



(51) International Patent Classification:
B65D 75/00 (2006.01)

(21) International Application Number:
PCT/US2015/022859

(22) International Filing Date:
26 March 2015 (26.03.2015)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/970,849 26 March 2014 (26.03.2014) US

(71) Applicant: **CLEAR LAM PACKAGING, INC.**
[US/US]; 1950 Pratt Boulevard, Elk Grove Village, IL
60007 (US).

(72) Inventors: **SANFILIPPO, John, E.**; 707 Plum Tree Road,
Barrington Hills, IL 60010 (US). **SANFILIPPO, James,
J.**; 799 Plum Tree Road, Barrington Hills, IL 60010 (US).
RADENOVIC, Milorad; 5421 N. East River Rd., Apt.
817, Chicago, IL 60656 (US). **SORIA, Francisco, Javier**;
230 Church Street, West Chicago, IL 60185 (US).

(74) Agents: **COYNE, Michael, E.** et al.; Marshall, Gerstein &
Borun LLP, 233 S. Wacker Drive, 6300 Willis Tower,
Chicago, IL 60606-6357 (US).

(81) Designated States (*unless otherwise indicated, for every
kind of national protection available*): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,
BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR,
KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG,
MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM,
PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC,
SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every
kind of regional protection available*): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ,
TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU,
TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE,
DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU,
LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK,
SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— *without international search report and to be republished
upon receipt of that report (Rule 48.2(g))*

(54) Title: FLEXIBLE SQUEEZABLE PACKAGE

(57) Abstract: A flexible package for retaining a fluent product can include a dispensing nozzle attached to a panel and one or more corner seals surrounding the panel having the dispensing nozzle. The package can be configured to be deformable upon application of a squeezing force to the package to dispense the product, and can substantially return to its original shape upon release of the squeezing force.



WO 2015/148864 A2

FLEXIBLE SQUEEZABLE PACKAGE

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit under 35 U.S.C. §119(e) to United States Provisional Application Number 61/970,849 entitled FLEXIBLE SQUEEZABLE PACKAGE, filed March 26, 2014, the content of which is incorporated herein by reference in its entirety.

BACKGROUND

FIELD OF THE DISCLOSURE

[0002] The disclosure relates to flexible packages and method of making the same, and, in particular, to flexible packages that can dispense fluent products through a dispensing nozzle.

BRIEF DESCRIPTION OF RELATED TECHNOLOGY

[0003] Vertical form, fill, and seal (VFFS) packaging machines are commonly used in the snack food industry for forming, filling, and sealing bags of nuts, chips, crackers and other products. Such packaging machines take a packaging film or flexible material from a roll and form the flexible material into a vertical tube around a product delivery cylinder. One disadvantage of these packages is that the resulting filled package is not rigid enough to allow the stacking of one package on top of another in a display and/or resilient enough to allow for squeezing of the package for dispensing a fluent product without damaging or altering the shape of the package. Additionally, such conventional packages do not retain their shape, particularly after the package is opened and product is removed.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

[0004] Figure 1 is a photograph of a package in accordance with an embodiment of the disclosure;

[0005] Figure 2 is a photograph of a package in accordance with an embodiment of the disclosure;

[0006] Figure 3 is a photograph of a package in accordance with an embodiment of the disclosure;

[0007] Figure 4 is a photograph of a package in accordance with an embodiment of the disclosure, showing the panel having the dispensing nozzle;

[0008] Figure 5 is a photograph of a package in accordance with an embodiment of the disclosure;

[0009] Figure 6 is a schematic drawing of various views of a package in accordance with an embodiment of the disclosure;

[0010] Figure 7 is a cross-sectional view of a dispensing nozzle attached to a panel of a package in accordance with an embodiment of the disclosure;

[0011] Figure 8 is a cross-sectional view of a dispensing nozzle attached to a panel of a package in accordance with an embodiment of the disclosure;

[0012] Figure 9 is schematic drawing of various views of a package in accordance with another embodiment of the disclosure;

[0013] Figure 10 is a cross-section view of a dispensing nozzle attached to a panel of a package in accordance with an embodiment of the disclosure; and

[0014] Figure 11 is a schematic of a film layout for forming a package in accordance with an embodiment of the disclosure.

[0015] Skilled artisans will appreciate that elements in the figures are illustrated for simplicity and clarity. It will further be appreciated that certain actions and/or steps may be described or depicted in a particular order of occurrence while those skilled in the art will understand that such specificity with respect to sequence is not actually required. It will also be understood that the terms and expressions used herein have the ordinary meaning as is accorded to such terms and expressions with respect to their corresponding respective areas of inquiry and study except where specific meaning have otherwise been set forth herein.

DETAILED DESCRIPTION

[0016] Disclosed herein is a package formed from a flexible material that can advantageously be used with flowable products, for example, fluent products. The package can include a

dispensing nozzle. The package can be squeezable to allow for the flowable product to be squeezed through the dispensing nozzle. Advantageously, the package can be configured to return to substantially its original shape after squeezing and dispensing the flowable product. In various embodiments, the package can advantageously allow for substantially all of the product disposed within the package to be dispensed. For example, in various embodiments, it has been surprisingly found that approximately 95% or more of the product can be dispensed from the package, which is a significant improvement over prior squeezable-dispensing-type packages.

[0017] Packages of the disclosure can be formed by a variety of methods and on a variety of packaging machines, including, but not limited to VFFS machines, horizontal-form-fill-seal machines, stand-up pouch type machines, sequential assembly machines, and the like, as well as any suitable combinations thereof.

[0018] Packages in accordance with the disclosure can be used for a variety of products including, but not limited to, liquids, gels, and semi-solids. For example, the product could be a condiment or a sauce.

[0019] Referring to Figures 1-5, in some embodiments, a package includes a plurality of panels that cooperate to define an interior volume. The package can include first and second panels 12, 14 disposed opposite of each-other, third and fourth panels 16, 18 disposed opposite of each-other, and fifth and sixth panels 20, 22 disposed opposite of each other. The package can further include first, second, third, and fourth longitudinal edges 26, 28, 30, 32. The package can include at least one corner seal 34 surrounding at least a portion, for example, more than two sides, of the first and/or the second panel. In various embodiments, the package includes one or more corner seals 34 surrounding all four sides of the first and/or second panel. The package may further include a nozzle 36.

[0020] As shown in Figures 1-5, in various embodiments, the package can have a hyperrectangular shape. In other embodiments, the package can be substantially cubed. The configuration of the package, such as including a corner seal and having hyperrectangular or substantially cubed shape can facilitate stand-up of the package for retail display, for storage in the consumer's shelf, and shipping of the package. The hyperrectangular shape and/or the inclusion of corner seals can also aid the package in maintaining the ability to stand upright on a

surface after product is dispensed and even after substantially all of the product is dispensed and despite a small amount of deformation in the package shape that may occur after dispensing of the product due to the package's inherent flexible nature. It is understood that the package may be formed into any number of additional three-dimensional shapes such as .

[0021] The nozzle 36 can be disposed on the first or second panel 12, 14. Figures 2 and 3 illustrate an embodiment in which the nozzle 36 is attached to the second panel 14. Figure 5 illustrates an embodiment in which the nozzle 36 is attached to the first panel 12. It is also contemplated herein that the nozzle 36 can be disposed on one or more of the other panels of the package.

[0022] Any suitable dispensing nozzle 36 can be used, including, but not limited to, valves, pumps, pour spouts, squeeze spouts, and other known dispensing nozzles. For example, the package can be configured to allow for product to be squeezed out of the package. In such examples , the nozzle 36 can provide for flow regulation to limit the amount of product released. As such, the nozzle 36 can be or can include a one-way or a two-way valve.

[0023] Referring to Figures 6-8, in various embodiments, the dispensing nozzle 36 can include an insert 38 and a valve 40 disposed in the insert 38. The insert 38 can be attached or coupled to the package in any number of ways, such as gluing, taping, or other adhesives, press-fitting, interference fitting, seals, stapling, and the like. Other examples are possible. For example, the panel on which the dispensing nozzle 36 is disposed or coupled thereto can include an aperture. A portion of the insert 38 can be disposed in the interior volume of the package and a portion of the insert 38 can be disposed on the exterior surface 42 of the panel. For example, a portion of the insert 38 can be attached to the internal surface 44 of the panel, while a portion of the insert 38 is attached to and/or coupled with the external surface 42. In some embodiments, the flexible material defining the panel can be disposed between opposed surfaces of the insert 38.

[0024] Referring to Figures 9 and 10, in various embodiments, the dispensing nozzle 36 can be a unitary piece 46 that is disposed on a panel as previously described. For example, the panel can include an aperture through which the nozzle 36 is disposed. At least portion of the nozzle 36 can extend through the opening and be exposed on an exterior of the package. The nozzle 36 can include one or more projecting portions 48 that extend past the aperture and contact the interior

surface 44 of the panel. In some examples, the nozzle 36 is formed of a resiliently deformable or elastomeric material, to allow the nozzle 36 to be deformed to fit in the aperture and then allow the projections to extend to retain the nozzle 36 against the internal surface 44 of the panel. In some embodiments, one or more portions of the nozzle 36, for example, the projecting portions 48, can be attached to the interior surface 44 of the panel. Alternatively or additionally, the nozzle 36 can be retained on the panel by one or more of adhesive, seals, interferences fitting, and combinations thereof.

[0025] In various embodiments, the dispensing nozzle 36 can be attached an exterior surface 42 of the panel. In some embodiments, the dispensing nozzle 36 can be attached only to an exterior surface 42 of the panel and not include a portion extending into the interior of the package. For example, the panel having the nozzle 36 can include an opening through which product can flow and the dispensing nozzle 36 can be disposed around the opening and attached to the exterior surface 42 of the panel.

[0026] In other embodiments, the dispensing nozzle 36 can have a downward projecting portion that is capable of puncturing the panel to provide an opening in the panel through which the product can flow to the dispensing nozzle. The opening can be defined, for example, by one or more lines of reduced strength to facilitate insertion of the nozzle 36 into the flexible material defining the panel. Other types of known dispensing nozzles 36 include check valves and spouts, such as spouts having a twist-off cap. Any of the disclosed embodiments of the dispensing nozzle 36 can be attached to the package via adhesives, sealing, for example, heat sealing and/or interference fitting.

[0027] In some embodiments, the nozzle 36 is disposed on the second panel 14 and the package includes corner seals 34 surrounding all or a portion of the second panel 14. In yet another embodiment, the package can include corner seals 34 surrounding all or a portion of both the first and second panels 12, 14.

[0028] The corner seals 34 can be sized to provide a distance between the tip of the nozzle 36 and a surface upon which the package is resting. The corner seals 34 have a first end adjacent to the first or second panel 12, 14, and an opposite disposed second end. As used herein, the height of the corner seals refers to the distance between the first and second ends. The corner seals 34 at

least partially surrounding the panel having the nozzle 36 can have a height, for example, of about $\frac{1}{4}$ inch to about 2 inches, about $\frac{1}{2}$ inch to about 1 inch, about 1 inch to 2 inches, about $\frac{1}{4}$ inch to 1 inch, about $\frac{1}{4}$ inch to $\frac{3}{4}$ inch. For example, in one embodiment, the corner seal 34 surrounding the panel having the nozzle 36 can have a height of $\frac{1}{2}$ inch. Other heights are also contemplated herein and can vary depending on the nozzle 36 being attached to the panel. In embodiments in which corner seals 34 surround both the first and second panels 12, 14, the corner seals 34 surrounding the first panel 12 can have substantially the same or different heights than the corner seals 34 surrounding the second panel 14. So configured, the package may rest on a surface without the nozzle 36 contacting the surface. This may be beneficial for a number of reasons, such as sanitary purposes and aesthetic appeal.

[0029] As illustrated in Figures 6, 9, and 11, the package can include one or more sheets 50, 52 of flexible material attached to one or more panels of the package. The flexible material can be the same or different than the flexible material used for forming the package. For example, the one or more sheets 50, 52 can be of a thicker gauge than the flexible material used for forming the package.

[0030] The one or more sheets 50, 52 can be attached to the panel using a variety of known attachment methods, including sealing, permanent adhesive, and resealable adhesives. The sheet can be attached, for example, to opposed third and fourth panels 16, 18 of the package. The package can be configured such that a user grips the third and fourth panels 16, 18 and applies a pressure at the third and fourth panels 16, 18 to dispense product through the dispensing nozzle 36. The one or more sheets 50, 52 can add improved rigidity to the package in these panels and/or enhance the ability of the package to rebound to substantially its original shape after the gripping force is withdrawn. The one or more sheets of flexible material 50, 52 attached to the third and fourth panels 16, 18 of the package can also aid in squeezing the product out of the package and, in particular, dispensing substantially all of the product out of the package, by dispersing the squeezing force across the entire panels and preventing product from being dispersed above the squeezing force and away from the nozzle 36. It has surprisingly been discovered that packages in accordance with the disclosed can allow for approximately 95% or more of the product to be dispensed from the package, which is a significant improvement over

conventional rigid containers and flexible containers. It is also contemplated herein that one or more sheets can be attached to one or more additional panels, and/or a sheet can extend across multiple panels.

[0031] Referring to Figures 7 and 8, the package can also include one or more materials or sheets 54 attached to the panel having the nozzle 36 and covering the nozzle 36. The material or sheet 54 can be removably attached to the panel and the nozzle 36 to ensure the nozzle 36 remains sanitary during transport and provide evidence of tampering prior to the first use by the consumer. In various embodiments, the material or sheet 54 can be resealably attached to the panel and/or the nozzle 36 to provide a cover that can be reattached over the nozzle 36 after use. The sheet can include, for example, a pull tab 58 (see Figure 8) extending therefrom to facilitate detachment of the sheet to expose the nozzle 36 for use. The material or sheet 54 may be coupled to the panel and/or the nozzle 36 using any number of methods such as glues, tapes, or other adhesives. Other examples are possible

[0032] The package can be folded using a variety of methods and machines, including, for example, those disclosed in U.S. Patent No. 8,602,244 to Sanfilippo et al., entitled “Flexible, Stackable Sealed Package Having Corner Seals and Formed from a Sheet of Film” issued on December 10, 2013, the contents of which are incorporated herein by reference in their entirety. In any of the embodiments for making the package, the packaging equipment and the process can be performed aseptically, as is known in the art. In various embodiments, the dispensing nozzle 36 can be attached to the flexible material for forming the package prior to folding the flexible material into the package. In other embodiments, the dispensing nozzle 36 can be attached to the flexible material during the formation process, for example, after the flexible material is folded around a forming tube. An exemplary film layout for a flexible material having a dispensing nozzle is illustrated in Figure 11. As shown in Figure 11, the flexible material can include sheets attached to the third and fourth panel regions 16, 18 and a dispensing nozzle 36 attached to the second panel region 14. The flexible material in such a layout can be folded into a package configuration. The one or more sheets 54 can be attached prior to folding, for example, prior to placing the flexible material on the web. Alternatively, the one or more sheets 54 can be attached on the packaging machine, before the flexible material is folded around a forming collar, for

example. In yet another alternative, the one or more sheets 54 can be attached after the package is formed. Similarly, the nozzle 36 can be attached before, during, or after the package formation process.

[0033] The flexible material can include an opening defined in one of the first or second panels 12, 14. The opening can be defined, for example, by one or more lines of reduced strength that can be broken to remove a portion of the flexible material from the panel to provide the opening. Alternatively, the opening can be defined, for example, by removing a portion of the flexible material to provide an aperture in the flexible material. In some embodiments, the nozzle 36 can be configured with a portion that is capable of breaking the lines of reduced strength to provide the opening when the nozzle 36 is attached to the flexible material.

[0034] A line of reduced strength can be formed by any means known in the art. For example, a line of reduced strength can be formed by a series of alternating score lines and interruptions in the scoring or bridges. The score lines may have full penetration through the flexible material, while the bridges are areas of no penetration, or of partial penetration but less than 100% penetration such that the bridges maintain the attachment of flexible material in the opening region. The length of the score lines between the bridges may range from about 0.1" to 2.0", and the length of the bridges may fall within the range of about 0.002" to 0.090" depending on the implementation. The line of reduced strength can also be formed by a continuous line of partial penetration through the flexible material.

[0035] The flexible material can be provided in the form of a web or roll stock. The web or roll stock can be provided with or without the nozzle attached to the flexible material. For example, the web or roll stock can be provided with an opening defined therein and the nozzle can be provided separately for attached to the flexible material prior to or during formation of the package.

[0036] While various embodiments have been described above, the disclosure is not intended to be limited thereto. Variations can be made to the disclosed embodiments that are still within the scope of the appended aspects.

WHAT IS CLAIMED:

1. A flexible package comprising:
opposed first and second panels,
opposed third and fourth panels
at least one corner seal surrounding more than two sides of one or both of the first and second panels;
a dispensing nozzle disposed on the first panel,
first and second sheets attached to the third and fourth panels.
2. The flexible package of claim 1, wherein the at least one corner seal surrounds more than two sides of the first panel.
3. The flexible package of claim 1, wherein the at least one corner seal surrounds more than two sides of the second panel.
4. The flexible package of claim 3, further comprising at least one corner seal surrounding more than two sides of the first panel.
5. The flexible package of any one of the preceding claims, wherein the first panel has an aperture and at least a portion of the dispensing nozzle is received in the aperture.
6. A flexible package comprising:
opposed first and second panels,
opposed third and fourth panels

at least one corner seal surrounding more than two sides of one or both of the first and second panels;

a dispensing nozzle disposed on the second panel,

first and second sheets attached to the third and fourth panels.

7. The flexible package of claim 6, wherein the at least one corner seal surrounds more than two sides of the second panel.

8. The flexible package of claim 7, further comprising at least one corner seal surrounding more than two sides of the first panel.

9. The flexible package of claim 1, wherein the second panel has an aperture and at least a portion of the dispensing nozzle is received in the aperture.

10. The flexible package of any one of the preceding claims, further comprising a removably third sheet disposed over at least a portion of the dispensing nozzle.

11. The flexible package of any one of the preceding claims, wherein the dispensing nozzle comprises an insert and a flexible nozzle disposed in the insert.

12. The flexible package of claim 11, wherein a portion of the insert is received within an aperture disposed on the first panel.

13. The flexible package of any one of the preceding claims, wherein the package is adapted to receive a flowable product.

14. The flexible package of any one of the preceding claims, wherein the package is adapted to receive a fluent product.

15. The flexible package of any one of the preceding claims, wherein the at least one corner seal surrounds more than two sides of the first panel and the corner seal has a height, as measured from a first end of the corner seal adjacent to the first panel to an oppositely disposed second end, that is greater than a height of the dispensing nozzle, as measured from the first panel to an opposite disposed end of the dispensing nozzle.

16. The flexible package of any one of the preceding claims, wherein the dispensing nozzle is formed of silicon rubber.

17. The flexible package of any one of the preceding claims, wherein the dispensing nozzle is disposed in the first panel through an aperture and retained on the first panel by an interference fit.

18. The flexible package of any one of the preceding claims, wherein the dispensing nozzle is sealed to the first panel.

19. The flexible package of any one of the preceding claims, wherein the dispensing nozzle is attached to the first panel with an adhesive.

20. A method of manufacturing a flexible package comprising:

providing a flexible material;
forming the flexible material into a plurality of panels;
disposing at least one corner seal on at least one of the plurality of panels;
defining an opening on at least one of the plurality of panels; and
disposing a dispensing nozzle at least partially within the opening.

21. The method of claim 20, wherein the at least one corner seal is dimensioned to provide a distance between the dispensing nozzle and a surface upon which the flexible package rests.

22. The method of any one of the preceding claims, wherein the corner seal is disposed on at least two sides of the at least one of the plurality of panels.

23. The method of any one of the preceding claims, further comprising attaching a sheet of flexible material to at least one of a plurality of panels, the sheet of flexible material configured to increase the rigidity of the flexible package.

24. The method of any one of the preceding claims, further comprising the step of disposing a removable sheet over at least a portion of the dispensing nozzle.

25. The method of any one of the preceding claims, further comprising the step of filling the flexible package with a flowable product.

26. The method of claim 25, wherein the step of filling the flexible package with the flowable product is performed aseptically.

1/11

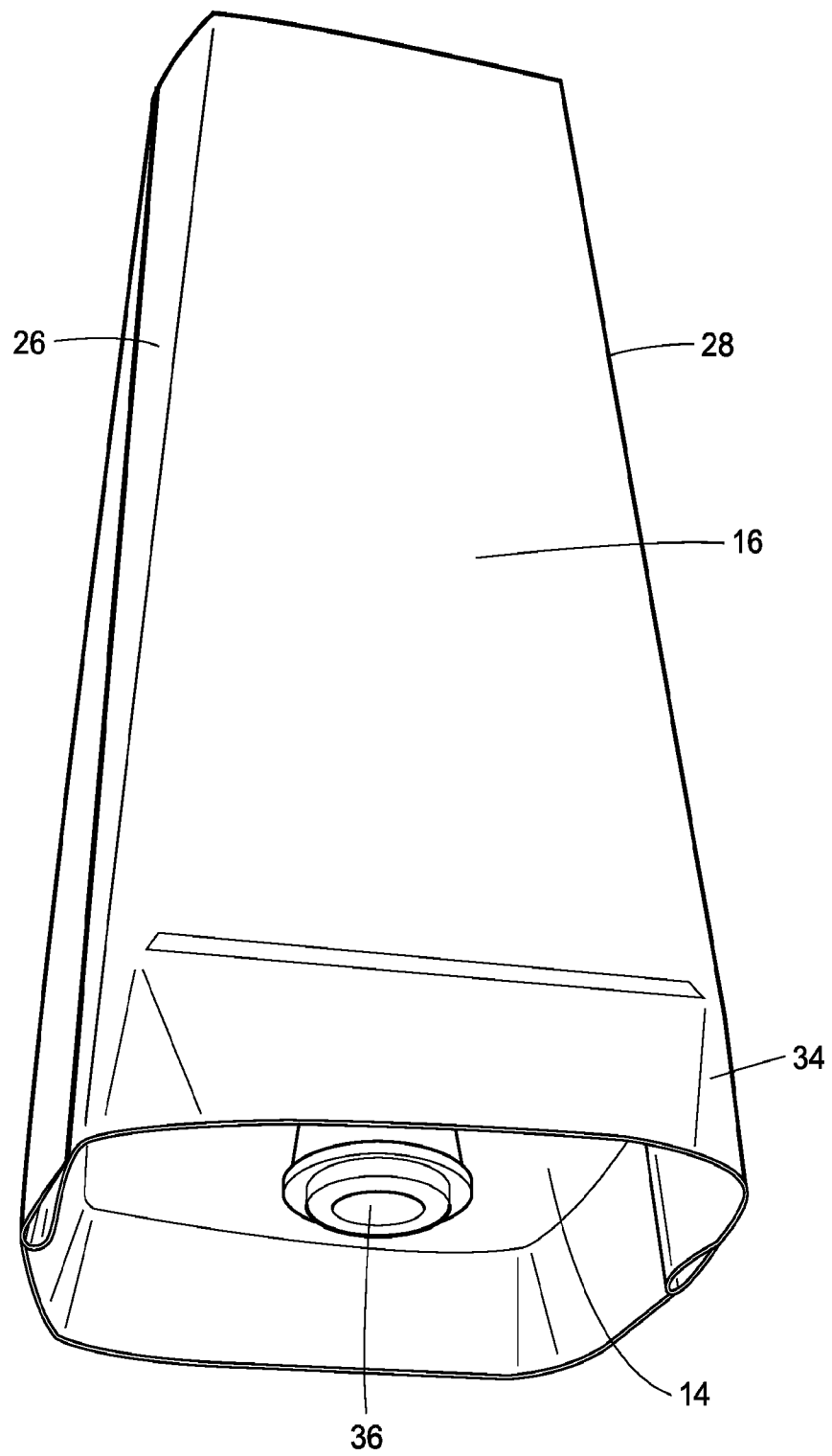


FIGURE 1

2/11

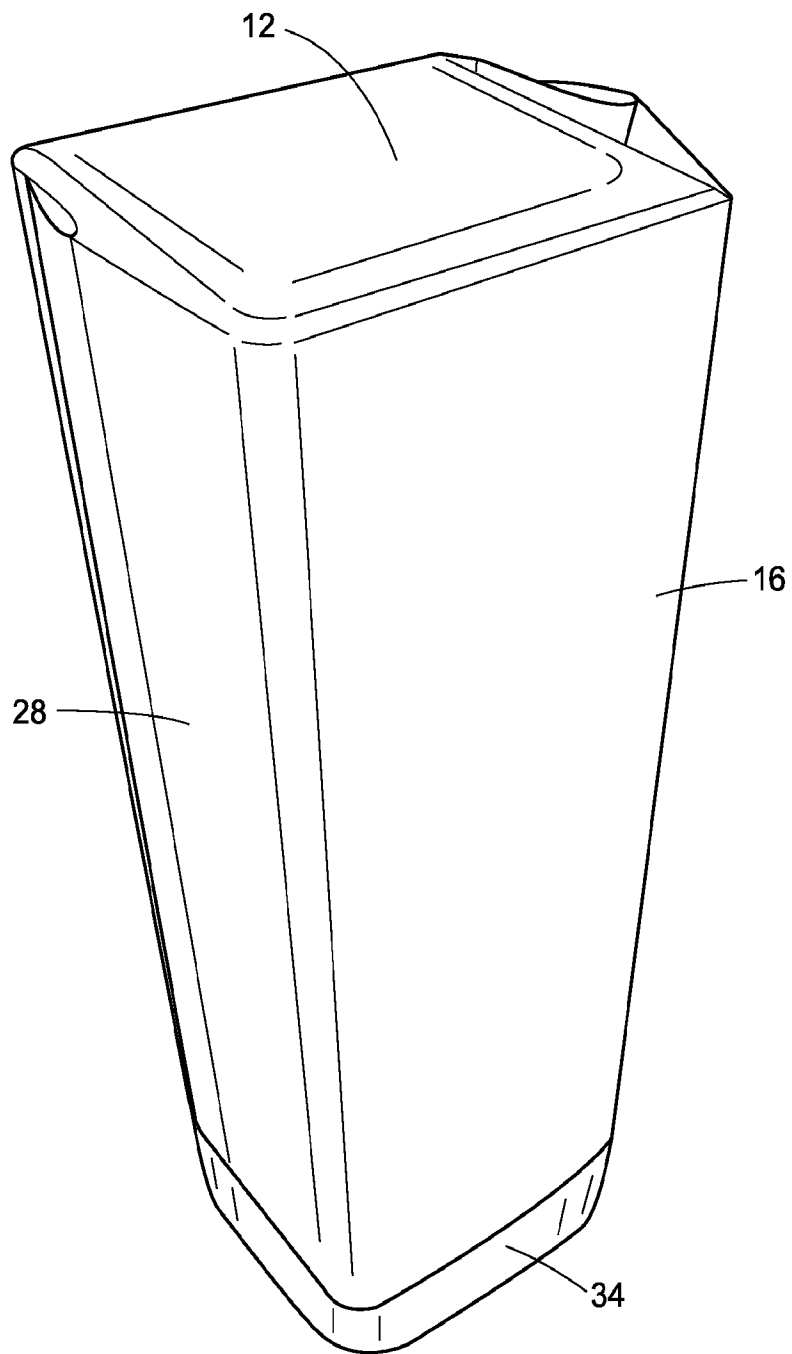


FIGURE 2

3/11

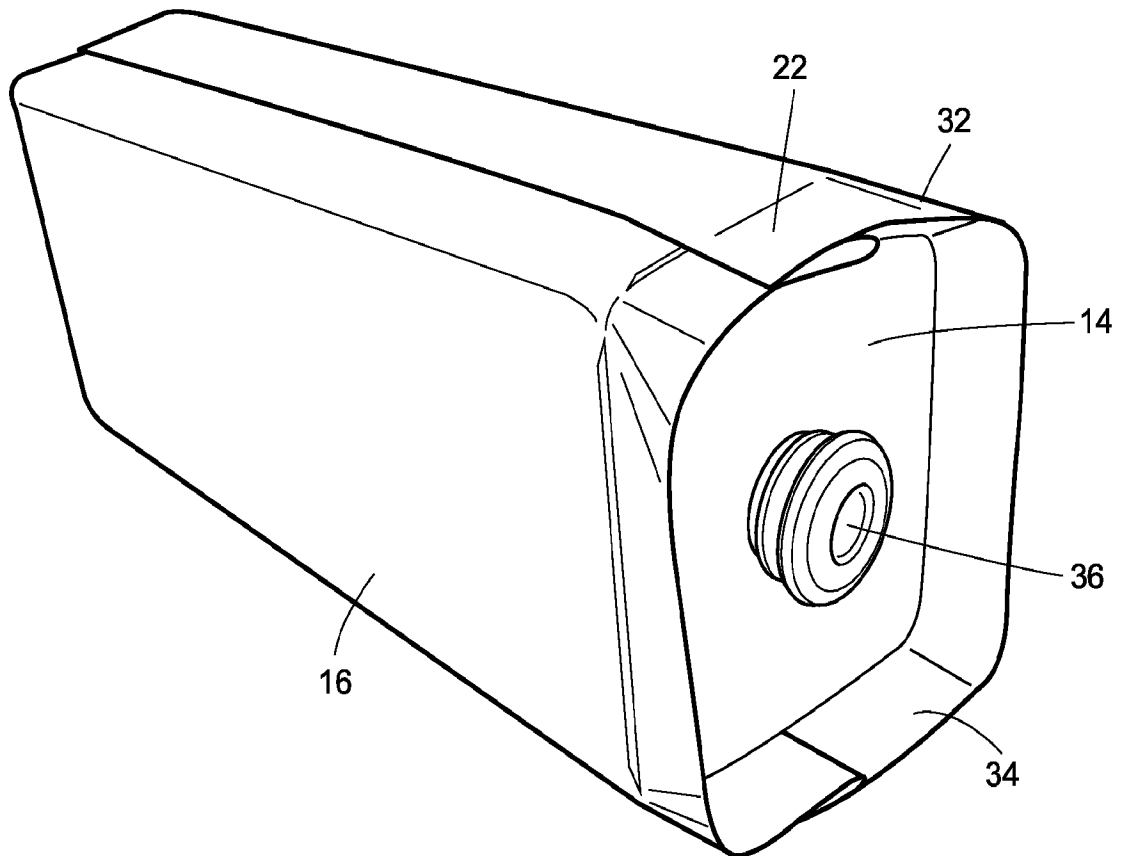


FIGURE 3

4/11

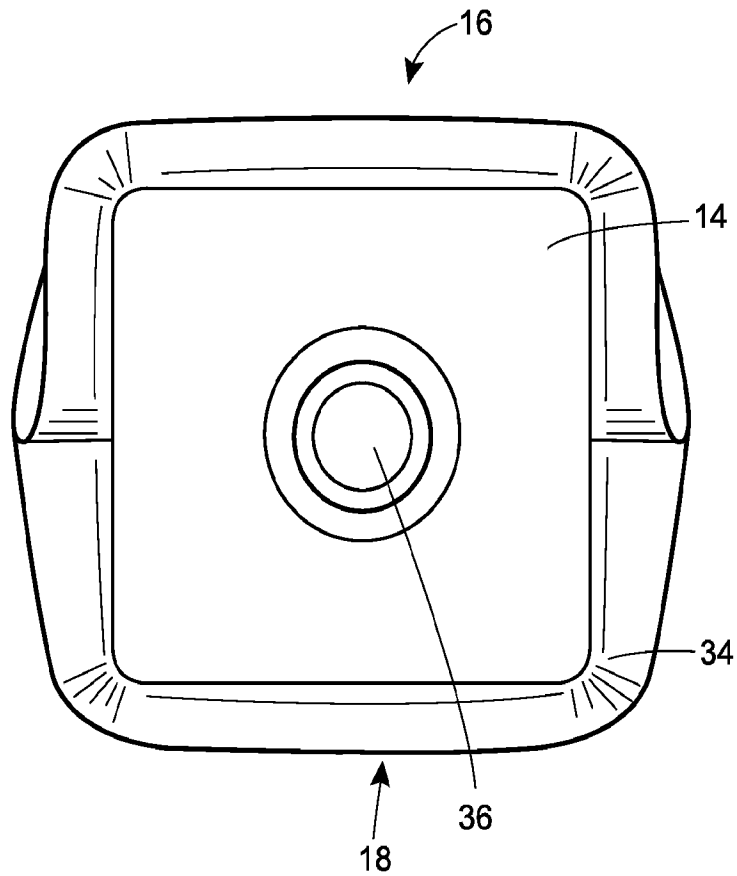


FIGURE 4

5/11

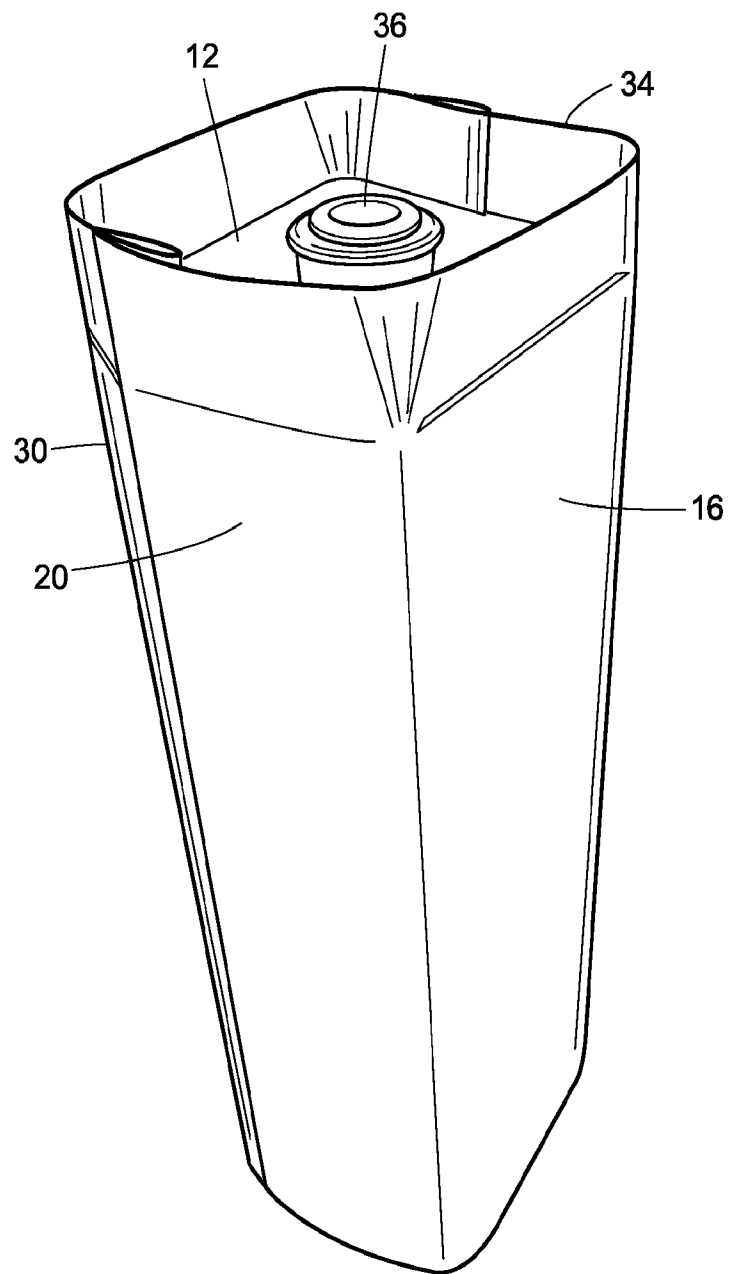
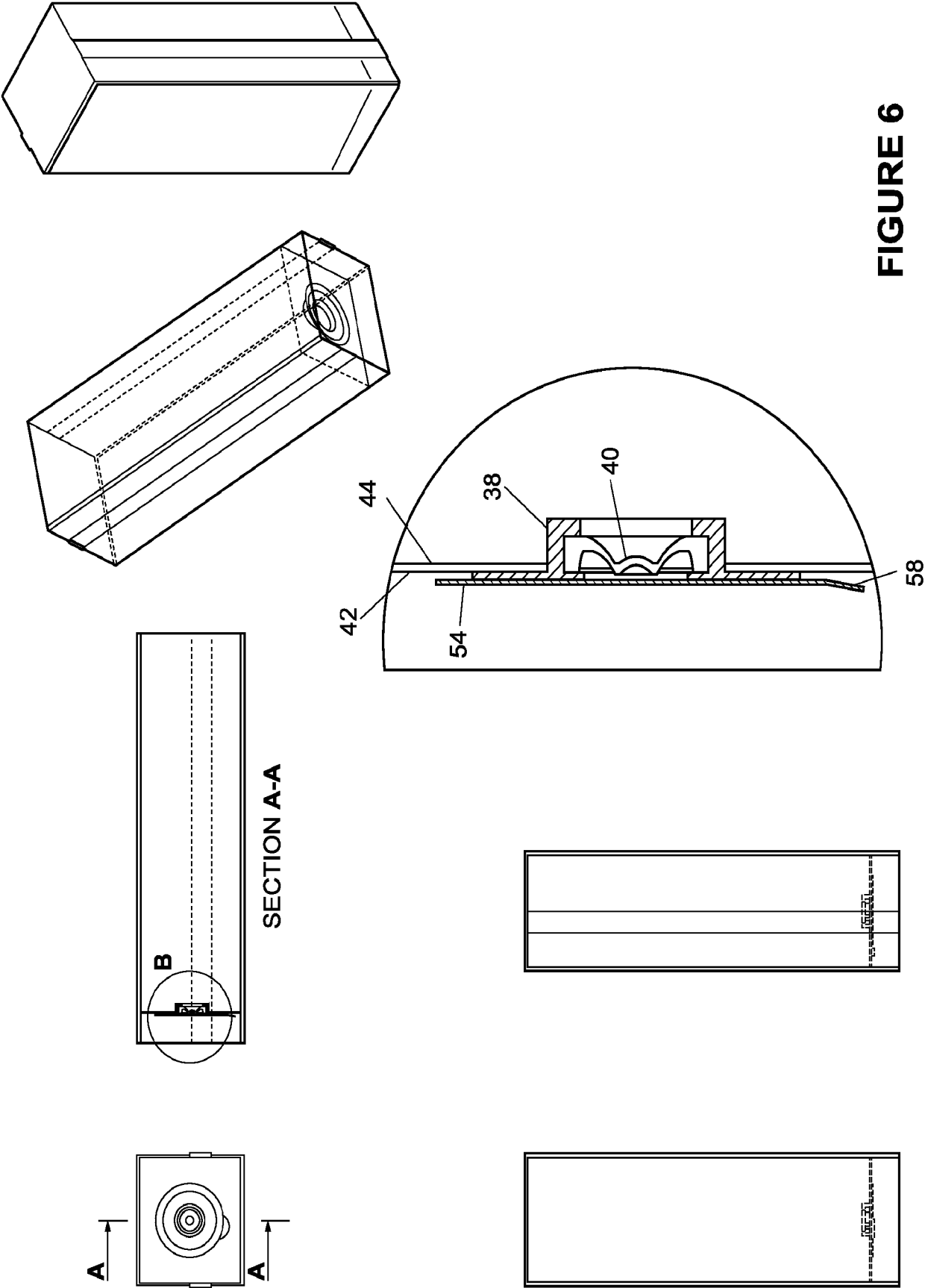


FIGURE 5



7/11

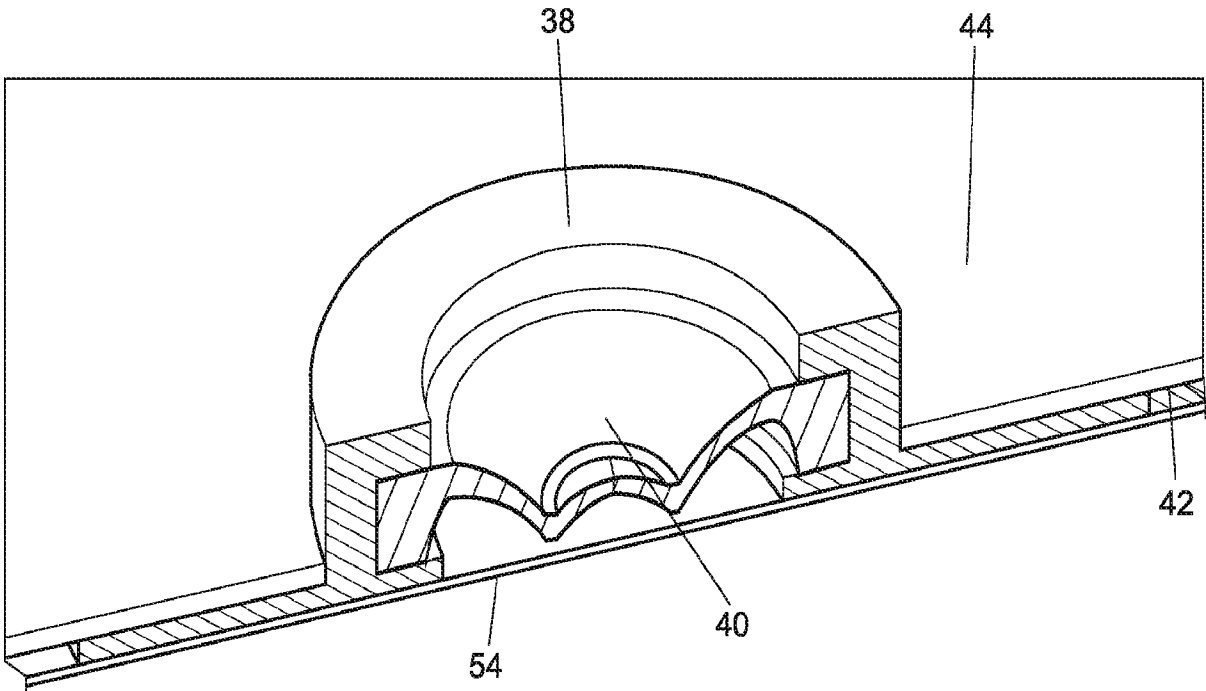


FIGURE 7

8/11

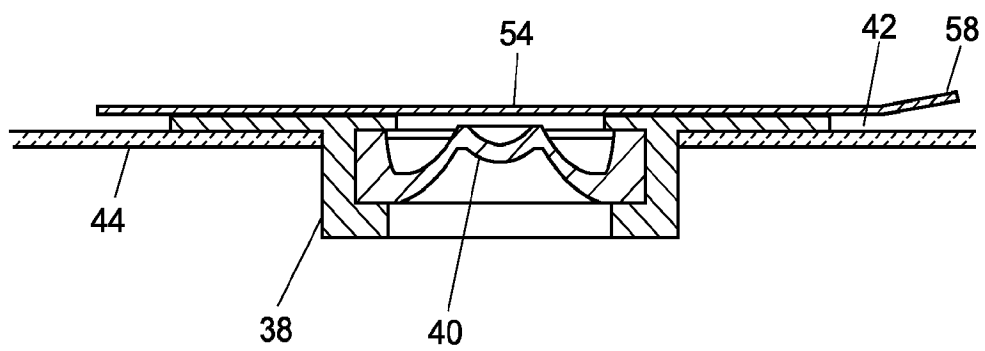
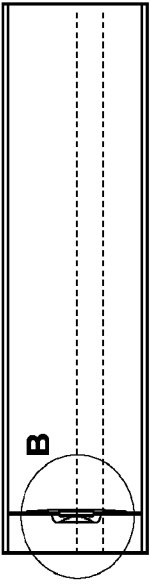
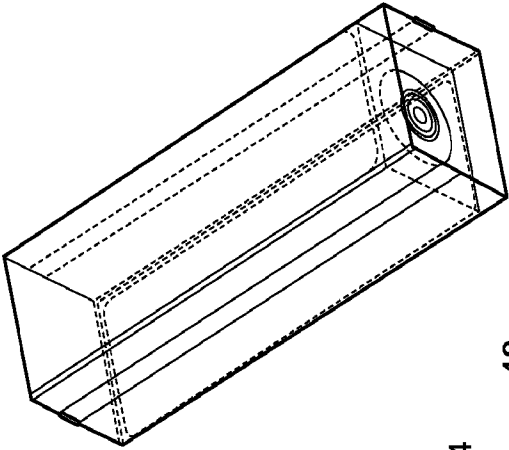
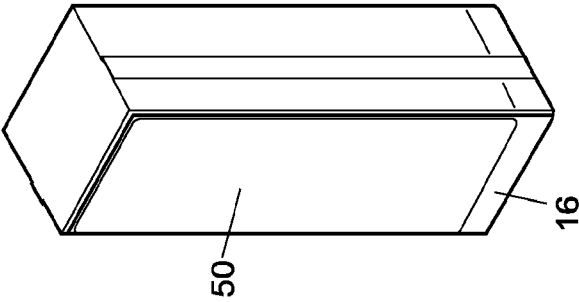


FIGURE 8



SECTION A-A

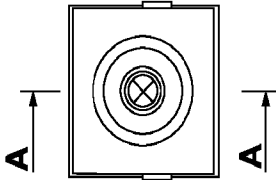
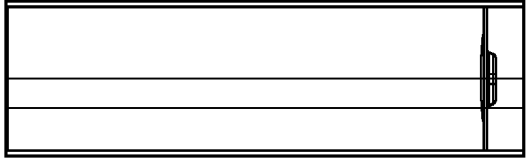
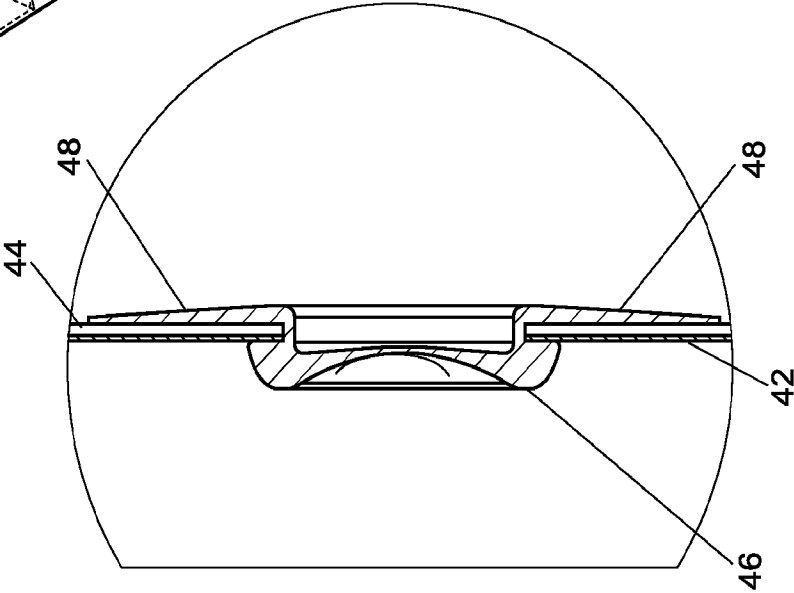


FIGURE 9

10/11

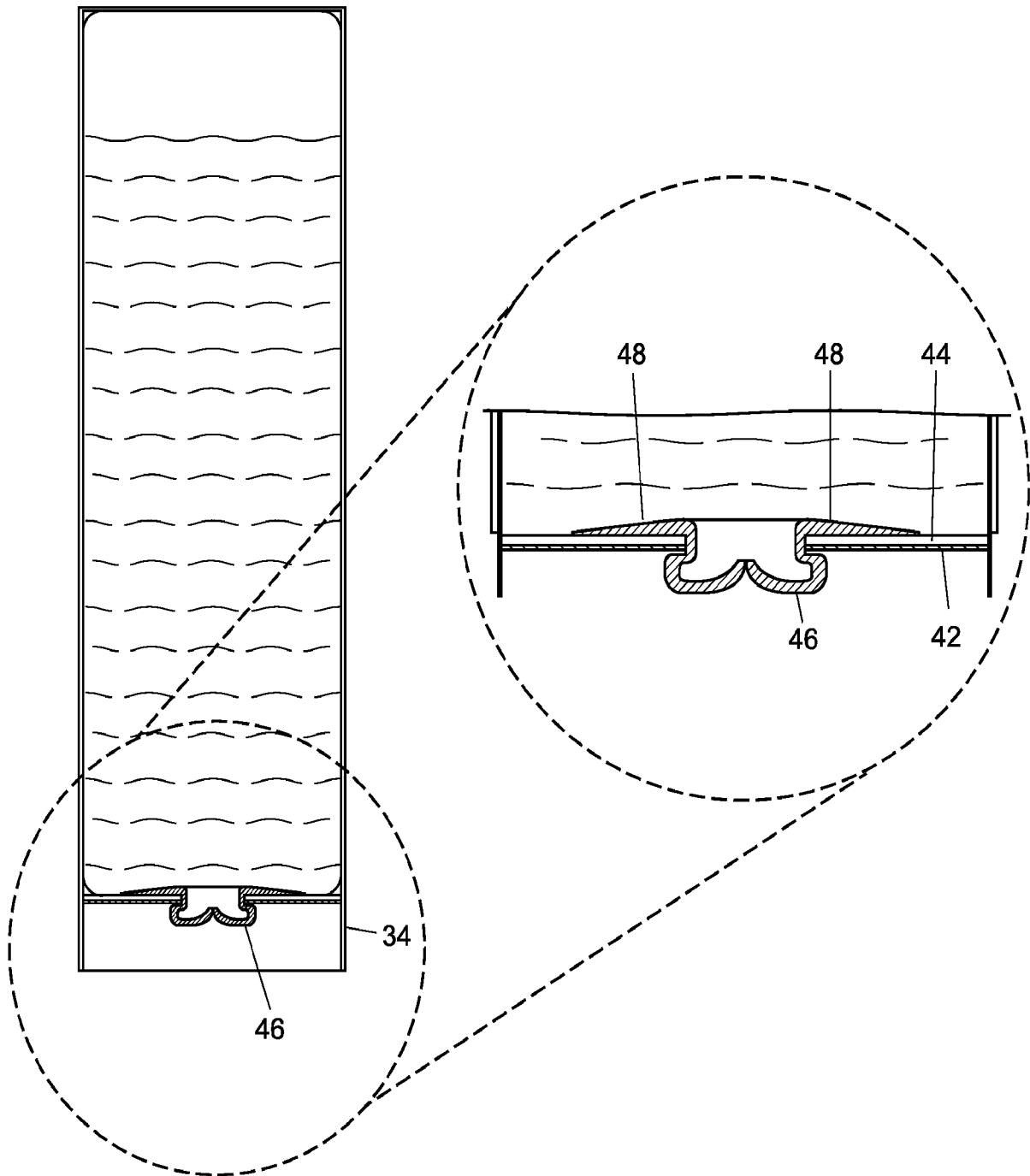


FIGURE 10

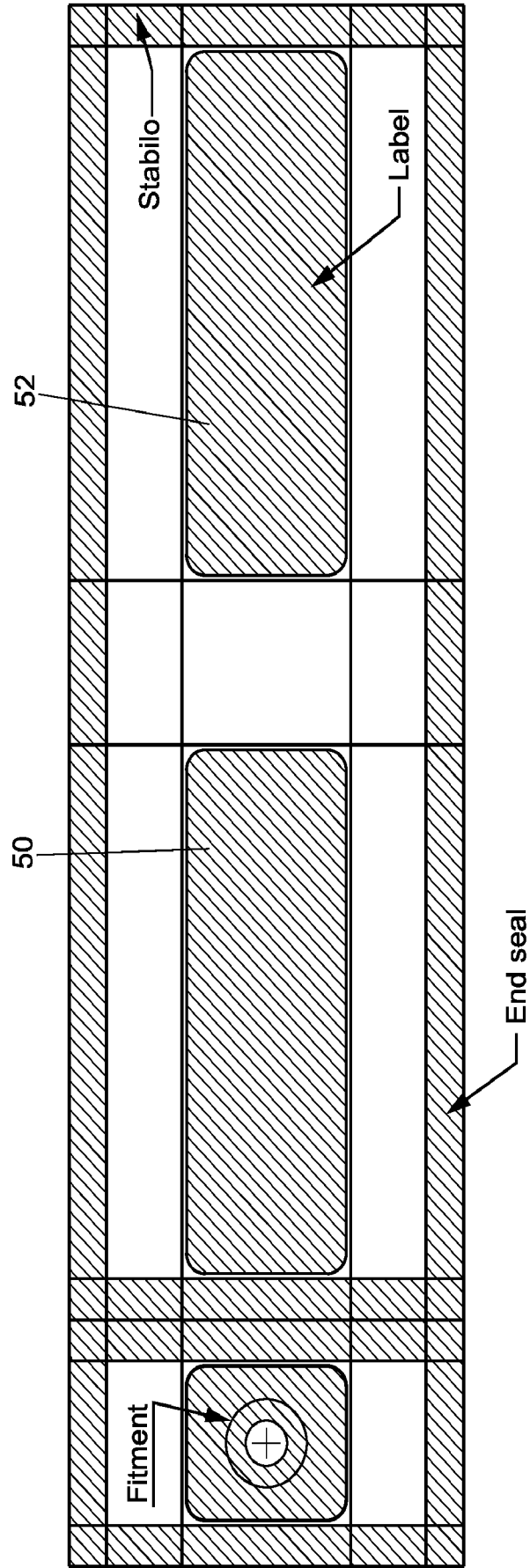


FIGURE 11