34. An enlarged lip 36 is provided at the opening 34. As is conventional, the nipple 30 is of a flexible rubber-like material deformable due to sucking action of an infant. The nipple 30 is received in the mouthpiece opening 16. The lip 36 is of a size larger than the opening 16 to be loosely retained therein. With the nipple 30 mounted in the mouthpiece 12, the interior space 32 is in communication with the housing 24 through the central opening 16. A plug 38 secures the nipple 30 to the mouthpiece 12. Particularly, the plug 38 includes a head 40 of a size and shape corresponding generally to the nipple open end 34 to be received therein. Thus, the head 40 sandwiches the nipple 30 in the opening 16. The nipple 30 provides a seal between the plug 38 and faceguard 14. A wing 42 at each of opposite ends of the plug 38 are receivable in the housing notches 28 to maintain proper orientation of the plug 38. Owing to this construction, the plug 38 floats within the housing 24, along an axial center line of the housing 24.

As particularly shown in FIG. 3, the plug 38 includes an axial opening 44. With the plug 38 mounting the nipple 30 to the mouthpiece 12, the opening 44 defines a narrowed air passage from the nipple interior space 32 to the housing 24. A groove 46 is formed on an outer side of the plug 40 in communication with the central opening 44 and ending near one of the wings 42, for reasons discussed more particularly below.

Referring also to FIGS. 4 and 5, a switch-actuated sound generating circuit 50 is disposed in the housing 24 for controllably reproducing audio signals. The circuit 50 comprises a printed circuit board 52 supporting a programmed integrated circuit 54 sealed with a glob of epoxy 56. Power is provided by a battery 58 secured to the circuit board 52 with a conventional battery clip 60. A strip of double-sided tape 62 secures a piezo speaker 64 to the battery clip 60 and electrically insulates the two from each other. The speaker 64 is electrically connected to the integrated circuit 54 as generally illustrated in FIG. 5. The printed circuit board 52 includes opposite notches 66 for aligning the printed circuit board 52 in the housing 24 as by receiving the wings 42 to center the circuit board 52 and prevent movement.

The switch-actuated sound generating circuit 50 is electrically actuated by a pressure sensitive switch 68. The pressure sensitive switch 68 comprises fixed electrical contacts, represented at 70 and 71 on the inside of the circuit board 52, and a movable diaphragm switch 72. The diaphragm switch 72 is typically manufactured of conductive silicone rubber and is generally circular in shape. The switch 72 includes a central protrusion 74 on an inside surface 76 and an annular raised ridge 78 on an outer surface 80. The diaphragm switch 72 is sandwiched between the circuit board 52 and the plug head 40. Particularly, the raised ridge 78 maintains the diaphragm switch 72 spaced from the contacts 70 and 71. The protrusion 74 is received in the plug opening 44 to maintain the diaphragm switch 72 in a central axial position. The size of the protrusion 74 is selected to be received in the opening 44 without sealing the opening 44

relative to the channel 46. As can be seen, the length of the channel 46 is greater than the radius of the diaphragm switch 72 so that even with the diaphragm switch 72 seated on the plug head 40 there is an air leakage path from the opening 44 into the housing 24.

Referring to FIG. 6, the bottom of the circuit board 52 is illustrated. The contact 70 comprises a Y-shaped conductive trace on the board 52. The contact 71 comprises a contact pad which is generally circular and surrounds the Y-shaped contact 70 without contacting the same. The circuit board 52 is covered with a solder mask except for an annular area represented at 73 so that only a portion of the contacts 70 and 71 are exposed. The solder mask elevates the switch 72 to prevent inadvertent actuation of the contacts 70 and 71 by the conductive switch 72.

A cap 82 is received on the housing 24. The cap 82 maintains the speaker 64, circuit board 52, diaphragm switch 72 and plug 38 within the housing 24. Particularly, the cap 82 and mouthpiece 12 are of polycarbonate construction. The cap 82 is sonically welded onto the cylindrical wall 22 to provide an airtight and watertight seal. By fusing the cap 82 to the wall 22, the plug 38 is effectively fused in place in a desired central position. Likewise, the nipple 30 acts as a gasket between the plug 38 and the mouthpiece 12 to provide a further airtight and watertight construction.

The particular operation and programming of the sound generating circuit 50 is not critical to the claimed invention. The circuit may be generally similar in operation to that described in U.S. Pat. No. 4,554,919 and is operable to reproduce audio signals, such as a musical tune, for a period of time after contact is made between the contacts 70 and 71 by the diaphragm switch 72.

Normally, i.e., in the shelf state, the diaphragm switch 72 generally closes the air passage 44 so that the switch 72 is spaced from the contacts 70 and 71. The air channel 46 being in communication with the housing 24 and the passage 44 maintains static pressure equilibrium between the nipple interior space 32 and the housing 24. When the nipple 30 is collapsing, as by the infant sucking, a dynamic pressure change occurs in the nipple interior space 32 to force the diaphragm switch 72 against the contacts 70 and 71 to actuate the sound generating circuit 50 to play a musical tune on the speaker 64. When the nipple 30 has finished collapsing, the pressure difference across the diaphragm switch 72 is relieved via the air channel 46 and the diaphragm switch 72 will then return to its normal position. A similar equalizing action occurs again after the nipple 30 is released.

Because the pacifier 10 is of watertight and immersion proof construction, the electronic circuitry need not be removed if the pacifier 10 is immersed in water, such as for boiling, dishwashing or sterilization. The use of the air channel 46 prevents damage from a large differential pressure across the switch 72 such as might occur during boiling, dishwashing or sterilization. Moreover, the air channel 46 prevents switch bias due to changes in ambient pressure and temperature. This is accomplished as the channel 46 acts as a slow bypass path from one side of the switch 72 to the other. A large pressure developing on one side of the switch is relieved to the other side, preventing a large differential pressure from developing. Therefore, the switch 72 will not rupture. Likewise, the bypass path acclimates any change in atmospheric pressure, temperature or altitude, preventing a bias from forming on the switch 72. A bias on the switch 72 could make activation by the infant more difficult, or the switch 72 could be activated inadvertently for long periods of time, leading to premature battery failure.

Referring to FIG 7, a switch arrangement according to an alternative embodiment of the invention is illustrated In this embodiment, elements which correspond generally to elements of FIG 3 are referenced with like, primed reference numerals and are therefore described in detail

In the alternative embodiment, the plug **38'** is similar to the plug **38**, see FIG 3, omitting the groove **46** The diaphragm switch **72'** consists of a film or membrane **100** having a central through opening **102** A back side of the membrane **100** has an adhesive surface **104** for adhering the membrane **100** to an outer surface **106** of the plug **38'** In so doing, the opening **102** is positioned overlying the plug opening **44'** A conductive element **108** is outside the membrane **100** and is sandwiched by the membrane **100** and the printed circuit board **52** (not shown in this Figure)

In the alternative embodiment, the opening **102** provides an air leakage or bypass path eliminating the use of the channel **46** Normally, i e , in the shelf state, the membrane **100** acts as a diaphragm to generally close the air passage **44'**, except for the small bypass opening **102** The opening **102** being in communication with the housing **24** and the passage **44'** eliminates any static pressure differential across the membrane **100** When the nipple is collapsing, as by an infant sucking, a dynamic pressure change occurs in the nipple interior space to cause the membrane **100** to balloon outwardly against the conductive member **108**, causing it to make contact with the contacts **70** and **71** to actuate the sound generating circuit **50** which plays a tune on the speaker **64** Once the membrane **100** comes into contact with the conductive member **108**, the opening **102** is substantially closed so that the diaphragm switch **72'** acts as a "leaky" one-way valve, increasing switch sensitivity but allowing eventual equalization When the nipple **30** has finished collapsing, the pressure difference across the membrane **100** is relieved via the opening **102** and the membrane **100** and conductive member **108** will then return to their normal positions Similarly, when the nipple is released, the pressure difference that has developed across the membrane **100** will also be relieved via the opening **102**, returning membrane **100** and conductive member **108** to their normal positions. Although shown as separate elements, the membrane **100** could be a conductive membrane or could have a conductive element adhered directly thereon such as by sputtering or the like

Thus, the invention broadly comprehends a musical pacifier incorporating a slow air bypass path to prevent damage from a large differential pressure across the switch and to prevent switch bias due to changes in ambient pressure and temperature

I claim:

1 A pacifier comprising:

a mouthpiece including a faceguard having an opening defining an air passage to an integral housing;

a nipple mounted to the mouthpiece and having an interior space in communication with the housing through said air passage;

a switch actuated sound generating circuit disposed in said housing for controllably reproducing audio signals;

a pressure sensitive switch normally generally closing said air passage, said switch electrically actuating said sound generating circuit in response to pressure generated in the nipple causing the switch to open the air passage and subsequently normally generally closing the air passage when the pressure is relieved; and

means defining an air leakage path between said nipple interior space and said housing to maintain static pressure equilibrium between the nipple interior space and the housing

2 The pacifier of claim **1** wherein said switch comprises a diaphragm switch

3 The pacifier of claim **2** wherein said diaphragm switch comprises a flexible, electrically conducting element spaced a select distance from contacts associated with the sound generating circuit

4 The pacifier of claim **3** wherein said element includes a raised annular ridge normally spacing the element from the contacts

5 The pacifier of claim **1** wherein said housing comprises a sealed housing.

6 The pacifier of claim **1** further comprising a plug securing said nipple in the opening of the mouthpiece.

7 The pacifier of claim **6** wherein said plug extends through the faceguard opening and includes a through opening defining a narrowed air passage between the nipple and the housing normally closed by the switch and said air leakage means comprises a channel in said plug defining a bypass path around the switch

8 The pacifier of claim **1** wherein said air leakage means comprises a through opening in said switch

9 A watertight, immersion proof pacifier comprising:

a mouthpiece including a faceguard having an opening defining an air passage to an integral sealed housing;

a nipple having an interior space;

means for sealingly mounting the nipple to the mouthpiece with the interior space in communication with the housing through said air passage;

a switch actuated sound generating circuit disposed in said hosing for controllably reproducing audio signals;

a pressure sensitive switch normally generally closing said air passage, said switch electrically actuating said sound generating circuit in response to pressure generated in the nipple causing the switch to open the air passage and subsequently normally generally closing the air passage when the pressure is relieved; and

means defining an air leakage path between said nipple interior space and said housing to maintain static pressure equilibrium between the nipple interior space and the housing

10 The pacifier of claim **9** wherein said switch comprises a diaphragm switch

11 The pacifier of claim **10** wherein said diaphragm switch comprises a flexible, electrically conducting element spaced a select distance from contacts associated with the sound generating circuit

12 The pacifier of claim **11** wherein said element includes a raised annular ridge normally spacing the element from the contacts

13 The pacifier of claim **9** wherein said mounting means comprises a plug securing said nipple in the opening of the mouthpiece

14 The pacifier of claim **13** wherein said plug extends through the faceguard opening and includes a through opening defining a narrowed air passage between the nipple and the housing normally closed by the switch and said air leakage means comprises a channel in said plug defining a bypass path around the switch.

15 The pacifier of claim **9** wherein said air leakage means comprises a through opening in said switch

16 A pacifier comprising:

a mouthpiece including a faceguard having an opening defining an air passage to an integral housing;

a nipple mounted to the mouthpiece and having an interior space in communication with the housing through said air passage;

an electrically actuable circuit disposed in said housing;

a pressure sensitive switch normally generally closing said air passage, said switch electrically actuating said circuit in response to pressure generated in the nipple causing the switch to open the air passage and subsequently normally generally closing the air passage when the pressure is relieved; and

means defining an air leakage path between said nipple interior space and said housing to maintain static pressure equilibrium between the nipple interior space and the housing

17 The pacifier of claim **16** wherein said switch comprises a diaphragm switch

18 The pacifier of claim **17** wherein said diaphragm switch comprises a flexible, electrically conducting element spaced a select distance from contacts associated with the sound generating circuit

19 The pacifier of claim **16** wherein said housing comprises a sealed housing.

20 The pacifier of claim **16** further comprising a plug extending through the faceguard opening and securing said nipple in the opening of the mouthpiece, the plug including a through opening defining a narrowed air passage between the nipple and the housing normally closed by the switch and said air leakage means comprises a channel in said plug defining a bypass path around the switch

21 The pacifier of claim **16** wherein said air leakage means comprises a through opening in said switch

22 A pacifier comprising:

a mouthpiece including a faceguard having a nipple portion defining an interior space;

a housing secured to the mouthpiece;

a switch actuated electronic circuit disposed in said housing:

a pressure sensitive diaphragm switch in communication with the interior space of said nipple portion for actuating said circuit in response to pressure generated in the nipple portion; and

means defining an air leakage path to maintain static pressure equilibrium on said pressure sensitive diaphragm switch

* * * * *