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(54) **ASEPTIC PACKS**

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EP 2 173 632 B1

Description

[0001] The present invention relates to aseptic packs. The present invention relates more specifically, but not solely, to apparatus and methodologies useful in the packing of a pourable product and to related packs, subassemblies and the like, according to the preamble of claim 1.

[0002] WO00/34136 describes an aseptic container for use in an aseptic packaging system having a wall which encloses a volume in which the material to be packaged will be received and a generally cylindrical gland fitted to said wall.

[0003] We provide apparatus and bags provided with a gland able to be filled with a pourable product.

[0004] Our current commercialised apparatus, and current commercialised bags suitable therefor are as disclosed in our website in respect of our commercialised INTASEPT™ process. We also refer to the discussion of techniques and methodologies in our New Zealand patent specification numbers 219449 and 509001.

[0005] For the sake of completeness the process in at least one of its variants can be described thus

1. Bag is delivered to filler;
2. Gland is captured by filler and engaged by filling head;
3. Top ("bottom" of what we, for the purpose of this application now designate as the "filler" gland) membrane (eg, as a cover for the gland's passageway) is steam sterilised and punctured in a closed chamber;
4. Product is delivered through filler gland into bag in aseptic transfer;
5. Heat seal head is activated from underneath the bag;
6. Bottom membrane is sealed under heat and pressure to the underside of the filler gland;
7. Heat seal head is removed from underside of bag;
8. A steam flush operation is performed to clear any remaining product from within the bore/passageway of the filler gland; and
9. Filler is released from filler.

[0006] Such a gland as used in such a process is generally a large diameter gland in order to ensure machine speed for the fill process. Such a gland, when used as the dispensing gland, is far from ideal.

[0007] We have determined that there will be a considerable advantage to users of filled bags or other container variants (whether hybrids of bags or not) where a gland is available more conducive both to the dispensing operation after some piercing of the bags membrane and to the piercing operation itself.

[0008] It is therefore an object of the present invention to provide the aforementioned outcomes or to at least provide the public with a useful choice.

[0009] The invention is a **product containing container** having the features defined in claim 1.

[0010] Said product containing container has a membrane (preferably adjacent the product) heat sealed to the filling gland.

[0011] Preferably said container is in the form of a bag defmed by a web or webs.

[0012] Preferably said filling gland is a moulded gland affixed to a web of the bag.

[0013] Preferably said filling gland is affixed to a web of the bag on top of part (eg, flange) of the filling gland.

[0014] Preferably said dispensing gland, pierce guide and/or collar is a moulded product having a passageway and that is fitted at least in part within said filling gland. Preferably said dispensing gland, piercer guide and/or collar is fitted with a mechanical interaction and/or heat sealing with said filling gland or such other welding or attachment methodology as might be appropriate.

[0015] Preferably said filling gland, post fill, has been sealed from adjacent to product reliant upon a membrane heat sealed to a surround of the ingress opening of the filling gland and/or preferably said dispensing gland, piercer guide and/or collar is heat sealed to such a membrane or the same membrane.

[0016] Said post fill fitted dispensing gland, piercer guide and/or collar is of a kind substantially as hereinafter described by reference to any assembly hereinafter defined or described, any pack hereinafter defined or described and any related methodology.

[0017] In an aspect the invention consists in **a (preferably aseptic) pack of a product**
wherein a membrane, interposed between the product and the or a surround of the opening into said filling gland, has been post fill sealed to said surround of the filling gland,
and wherein, post fill, an insert defining a dispensing gland, piercing adaptor and/or collar, has been both (i) engaged to said filling gland and (ii) had a surround of its opening sealed to said membrane,
the arrangement being such that a suitable piercer to be guided by said dispensing gland, piercer adaptor and/or collar can pierce said membrane within the bounds of the seal of the insert with said membrane thereby to allow egress of said product from the container via said insert alone or, in conjunction with the piercer, as a dispensing pathway.

[0018] Preferably said pack is a product containing container or results from a combinate or a method as herein described.

[0019] In another aspect the invention consists in, **in combination or assembly**,
a filling gland adapted to connect to a or the web of a bag (or associated with a web of a bag), the filling gland having attached thereto a bottom membrane sealable to the filling gland to close the filling gland, and
a dispensing gland, piercing adaptor and/or collar associable with the filling gland and also sealable or sealed to said membrane. A **method of providing an aseptic pack includes a product dispensable upon use of a**

piercer through a dispensing gland said method comprising or including the steps of

taking an aseptic container of a kind having a filling gland and a web of the container sealing to said gland and having an inner membrane not, or only partially, sealing the gland from the inside,

inserting or engaging, (preferably in aseptic conditions), a filling head or nozzle ("head") through said web into or to said gland and (preferably aseptically) filling the container with product,

sealing said inner membrane to said filling gland so as to close the container, and

(preferably in aseptic conditions), engaging an insert to said filling gland and sealing that insert to said inner membrane, the insert defining a dispensing gland piercer adaptor and/or collar to allow product egress (whether via a piercer or not) when the inner membrane is pierced.

[0020] The insert is to be a collar as a guide for a piercer that while still piercing the inner membrane will allow product egress.

[0021] Preferably said membrane is a laminate of material able to be heat sealed to said gland or glands and a material at the heat seal temperature of said first mentioned material with a said gland which does not heat seal to a web of the bag.

[0022] In other forms the web of the bag is such that it requires a heat seal temperature above that of the membrane to achieve a seal whether with the membrane or not.

[0023] The invention consists in **an assembly of a product containing container with a filling gland and dispensing gland, piercer adaptor and/or collar** substantially as herein described with reference to any one or more of the accompanying drawings.

[0024] In another aspect the invention is **a pack of a product**

wherein a post fill membrane, interposed between the product and the, or a, surround of the opening into a filling gland and the surround of a dispensing gland, piercer guide and/or collar, all defined by a moulding, has been at least post fill sealed to said surround of the filling gland, or has been post fill sealed to both said surrounds;

the arrangement being such that a suitable piercer to be guided by said dispensing gland, piercer adaptor and/or collar can pierce said membrane within the bounds of its surround seal with said membrane thereby to allow egress of said product from the container via said dispensing gland alone or, in conjunction with the piercer, as a dispensing pathway.

[0025] Preferably both glands are annular and the dispensing gland is spoke supported. A method of **providing an aseptic** pack **includes a product dispensable upon use of a piercer through a dispensing gland,** said method comprising or including the steps of

taking an aseptic container of a kind having a combined filling gland and dispensing gland and a web of the container sealing to said filling gland and having an inner membrane not, or only partially, sealing the filling and dispensing gland from the inside,

inserting or engaging, (preferably in aseptic conditions), a filling head or nozzle ("head") into, or to, said gland and (preferably aseptically) filling the container with product, and

sealing said inner membrane to said filling and dispensing gland so as to close the container.

[0026] Preferably the invention is, or the method used, a combined filling and dispensing gland substantially as herein described with reference to any one or more of the accompanying drawings.

[0027] The present invention also consists in, in combination, a fillable bag having a membrane provided filling gland and a dispensing gland, piercing adaptor and/or collar associable therewith so as to provide an assembly or sub assembly or outcomes substantially as herein described.

[0028] As used herein the term "and/or" means "and" or "or", or both.

[0029] As used herein the term "(s)" following a noun includes, as might be appropriate, the singular or plural forms of that noun.

[0030] As used herein the terms "ingress", "egress", "pathway", "passageway", "opening" etc are to be construed purposively to allow product inflow or product outflow as the case might be at a desired time in the use cycle of such apparatus.

[0031] In this specification where reference has been made to patent specifications, other external documents, or other sources of information, this is generally for the purpose of providing a context for discussing the features of the invention. Unless specifically stated otherwise, reference to such external documents is not to be construed as an admission that such documents, or such sources of information, in any jurisdiction, are prior art, or form part of the common general knowledge in the art.

[0032] Preferred forms of the present invention will now be described with reference to the accompanying drawings in which

Figure 1 shows part of a bag having a filling gland top sealed to the top web of the bag and having attached to the preferably flanged bottom of the filling gland a bottom membrane able to be annularly or otherwise surround sealed about the bottom of the filling passageway of the filing gland, Figure 1 also showing, exploded therefrom, a piercing adaptor, piercer collar and/or dispensing gland able to mechanically or otherwise attached to the filling gland and also capable of being surround sealed (with respect to the egress opening or passageway) to the membrane,

Figure 2 shows the apparatus of Figure 1 with the piercing adaptor and/or dispensing gland engaged by retention shoulders to the filling gland and having the bottom annular end of its passageway defining member contacting the bottom membrane, Figure 2 also showing a heated sealing head able to press

through the product whilst lifting the bottom web of the bag to effect a seal between the piercing adaptor and/or dispensing gland and said membrane, such seal to be in addition to that that already exists wholly around the passageway in the filling gland,

Figure 3 shows the instance of preferred sealing of that dispensing gland passageway to the membrane, there being selectivity of what seals to what at the heat sealing temperatures i.e. not the bottom web of the bag to the membrane,

Figure 4 shows the outcome of the sealing process, the seal with the bottom membrane now being complete,

Figure 5 shows a piercer able to allow dispensing of the product being aligned to be guided by the passageway of the piercing adaptor or piercer collar which is also the dispensing gland, **Figure 6** shows the piercer about to pierce the membrane,

Figure 7 shows dispensing via the egress opening, passageway, pathway or the like of the piercer whilst it is resident in the dispensing gland, piercing adaptor and/or collar,

Figure 8 is a simplified print of the flow process diagram of our aforementioned website in respect of our commercialised INTASEPT™ process,

Figure 9 is a centrally sectioned isometric view of an embodiment which is a unitary moulding of the filling and dispensing glands where a spoke supported inner ring can concentric with the outer passageway is provided,

Figure 10 is a view of the component of Figure 9 from the other side,

Figure 11 is a top isometric view of the whole item of Figures 9 and 10,

Figure 12 is a view of the reverse side of the embodiment of Figure 11,

Figure 13 is a plan view of the embodiment of Figure 11, and

Figure 14 is a side elevational view of the apparatus of Figures 9 through 13.

[0033] A preferred overall process of the present invention can be summarised as follows:

1. Bag is delivered to filler (eg, INTASEPT™ filler).
2. Gland is captured by filler and engaged by filling head.
3. Top membrane is steam sterilised and punctured in a closed chamber.
4. Product is delivered through filler gland into bag in aseptic transfer.
5. Heat seal head is activated from underneath the bag.
6. Bottom membrane is sealed under heat and pressure to the underside of the filler gland.
7. Heat seal head is removed from underside of bag.
8. A steam flush operation is performed to clear any remaining product from within the bore/passageway of the filler gland.
9. Filler is released from filler.
10. Filler gland is recaptured downstream of filling process (bag is filled).
11. Dispensing gland, piercing adaptor and/or collar (or other such insert) is inserted into the bore of the filling gland.
12. Heat seal head is driven up from behind the bag.
13. Bottom membrane is sealed under heat and pressure to the underside of the dispensing gland, piercing adaptor and/or collar.
14. Heat seal head is removed from underside of bag with insert as both a dispensing gland and piercing adaptor now surround sealed to bottom membrane.
15. Bag is released and supplied to market as a full aseptic pack.
16. Piercing adaptor provides a means for dispensing in market through a compatible piercer.

[0034] Figure shown in the drawings is the filling gland 1 having top sealed thereto the opening surround of the top web 2 of the bag. This top seal is quite distinct from that of the top membrane that is penetrated at the filler and shown in the Figure 8 at step 2.

[0035] Attached loosely to the base of the filling gland 1, so as not to prevent product insertion, has been the bottom membrane 3 but which membrane, by the time as shown in Figure 1 where the product 4 is present, has been fully surround heat sealed (preferably annularly) about the annulus or opening or passage surround 5. This is as a consequence of an intrusion with the bottom web (not shown) of a suitable heat sealing head all as disclosed in the aforementioned prior art processes.

[0036] It has generally been found that a filling gland of sufficient passageway size does not lend itself best to the dispensing process. Nor does it lend itself primarily to the aseptic conditions at dispensing.

[0037] The present invention envisages the positioning of the dispensing gland, piercing adaptor and/or collar 7 into a condition as shown in Figures 2 through 7.

[0038] There is the mechanical or other retention between the top flange of the filling gland and retention shoulders, seals and the like of the piercing adaptor and/or dispensing gland 7 as well as contact by the bottom region 8 thereof, as a surround of the dispensing pathway, with the membrane 3. In this condition, with the membrane 3, being contacted by the annulus 8 of the piercing adaptor and/or dispensing gland, and its engagement as shown generally at 9, the heat sealing head 10 can be bought up through the product by lifting up bottom bag web 11 to a condition as shown in Figure 3 where the heat sealing head seals the bottom membrane 3 to the bottom extremity 8 as shown in Figure 4.

[0039] In that condition there are venting openings 12 to allow evaporation of any residue from the flashing from the space between the glands or to allow, if desired, flashing at that stage. Subsequently, but whilst still in aseptic

conditions, an overcap (not shown) or a closing patch, membrane or the like can be fitted to close those openings once open.

[0040] At the customer end a piercer 13 is brought into the piercing adaptor and dispensing gland as shown in Figure 6. Its cutting end 14 is used whilst guided by the piercing adaptor to cut the membrane 3 wholly within the bounds of the dispensing gland and its annular seal to the membrane 3 thereby to allow product egress via the dispensing gland, but preferably wholly through the passageway of the piercer.

[0041] Materials preferably used in the assembly of the present invention preferably the membrane 3 is a laminate of, for example, of both a material heat sealable and a material non heat sealable at the temperatures of the sealing head, whether for the purpose of the heat sealing of the heat sealable layer of the laminate to the filling gland or to the dispensing gland, piercing adaptor and/or collar. Where there is not such a laminate structure, preferably the web from which the bag (which is the preferred container form of the present invention) is non heat sealable at the temperatures of the sealing head required for sealing the membrane to each of the filling gland and the dispensing gland.

[0042] Suitable materials for various components may be selected from, but not limited to the following:

1. The bag web materials comprising a lamination of a heat sealable polyethylene film, foil, and orientated nylon film or other such combination that affords the contained product protection from the ingress of Oxygen, moisture and the like.
2. The filling gland made of a sealable grade of polyethylene (eg, LLDPE)
3. The bottom membrane of the filling gland being a lamination of heat sealable polyethylene film (eg, LLDPE film) and a non-heat sealable orientated polyester film.
4. The insert (eg, as the dispensing gland, piercing adaptor and/or collar) being made from a heat sealable polyethylene (eg, HDPE).

[0043] Typical temperatures that might be employed for the sealing head for the purpose of each of the seals is preferably in the range of 160°C to 200°C.

[0044] Examples of product that can encounter such sealing head temperatures include sauces, soups, beverage concentrates, dips, fruit pulps, cream.

[0045] Figures 9 onwards show another embodiment of the present invention where a moulded gland can be provided to define both an inner and outer bore for the dispensing gland/piercer guide and filling gland respectively. In such an arrangement, still able to be used with a piercer as previously described, there is a moulded component that as a gland provides two bores.

[0046] Shown is an injection moulded flange 15 integral with the wall 16 defining the filling gland and having a bore surrounding bead 17 downwardly projecting to facilitate association of a sealable membrane therewith. The remainder of the wall 16 supports concentric structures or alternative 18 as are conventionally used with such glands.

[0047] Located internally is an annular wall 19 concenttic with the wall 16 to define the dispensing gland and again having a lower region 18 adapted for sealing to a membrane.

[0048] This inner bore is supported by spokes 19.

[0049] An advantage of such a gland as depicted in Figures 9 onwards, arising from its being moulded to incorporate both an inner and outer bore includes provision

- Such that when filing liquid passes through both channels
- After filling the bottom membrane is sealed across both bores (forming two concentric sealed rings)
- On dispense only one channel is used
- Allowing better seal between the inner bore and dispense fitment
- A series of spokes separate the inner and outer bores
- Allows large diameter fill and small diameter dispense
- Gap between inner and outer bore provides gap for membrane shards.

[0050] Its method of use varies from that earlier described only to the extent there is no subsequent insertion of the dispensing gland.

[0051] A person skilled in the art will appreciate how it is possible with such an arrangement post fill to adapt for a better dispensing methodology which leaves the filling region in better aseptic conditions.

Claims

1. **A product containing container** having both a dispensing gland (7), and a filling gland (1);
wherein said dispensing gland (7) is either

   (i) at least in part in the container's filling gland (1), or
   (ii) in addition to the container's filling gland (1);

   characterised in that both the dispensing gland (7), and the filling gland (1) are sealed to a membrane within the container;
   and wherein said dispensing gland (7) is able to act as a guide for a compatible piercer (13) to pierce the membrane to allow egress of the product from the container.

2. A product containing container of claim 1 wherein the dispensing gland (7) is positioned within the filling gland (1).

3. A product containing container of claim 1 or 2 where-

in said product egresses via the dispensing gland (7) or via a passageway of the piercer (13).

4. A product containing container of any of the previous claims wherein the container is a bag.

5. A product containing container of claim 4 wherein the filling gland (1) is adapted to connect to a web of the bag.

6. A product containing container of any of the previous claims wherein the membrane is interposed between the product (4) and the surround of the opening into the filling gland (1), and is post fill sealed to the surround of the filling gland (1).

7. A product containing container of any of the previous claims wherein, post fill, the dispensing gland (7) has been both (i) engaged to said filling gland (1) and (ii) had a surround of its opening sealed to the membrane.

Patentansprüche

1. Produkt enthaltender Behälter, aufweisend einen Abgabeanschluss (7) und einen Füllanschluss (1); wobei der Abgabeanschluss (7) entweder

   (i) mindestens teilweise in dem Behälterfüllanschluss (1) ist, oder
   (ii) zusätzlich zu dem Behälterfüllanschluss (1), **dadurch gekennzeichnet, dass** sowohl der Abgabeanschluss (7), als auch der Füllanschluss (1) an einer Membran innerhalb des Behälters abgedichtet ist;

   und wobei der Abgabeanschluss (7) dazu in der Lage ist, als Führung für einen kompatiblen Lochdorn (13) zum Durchstechen der Membran zu fungieren, um den Austritt des Produktes aus dem Behälter zu ermöglichen.

2. Produkt enthaltender Behälter nach Anspruch 1, wobei der Abgabeanschluss (7) in dem Füllanschluss (1) angeordnet ist.

3. Produkt enthaltender Behälter nach Anspruch 1 oder 2, wobei das Produkt über den Abgabeanschluss (7) oder über einen Durchgang des Lochdorns (13) austritt.

4. Produkt enthaltender Behälter nach einem der vorherigen Ansprüche, wobei der Behälter ein Beutel ist.

5. Produkt enthaltender Behälter nach Anspruch 4, wobei der Füllanschluss (1) zum Verbinden mit einem Gewebe des Beutels ausgelegt ist.

6. Produkt enthaltender Behälter nach einem der vorherigen Ansprüche, wobei die Membran zwischen dem Produkt (4) und der Umgebung der Öffnung in dem Füllanschluss (1) angeordnet ist und nach der Füllung zu der Umgebung des Füllanschlusses (1) abgedichtet ist.

7. Produkt enthaltender Behälter nach einem der vorherigen Ansprüche, wobei nach der Befüllung der Abgabeanschluss (7) sowohl (i) mit dem Füllanschluss (1) in Eingriff gebracht wurde als auch (ii) die umgebende Öffnung davon an der Membran abgedichtet wurde.

Revendications

1. Récipient contenant un produit, lequel récipient a à la fois un presse-garniture de distribution (7) et un presse-garniture de remplissage (1) ;
   dans lequel ledit presse-garniture de distribution (7) est soit

   (i) au moins en partie dans le presse-garniture de remplissage (1) du récipient soit
   (ii) prévu en plus du presse-garniture de remplissage (1) du récipient ;

   caractérisé en ce qu'à la fois le presse-garniture de distribution (7) et le presse-garniture de remplissage (1) sont scellés à une membrane à l'intérieur du récipient ;
   et dans lequel ledit presse-garniture de distribution (7) est apte à agir en tant que guide pour un poinçon compatible (13) pour percer la membrane pour permettre au produit de sortir du récipient.

2. Récipient contenant un produit selon la revendication 1, dans lequel le presse-garniture de distribution (7) est positionné à l'intérieur du presse-garniture de remplissage (1).

3. Récipient contenant un produit selon la revendication 1 ou 2, dans lequel ledit produit sort via le presse-garniture de distribution (7) ou via un passage du poinçon (13).

4. Récipient contenant un produit selon l'une quelconque des revendications précédentes, le récipient étant un sachet.

5. Récipient contenant un produit selon la revendication 4, dans lequel le presse-garniture de remplissage (1) est conçu pour se connecter à une bande du sachet.

6. Récipient contenant un produit selon l'une quelconque des revendications précédentes, dans lequel la membrane est interposée entre le produit (4) et la bordure de l'ouverture dans le presse-garniture de remplissage (1) et est scellée à la bordure du presse-garniture de remplissage (1) après le remplissage.

7. Récipient contenant un produit selon l'une quelconque des revendications précédentes, dans lequel, après le remplissage, le presse-garniture de distribution (7) a été à la fois (i) mis en prise avec ledit presse-garniture de remplissage (1) et (ii) a eu une bordure de son ouverture scellée à la membrane.

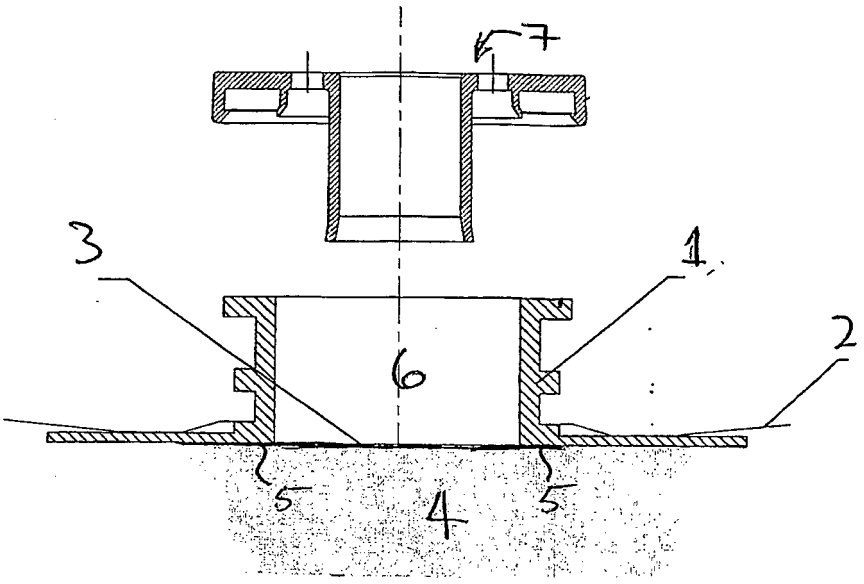


FIG 1

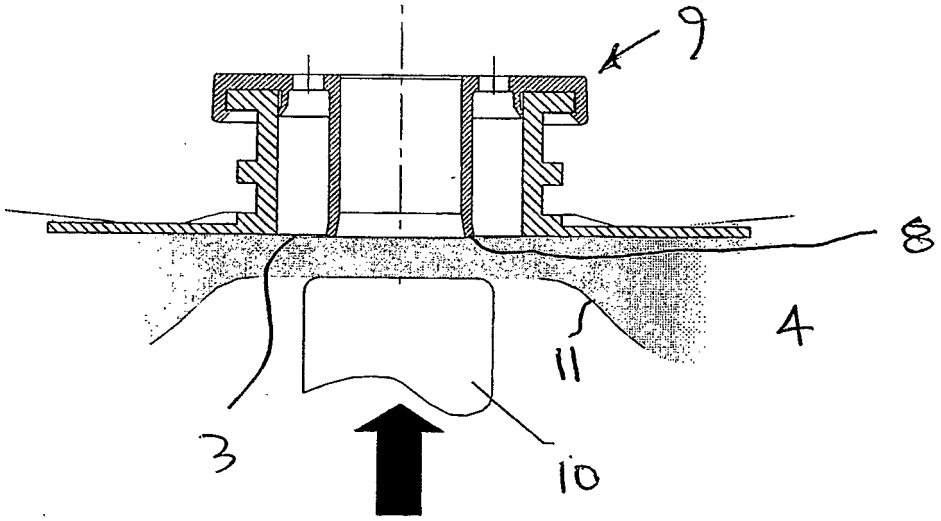


FIG 2

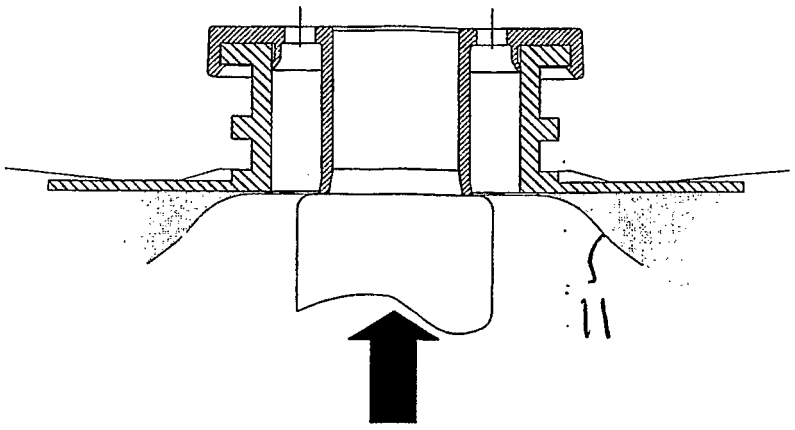


FIG 3

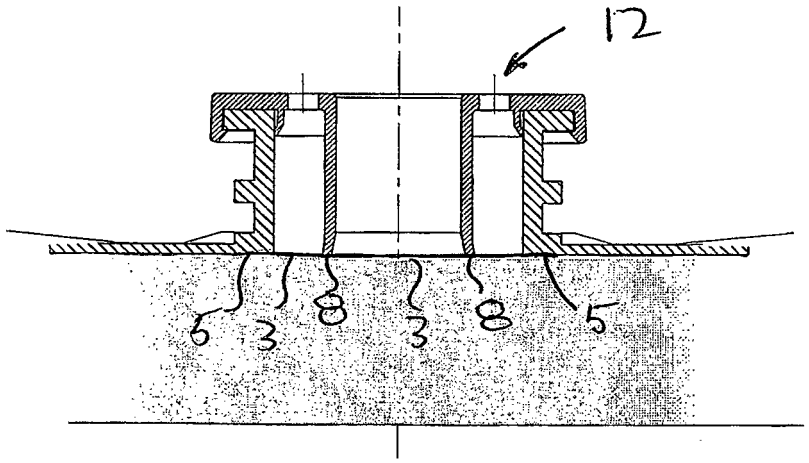


FIG 4

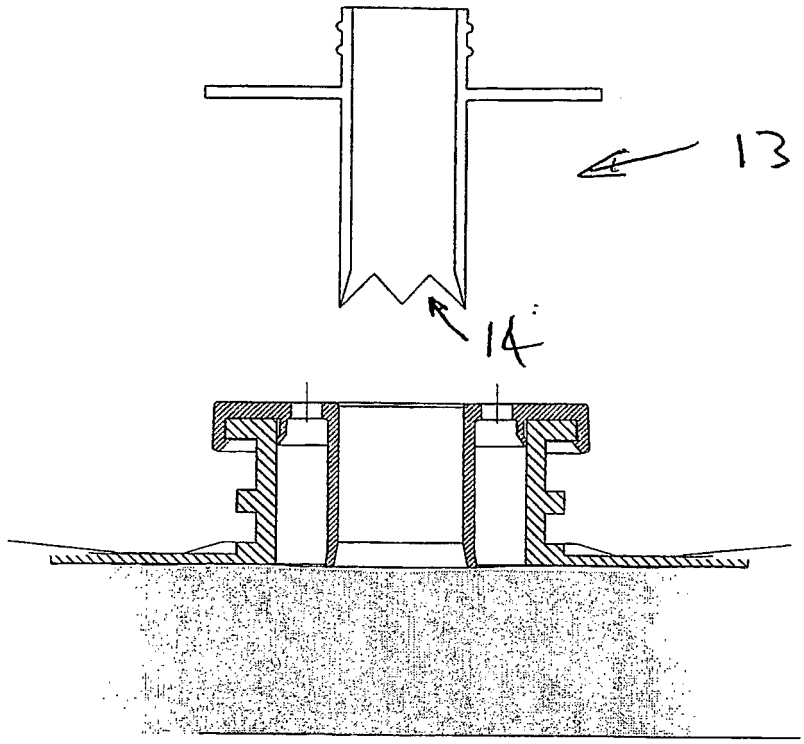


FIG 5

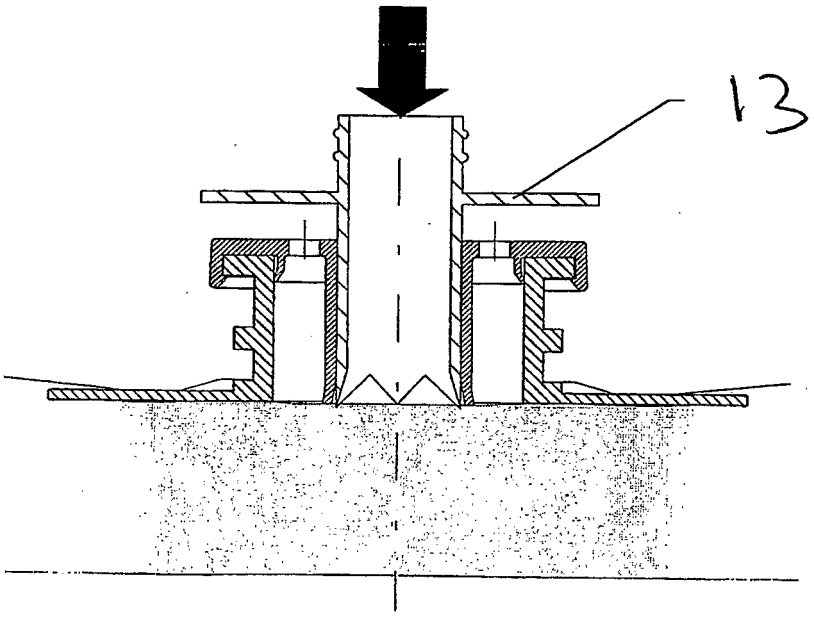


FIG 6

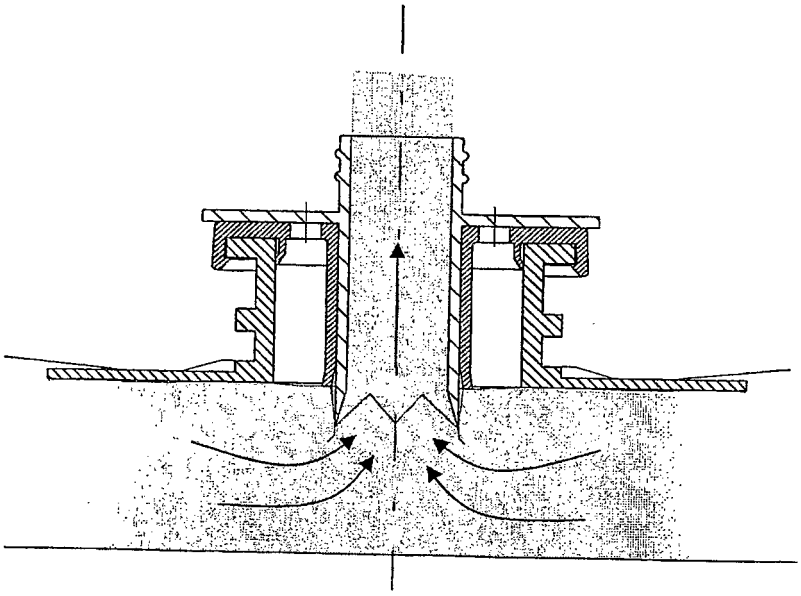


FIG 7

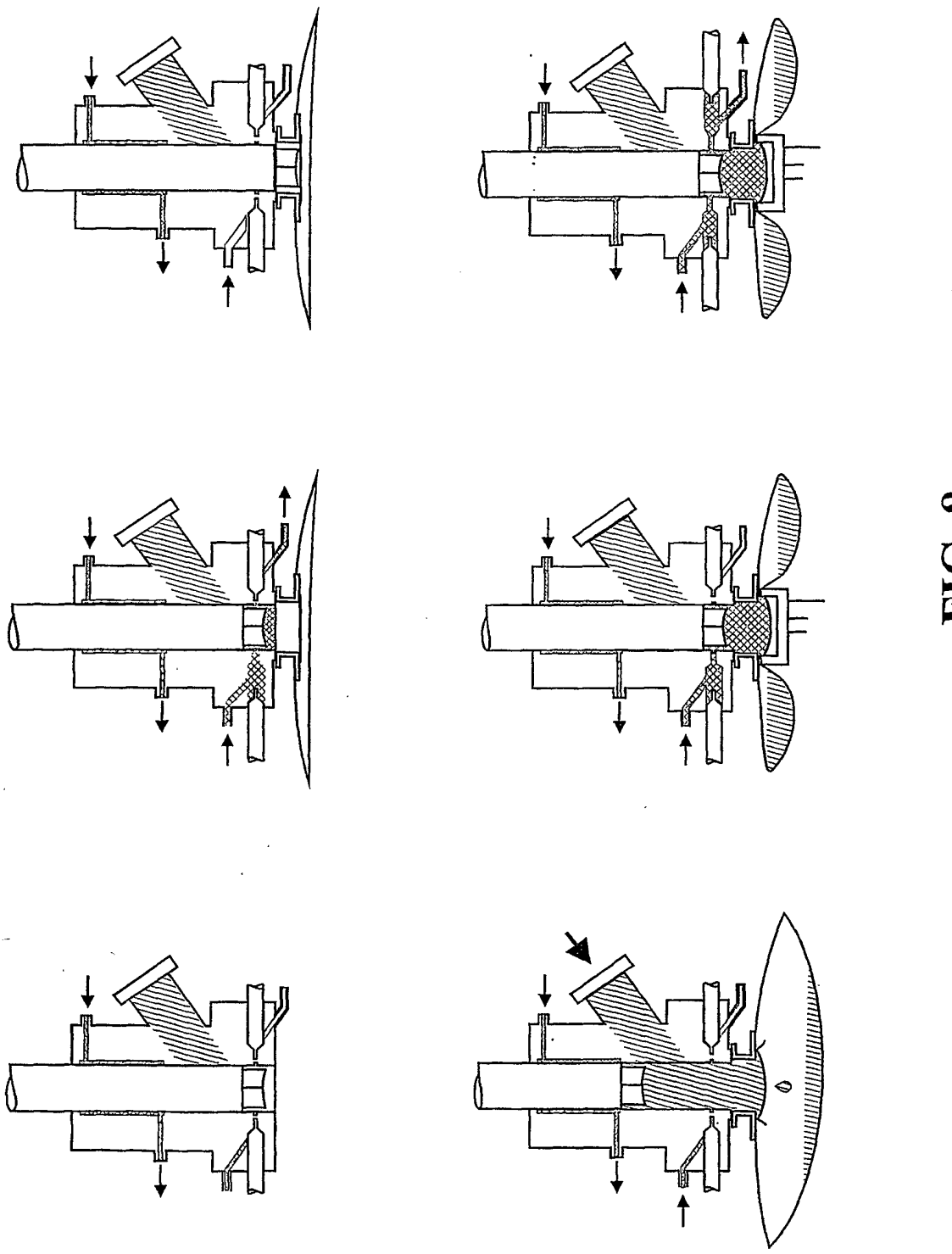


FIG. 8

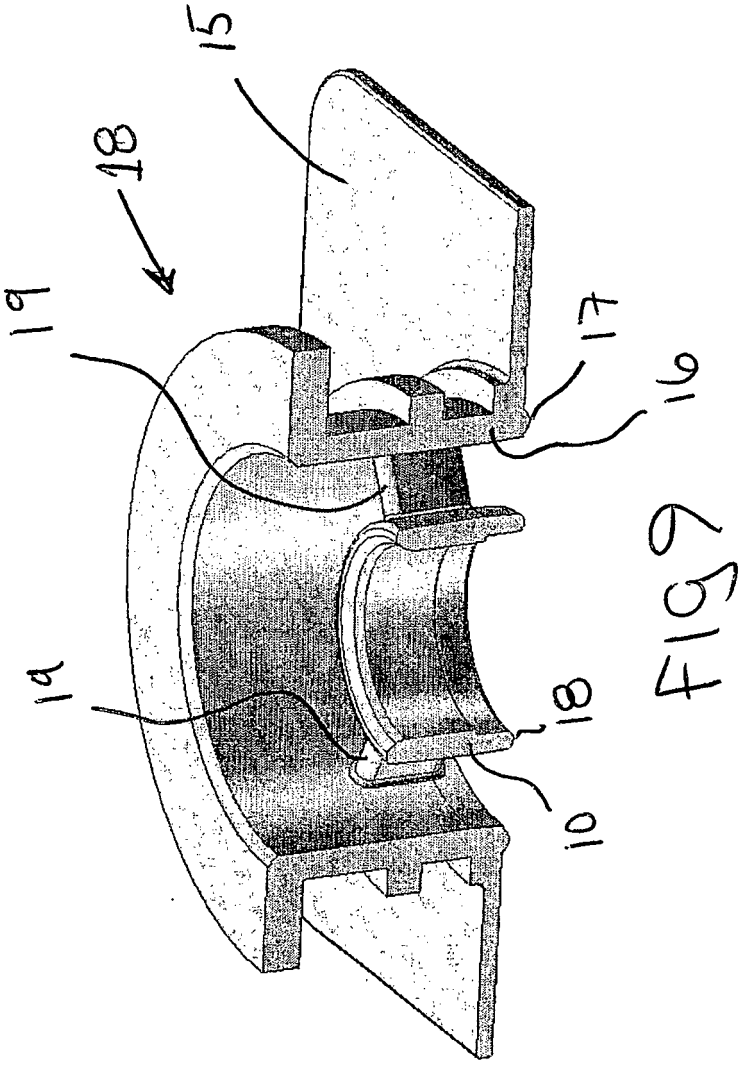


FIG 9

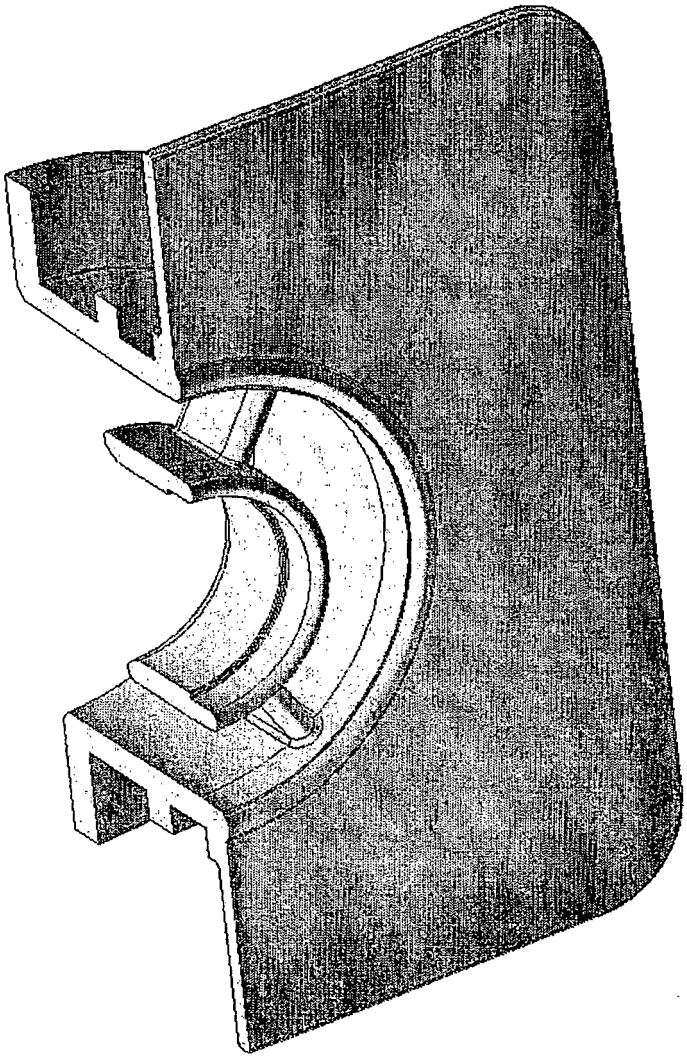


FIG 10

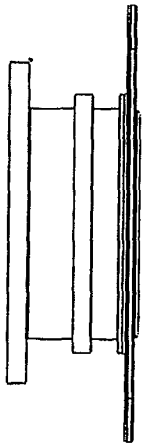


FIG 14

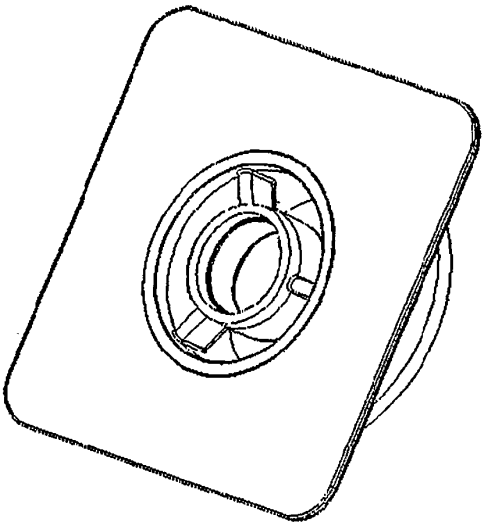


FIG 12

FIG 13

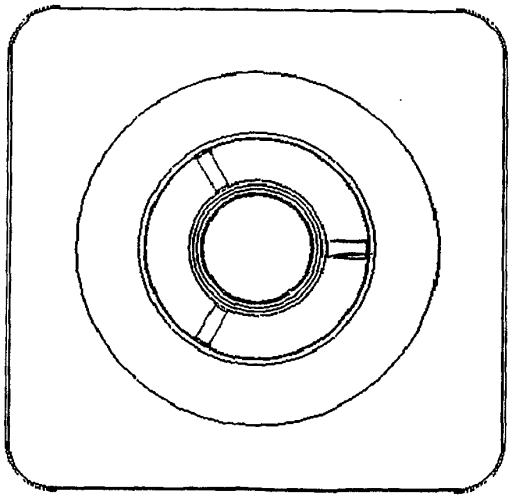
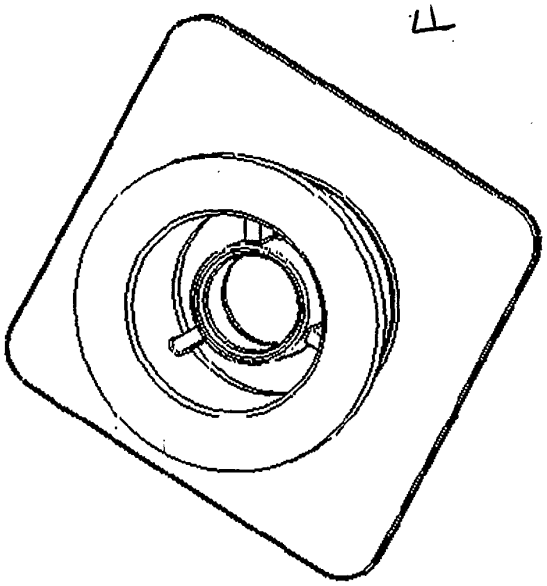


FIG 11



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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- NZ 219449 **[0004]**
- NZ 509001 **[0004]**