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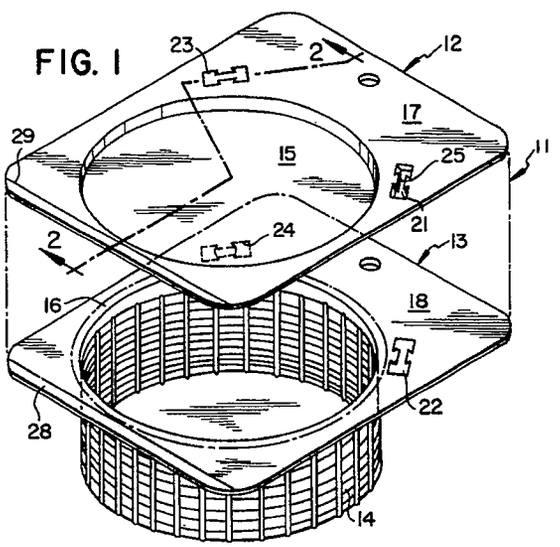
(54) Reclosable food packaging having snap closure.

(57) A food package container including a base (12) and a body (13) in alignment with a peelably sealed to each other is provided. At least one snap closure assembly is provided on the respective peripheral flanges of the base and body, and this snap closure assembly provides an audible snapping signal when the consumer recloses the food packaging container. The closure assembly includes an insertion projection (e.g. 21, 23), and an opening (e.g. 22, 24), in general registry therewith which is undersized with respect to the projection.

FIG. 1



EP 0 427 512 A1

RECLOSABLE FOOD PACKAGING HAVING SNAP CLOSURE

Background and Description of the Invention

The present invention generally relates to food packaging containers and method of forming the containers including locking members for snap locking together a base member thereof and a body member thereof. More particularly, the snap locking members include at least one mating snap closure assembly having a projection on one of the container members which enters into and snappingly engages an undersized opening in the other member of the packaging container. The projection may be subjected to crimping after it has been thermoformed into the package member. An audible snap sounds when the food packaging container is closed by pressing the package base member and body member together. The projection and the undersized opening are formed in the respective peripheral flanges of the base member and body member and at a location that is spaced outwardly from a peelable hermetic seal of the food packaging container.

Food Packaging containers of the type that include a semi-rigid and/or thermoformed base member and a body member having a bubble portion for defining a cavity that encloses a food product are well known. Packaging containers of this type have long been used for merchandising packaged foods such as sliced luncheon meats, cheeses and the like. In these types of packaging containers, the food product is hermetically sealed inside the cavity under vacuum packaging conditions in a manner well known in the art. At times, mechanical pressure may be used in order to generally shape or form the food to the package cavity.

A desired objective of many of these types of packaging containers is to provide a food packaging container that is resealable, at least to the extent that the base and body or bubble portion will be readily reclosed after the hermetic seal has been broken and the package has been opened, typically to remove a portion of the food product within the cavity. Attempts in this regard have included the use of pressure sensitive adhesives which remain tacky through a number of openings and closings.

At times, consumers desire a re-securement arrangement that is more readily detectable and more positive-acting. Prior attempts to meet this desire have included various interengaging profiles wherein a component of the base portion generally lockingly engages another component of the body or bubble portion of the food packaging container. These attempts have met with a varied degree of success. One difficulty with some of these structures is the problem of knowing when proper alignment of the interengaging profiles has been achieved so that the interlocking engagement for which the package is designed will be achieved without requiring a great deal of care and attention on the part of the consumer. This can be particularly important for consumers who either do not possess the keen eyesight that might be needed to check that interlocking profiles have been fully engaged. This can also be important in that a typical consumer would like to be assured that the proper degree of interengagement has been achieved by proceeding with what might amount to only casual resealing action, rather than the need to proceed with a studied and careful procedure.

One such approach that can be used in informing the consumer that the designed extent of reclosure has been accomplished is to provide an audible snapping sound which informs the consumer that the package has been reclosed. For merchandising food packaging containers it is essential that any such reclosure means may readily be combined with packaging wherein the packaged foods are formed to the package with vacuum and often also with mechanical pressure.

The present invention responds to a need in the art for food packaging containers which are easily openable and easily reclosable in a positive manner to the extent that the consumer is provided with an audible sound signifying that the package has been reclosed in order to provide at least a perception of freshness preservation. In addition, the reclosing is easily accomplished without requiring close visual study or careful attention by the consumer. This packaging thus provides the consumer with a clear signal that reclosure has been accomplished to ensure that the cavity will not be inadvertently opened and to provide a non-hermetic barrier for retarding deterioration of the food product within the cavity.

In summary, the food packaging container according to the present invention includes a base and a body which together define a bubble enclosure that provides a cavity within which the food product is tightly enclosed. The food is hermetically sealed within the cavity by suitable peelable sealing means. Peripheral flanges of the base and body are positioned outside of the cavity and peelable sealing means, and locking means for snap locking the peripheral flanges together are formed therewithin. The locking means includes at least one closure assembly of a projection and an undersized opening positioned one on the base and the other on the body. The projection and

opening are in registry with each other when the base and body are hermetically sealed to each other. After the package has been opened, this registry is easily re-established, at which time the projection enters into the undersized opening, and an audible snap will sound when reinsertion has been accomplished. Preferably, the projection is thermoformed into the package base or body, and it is of an adequate size to allow crimping thereof either before or after filling and sealing of the food packaging container. Post-thermoforming crimping of the projection causes or at least greatly enhances the audible snapping sound which is experienced when the base and body are pressed together.

It is accordingly a general object of the present invention to provide an improved food packaging container and method of forming same.

Another object of this invention is to provide an improved food packaging container and method of forming same, which container incorporates at least one flange area snap closure assembly that effects an audible snap when the food packaging container is reclosed.

Another object of the present invention is to provide an improved food packaging container and method of making same which provide a positive and clear signal to the consumer that the package has been reclosed

Another object of this invention is to provide an improved food packaging container and method of making same, which container can be readily reclosed without requiring a great deal of time, skill or attention on the part of the consumer, which can be further facilitated by a hinge assembly.

Another object of the present invention is to provide an improved food packaging container and method of making same, which incorporates reclosure members that do not substantially increase the cost of the container and that are readily visible from the front of the container.

These and other objects, features and advantages of the present invention will be clearly understood through a consideration of the following detailed description.

Brief Description of the Drawings

In the course of this description, reference will be made to the attached drawings, wherein:

Figure 1 is an exploded perspective view of a preferred food packaging container according to the present invention;

Figure 2 is an exploded cross-sectional view along the line 2-2 of Figure 1;

Figure 3 is a plan view of the base member of the food packaging container shown in Figure 1;

Figure 4 is an exploded perspective view of an alternative embodiment of a food packaging container according to the present invention;

Figure 5 is a plan cross-sectional view of the locking means, as assembled, of the embodiment illustrated in Figure 4;

Figure 6 is a perspective view of another embodiment according to the present invention; and

Figures 7a, 7b, 7c and 7d are plan views of other alternative embodiments of locking means for incorporation into food packaging containers according to the present invention.

Description of the Particular Embodiments

The food packaging container, generally designated as 11, which is shown in Figures 1, 2 and 3 includes a base member, generally designated as 12, and a body member, generally designated as 13. Body member 13 includes a bubble portion 14, and food product such as a stack of luncheon meat or cheese slices or the like (not shown), is tightly enclosed by and between the bubble portion 14 and a panel portion 15 of the base member 12. In this illustrated embodiment, the panel portion 15 takes the form of a pedestal which generally nests within the mouth opening of the bubble portion 14.

A peelable seal 16 is provided, typically in close proximity to the bubble portion 14, and this peelable seal 16 can be of a generally known construction and/or character so that a vacuum seal condition is maintained within the food packaging container 11 until opening thereof is effected. Typically, the peelable seal 16 will be generally along or spaced closely from the inside perimeter of a peripheral flange 17 of the base member 12 and a peripheral flange 18 of the body member 13.

At least one snap closure assembly (two snap closure assemblies being visible in Figure 1) is provided in the peripheral flanges 17 and 18. In each case, the projection of each snap closure assembly is formed in the base member 12, or the body member 13 and the other undersized opening is formed in the other member. One illustrated snap closure assembly includes base member projection 21 and an undersized opening 22 in the body member. The other illustrated snap closure assembly consists of base member projection 23 and body member undersized opening 24. In this illustrated embodiment, the base member projections 21, 23 are insertion projections, and the body member undersized openings 22, 24 are receptor openings that are generally hollow and closely receive the insertion projections which are generally protruding above the surface of the base member.

Openings 22, 24 are undersized in that each

has an opening peripheral size and/or shape so as to effect an interference fit when the base member projection enters the opening. The entry and/or seating of the projection into the opening is accompanied by an audible snap as projection is thus force fitted into the opening. For example, when the perimeter of the opening has the same shape as a cross-section through an engagement portion of the projection, the opening perimeter will be less than the outer perimeter of the projection cross-section, resulting in an audible snap. In those cases where at least an engagement portion of the projection has a cross-sectional shape different from the shape of the opening perimeter, at least a part of the opening will be in interfering engagement with the projection whereby the interfering portions will signal an audible snap when the package is closed. Whichever undersizing approach is utilized, the extent of undersizing must be adequate to achieve the needed force fit, but it should not be so great as to cause the opening or the projection to distort or tear.

The base member 12 and the body member 13 are formed of a semi-rigid, pre-formed plastic material, and the projections 21 and 23 are thermoformed therewithin and at a location at least 1/8 inch away [3.2 mm] from the cavity area and outside of the peelable seal 16. Each projection has a height which ,is adequate (typically 1116 inch [1.6 mm] or more, typically on the order of approximately 1/8 inch [3.2 mm] or more) in order to allow for crimping of the projection either before or after filling and sealing of the food packaging container 11. It is preferred that the crimping action be post-thermoforming and before or after the base member 12 and body member 13 are pressed together. The post-thermoforming crimping of the projections can enhance the audible snap which sounds when the body and base are pressed together. The openings can be easily made after thermoforming, for example during a panel cut-out or trimming step.

The projection and opening of this embodiment exhibit a general bowtie shape and provide a relatively large engagement interface and a shape that facilitates crimping the projection, when desired. It can be especially convenient to crimp neck portion 25 of a projection in order to provide especially suitable snap locking means having a reliable audible snap.

Also shown in this embodiment in order to assist in ease of package reclosing is the inclusion of a hinge assembly, generally designated as 27. A suitable hinge assembly 27 can include a permanent-type of glue or adhesive or heat seal 28 for joining respective ends of the base member 12 and body member 13 which are generally opposite from the snap closure assembly. A score line 29 is also preferably included in order to facilitate bending of the semi-rigid base member 12 and/or body member 13.

The food packaging container, generally designated as 31 in Figure 4, includes base member 32 and a body member 33 having a bubble portion 34. In this embodiment, base member projection 35 and body member undersized opening 36 are not entirely identical in shape, and at least one engagement portion of the projection is slightly wider than the opening in at least one location and/or dimension. In the arrangement illustrated in Figures 4 and 5, portions of the insertion projection 35 are slightly wider than the generally corresponding portions of the undersized opening 36. The base member projection 35 enters the undersized opening 36 in the body member 33. Totally non-impeded entry is not possible due to the positioning of protruding wings 37 of the undersized opening 36, while corresponding wings are not included in the base member projection 35. By this arrangement, a pinching action is achieved from top to bottom of the projections when the wall 38 slidably engages a protruding wing 37 whereby the protruding wing 37 and/or wall 38 deform to provide secure, pinching engagement therebetween. An audible snap condition can be enhanced by crimping as described in connection with the embodiment of Figures 1 through 3, if desired.

The Figure 6 embodiment illustrates another general form which can be taken by a food packaging container, generally designated as 41. In this embodiment, there is less of a delineation between a base member and bubble member. This package provides a substantial hinge arrangement by including a hinge portion 42 joining body members 43 and 44 of generally equal volume. Snap closure assemblies 45 and 46 are illustrated. As with all of the embodiments, these snap closure assemblies can include post thermoforming crimping of the projection and/or can exhibit a pinching action structure. In any event they are characterized by a close interference fit.

In all of the illustrated embodiments, the insertion projection component of each snap closure assembly may be either within the base member or body member, and the corresponding receptor undersized opening component thereof will be within the other member, whether the body member or the base member. A minimum of one such snap closure assembly or as many as six or more such assemblies may be provided in order to achieve the desired reclosable locking action.

The projections and undersized openings may take on any number of various shapes. Typically these shapes will readily allow for the interference fit, and/or crimping and/or for pinching action as desired. Figure 7a shows a snap closure assembly

structure design modeled after a padlock. Figure 7b gives a structure on the order of that shown in the other embodiments, but also resembling a key providing the general outline of initials such as the illustrated "OM". Figure 7c provides another illustration of a multi-faceted shape which approximates that of the initials "OM". Figure 7d illustrates another shape of projection and undersized opening.

With more particular reference to the method aspects of this invention, U.S. Patents No. 3,498,018, No. 4,411,122, No. 4,577,757 and No. 4,688,369, which are incorporated by reference hereinto, describe methods of forming a vacuumized, hermetically sealed package characterized by a predetermined quantity of product which is deformable and is arranged in the form of an upright mass on a pedestal having a sidewall and a peripheral flange for hermetic sealing to a corresponding peripheral flange of the body member. The food product will engage the end panel of the body member bubble, as well as its sidewall. The sidewall of the base panel pedestal telescopes into the bottom edges of the bubble sidewall.

In a typical method for filling this type of package, the body member is placed in an inverted position, such as generally illustrated in Figure 1 hereof, and sufficient quantity of product is placed thereinto so that the cavity will be substantially filled when the package is assembled. Then, the base member is positioned on the mouth of the bubble so that the pedestal telescopes into the bubble and engages the product. The flange margins of the base member overlie the corresponding margins of the body member. Mechanical pressure can be applied inwardly and onto the outside surface of the pedestal. The area defined by the bottom edges of the bubble sidewall can be sufficient to force the product into close contact with interior surfaces of the base and body members to shape the product to conform to the shape of the cavity and substantially completely fill the space between the cavity and product while vacuumizing the assembly and while sealing the package in a hermetic manner.

The projection or projections are formed in the desired peripheral flange, preferably by thermoforming. While crimping can be accomplished before or after filling and sealing of the package, it is preferred to crimp before the base member and body member are assembled together. An audible snap is enhanced by post-thermoforming crimping of neck portions or the like of the projection or projections.

When this invention is followed, reclosability and the ability of the package to then stay closed is achieved at low cost by providing one or more points of frictional interaction outside of the sealed area of the package. An audible snap sound is also provided which enhances the perception of freshness preservation once the package is opened. This invention can be applied to packages of any of various shapes, including those that are generally round and generally square or rectangular, and the bubble portions can take on needed product-conforming shapes. Also, the projection or projections are readily visible to the consumer, even from the front of the package, and they can present a pleasing appearance. To achieve easy opening of the peelable seal, high molecular weight polymer adhesives which are peelable and reseala-ble may be used, or easy peel multi-layer rigid films that are heat sealable may be used.

With more particular reference to tbe preferred crimping procedure, crimping of the projection or projections occurs by applying pressure to one or both sides of, the projection (or a portion of it such as the illustrated neck) in order to slightly deform it. Crimping might occur at room temperature, or heat may be applied to the surface of the crimped area and/or imparted thereto by the crimping device itself, in order to utilize solid state forming techniques in order to utilize solid state forming techniques.

In a typical food packaging container, the thickness of the bubble film is about 13 mil. (0.33 mm] and the thickness of the base film is about 10 mil. [0.25 mm]. Exemplary bubble compositions include Barex 210 or polyethylene terephthalate. A suitable base composition can be Barex 210, polyvinyl chloride, or Saranex laminated to Barex 210 or polyvinyl chloride or polystyrene.

It will thus be seen that the present invention provides new and useful food packaging containers and method for making same, which have a number of advantages and characteristics, including those pointed out herein and others which are inherent in the invention. Preferred embodiments have been described by way of example, and it is anticipated that modifications may be made to the described form without departing from the spirit of the invention or the scope of the appended claims.

Claims

1. A food packaging container (11; 31; 41), comprising:

a base member (12; 32; 43), having a panel portion (15) for supporting a food product and a peripheral flange portion (17) generally surrounding said base member panel portion;

a body member (13; 33; 44) having a bubble portion (14; 34) for cooperating with the base member panel portion (15) to define a cavity to fully enclose the food product therewithin, said body

member further including a peripheral flange portion (18) generally surrounding said body member bubble portion;

peelable sealing means (16) to provide hermetic sealing of the base member peripheral flange portion (17) to the body member peripheral flange portion (18) after the food product is filled into the cavity, said peelable sealing means (16) providing a perimeter that is generally closely spaced outside of said cavity; and

locking means for snap locking said base member to said body member, said locking means including at least one closure assembly (21; 22 or 23,24; 35, 36; 45 or 46), said snap closure assembly including an insertion projection (21, 23; 35) and an undersized opening (22, 24; 36), said projection (21, 23; 35) having been thermoformed into one of said base member peripheral flange or said body member peripheral flange, said undersized opening (22, 24; 36) being in the other of said body member peripheral flange or said base member peripheral flange, said projection and said undersized opening being in registry with each other at a location outside of said peelable sealing means (16), and said undersized opening (22, 24; 36) receives and enters into interference fit snapping engagement with said insertion projection (21, 23; 35).

2. A food packaging container according to claim 1, further including hinge means (27; 42) hingedly joining said base portion peripheral flange and said body portion peripheral flange.

3. A food packaging container according to claim 1, further comprising:

hinge means (27; 42) for hingedly joining said base portion peripheral flange (17) and said body portion peripheral flange, (18) at a location generally opposite to the location of said locking means.

4. A food packaging container according to any one of claims 1 to 3, wherein said insertion projection (21, 23; 35) includes a crimped portion.

5. A food packaging container according to any one of claims 1 to 4, wherein said closure assembly (21, 22 or 23, 24; 35, 36; 45 or 46) provides for reclosure of the food packaging container, which reclosure is signalled by audible snapping sound generated by reinsertion of said insertion projection into said undersized opening.

6. A food packaging container according to any one of claims 1 to 5, wherein said projection has a crimped neck portion.

7. A food packaging container according to any one of claims 1 to 6, wherein said projection (21, 23) has a general bowtie shape including a crimped central neck portion (25).

8. A food packaging container according to any one of claims 1 to 7, wherein said base member panel portion (15) is a protruding pedestal having an annular sidewall that nests within said bubble portion of the body member.

9. A food packaging container according to any one of claims 1 to 8, wherein one of said projection (21, 23; 35) or undersigned opening (22, 24; 36) has a protruding wing portion (37) which deforms to provide pinching securement action when said closure assembly is joined together.

10. A food packaging container according to any one of claims 1 to 9, wherein said undersized opening (26) includes a protruding part (37) that deforms upon sliding engagement with a wall portion (38) of said insertion projection.

11. A method for providing a food packaging container (11; 31; 41), said method comprising:

thermoforming a base member (12; 32; 43) having a panel portion (15) for supporting a food product and a peripheral flange portion (17) generally surrounding said base member panel portion, said thermoforming step including thermoforming an insertion projection (21, 23; 35; 45 or 46) into said peripheral flange portion of the base member;

thermoforming a body member (13; 33; 44) having a bubble portion (14; 34) for cooperating with the base member panel portion (15) to define a cavity to fully enclose the food product therewithin, said thermoforming step further including forming a peripheral flange portion (18) surrounding said body member bubble portion;

forming an undersized opening (22, 24; 36; 45 or 46) into said peripheral flange portion (18) of the body member, said undersized opening having a periphery, at least a portion of which is smaller than a similarly positioned portion of said insertion projection (21, 23; 35; 45 or 46) of the base member;

hermetically sealing together a portion of said base member peripheral flange (17) and a portion of said body member peripheral flange (18) to provide a peelable seal (16) along a perimeter that is closely spaced outside of said cavity; and

inserting said thermoformed projection (21, 23; 35; 45 or 45) into said undersized opening (22, 24; 36; 45 or 46) in order to snap lock said projection and opening together.

12. A method according to claim 11, further including crimping at least one portion of said thermoformed projection in order to form a crimped portion thereof.

13. A method according to claim 12, wherein said crimping step takes place before said inserting step.

14. A method according to any one of claims 11 to 13, wherein said undersized opening forming step includes forming a protruding portion of said undersized opening.

15. A method according to any one of claims 11 to 14, further including hingedly attaching together respective ends of said peripheral flange portions.

16. A method according to any one of claims 11 to 15, wherein said hermetic sealing step is preceded by filling said cavity with a food product.

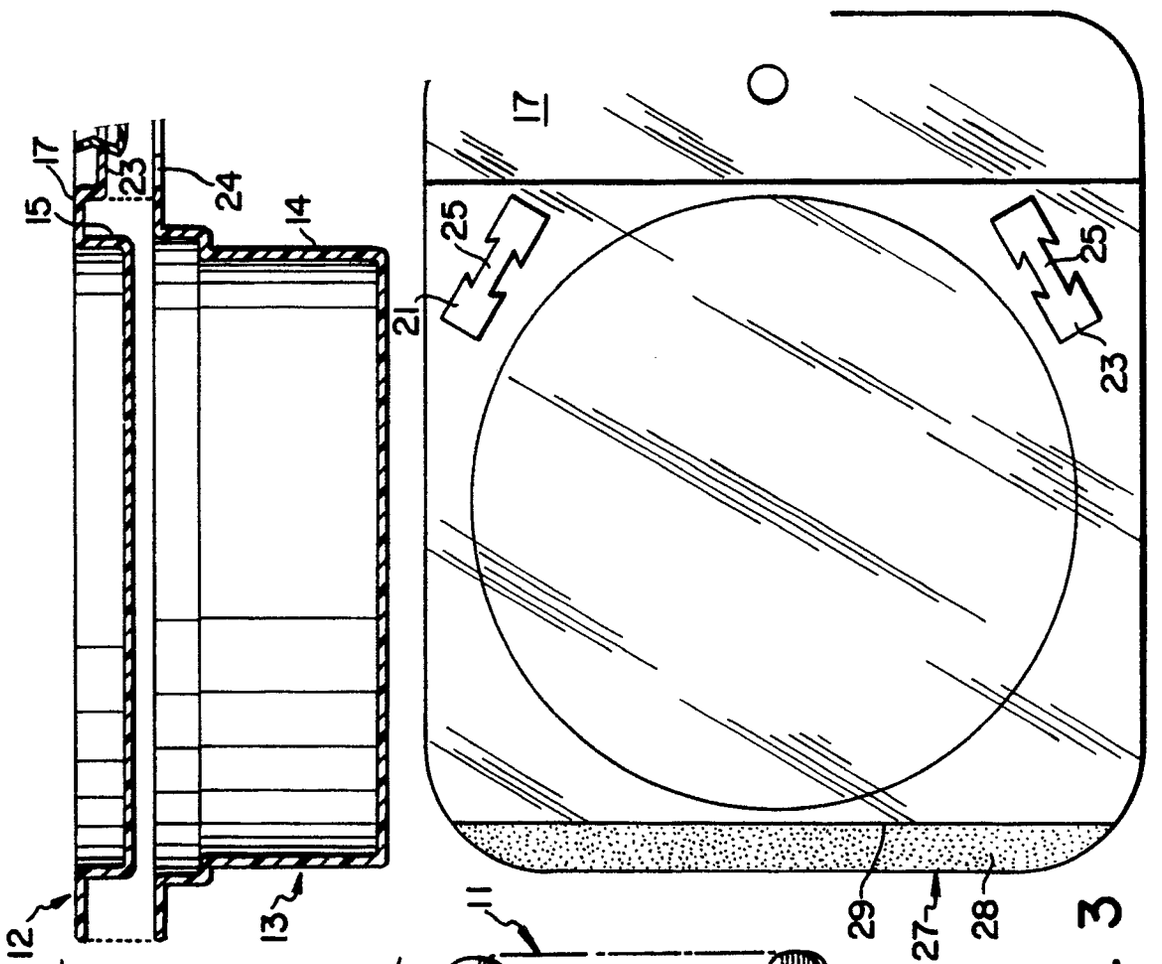


FIG. 2

FIG. 3

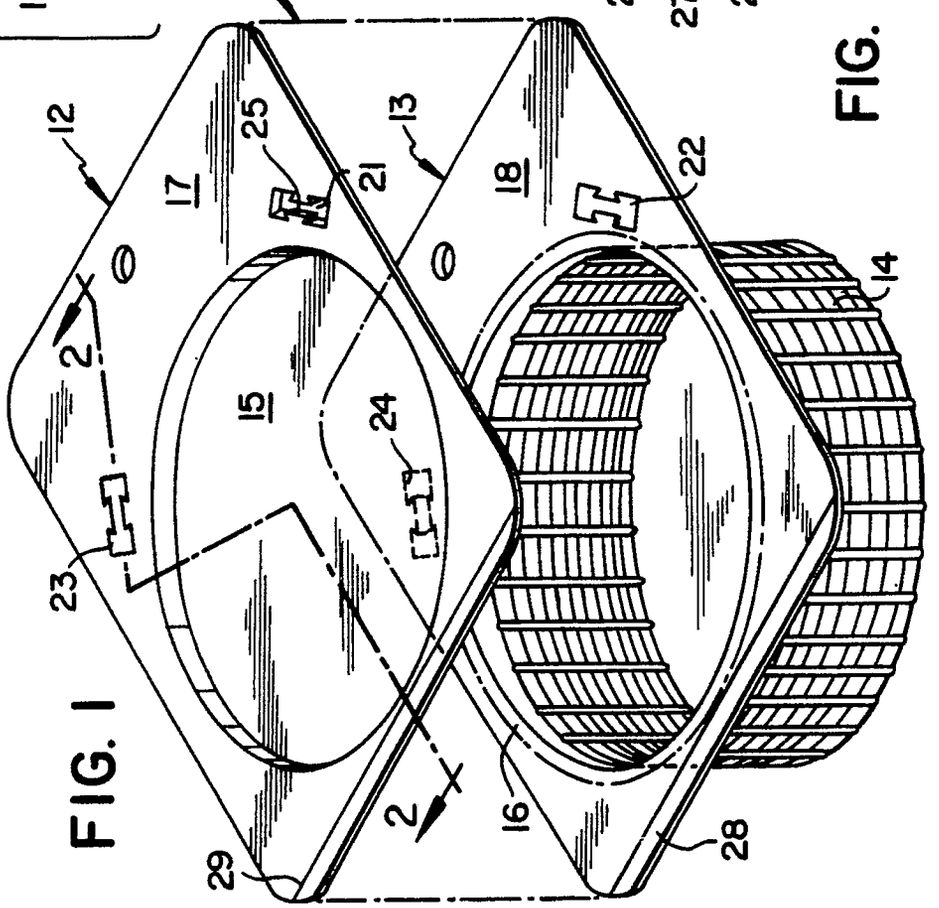


FIG. 1

FIG. 4

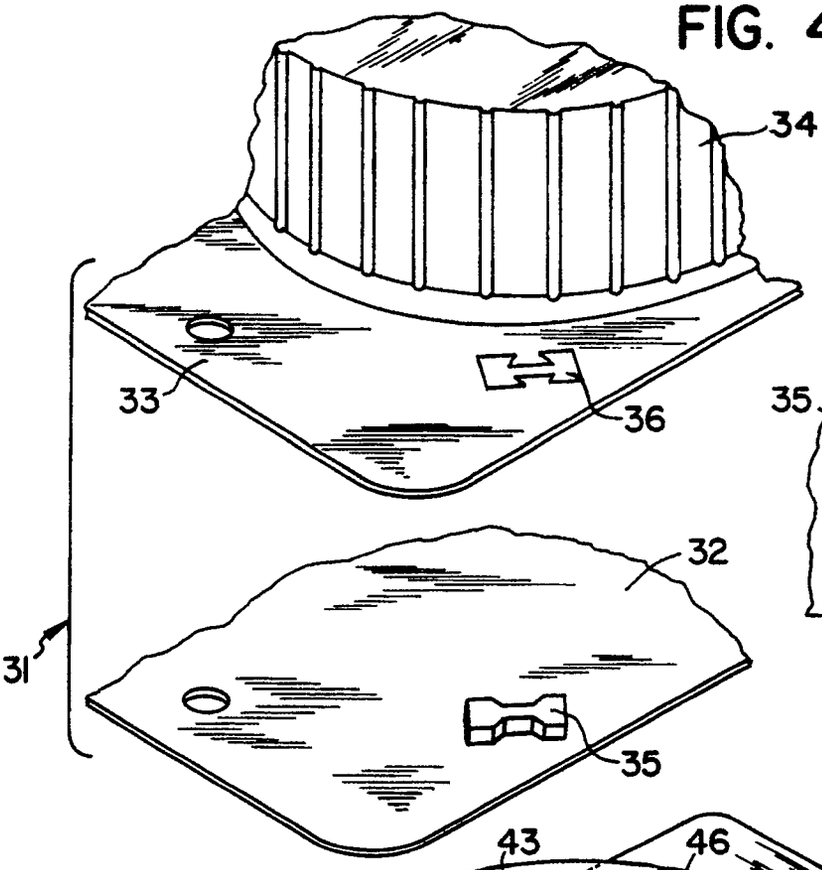
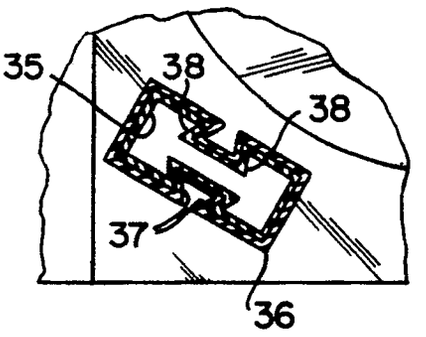


FIG. 5



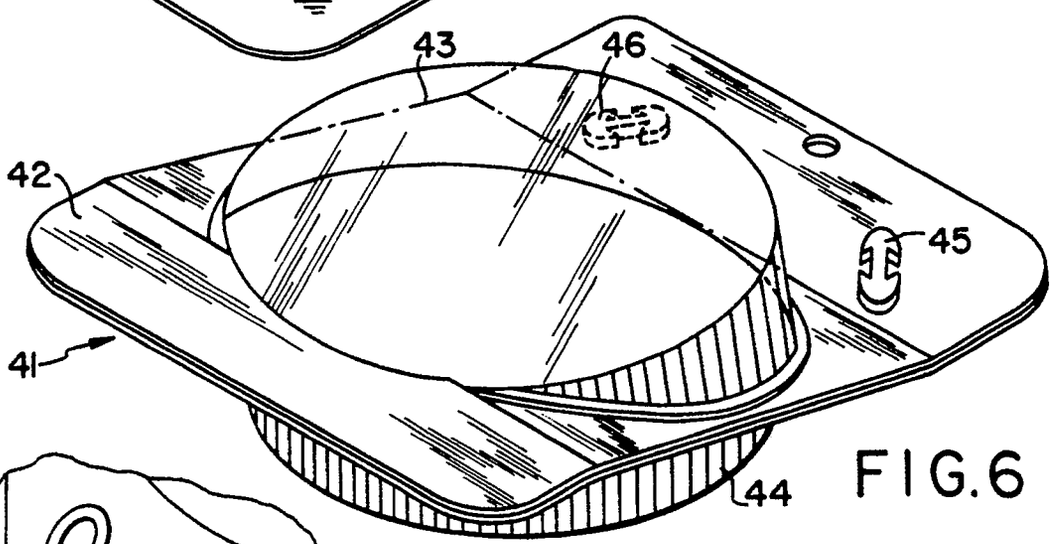


FIG.6

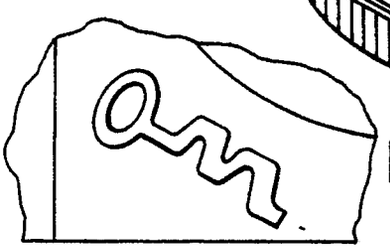


FIG. 7c

FIG. 7a

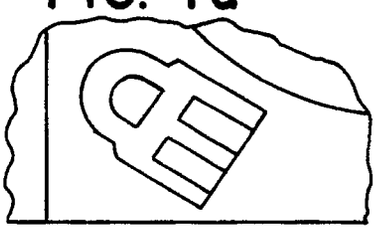


FIG. 7b

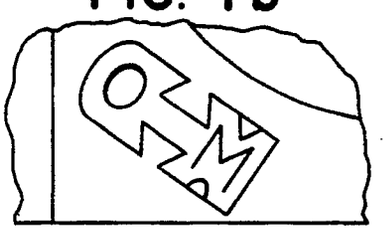
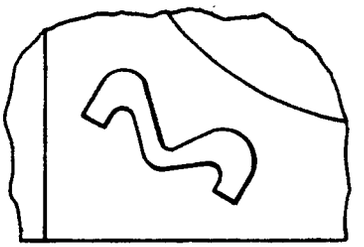


FIG. 7d



European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 90 31 2139

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y	US-A-3 311 229 (TROLL) * Column 1, line 69 - column 2, line 15; column 2, lines 31-59; column 3, lines 1-9; figures 1-7 *	1-6,8-13, 15,16	B 65 D 75/32
A		7,10,14	
Y	US-A-4 498 588 (SCOTT) * Column 4, line 3 - column 5, line 7; column 5, line 33 - column 6, line 6; figures 1-6 *	1-6,8-13, 15,16	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

B 65 D

The present search report has been drawn up for all claims

Place of search	Date of completion of search	Examiner
The Hague	28 January 91	VANTOMME M.A.

CATEGORY OF CITED DOCUMENTS

X: particularly relevant if taken alone
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