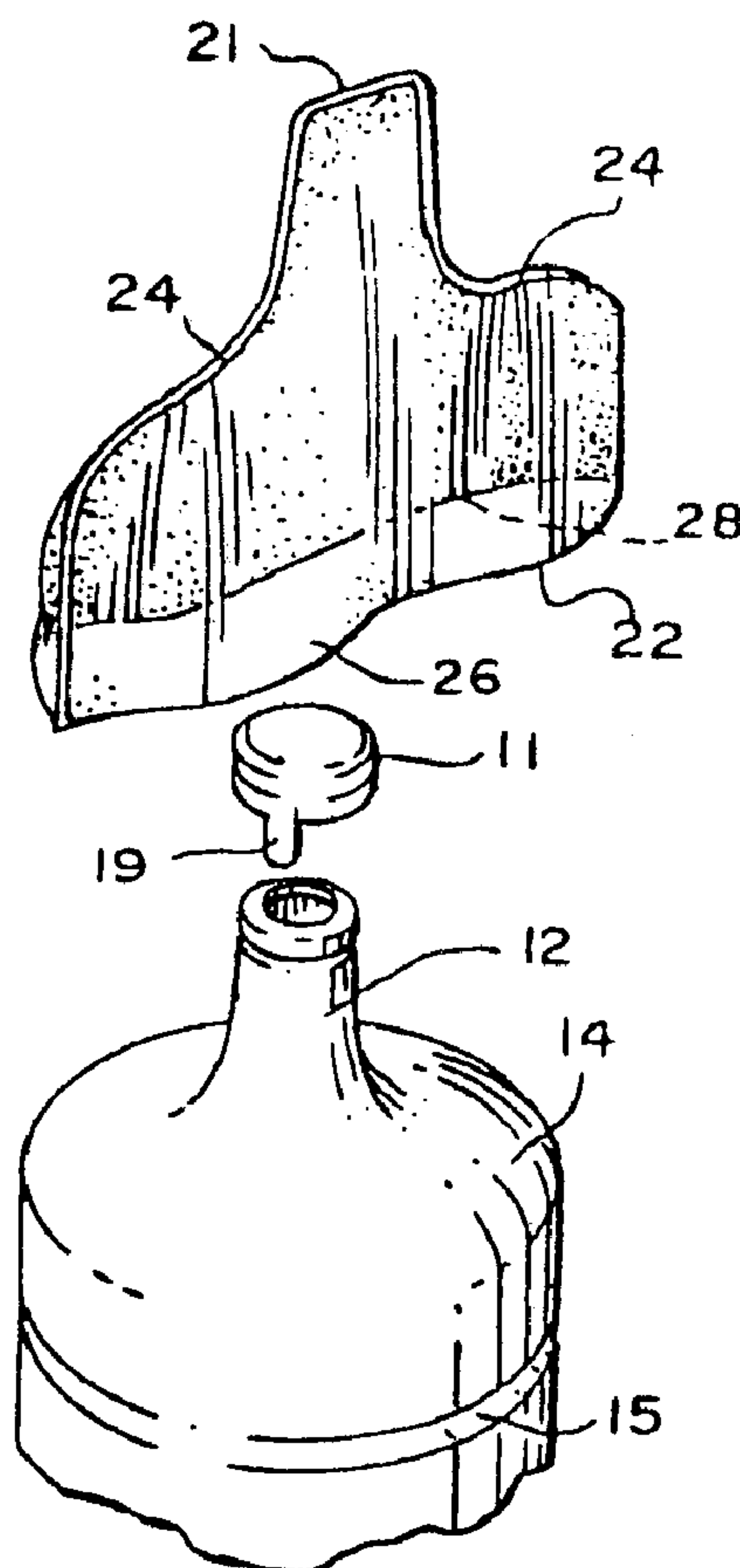




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(54) Titre : MANCHON POUR ETRE UTILISE AVEC UNE BOUTEILLE
(54) Title: SLEEVE FOR USE WITH A BOTTLE



(57) Abrégé/Abstract:

A disposable sleeve (20) that can be applied to a water bottle (10) before leaving the filling source and heat-shrunk take the configuration of the upper portion of the bottle including the cap and shoulder and anchor the same to the bottle. Optionally, the

(57) **Abrégé(suite)/Abstract(continued):**

cover which has a neck, shoulder and body portion can be provided with a removal tab. Important to the invention, however, is the securing of the sleeve to the bottle in an intimate skin-to-skin relationship which thereby shields the upper portion of the bottle from contamination wherever it may be prior to use. In accordance with the method, the sleeve heat-shrunk to the bottle and is removed prior to emptying the bottle. The bottle is then uncapped and secured to the cooler. The sleeve should not be allowed to touch any portion of the bottle or cooler after its removal.

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(21) International Application Number: PCT/US99/31121 (22) International Filing Date: 29 December 1999 (29.12.99) (30) Priority Data: 09/225,047 4 January 1999 (04.01.99) US (71)(72) Applicant and Inventor: CLARK, David, W. [US/US]; 2319 SE 5th Street, Ocala, FL 34471 (US). (74) Agent: DOMINIK, Jack, E.; Dominik, Knechtel, Demeur & Samlan, Miami Lakes Corporate Plaza, Suite 225, 6175 NW 153rd Street, Miami Lakes, FL 33014 (US).			(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published With international search report. With amended claims.
(54) Title: SHIELD FOR BOTTLE AND METHOD			
(57) Abstract			
A disposable sleeve (20) that can be applied to a water bottle (10) before leaving the filling source and heat-shrunk take the configuration of the upper portion of the bottle including the cap and shoulder and anchor the same to the bottle. Optionally, the cover which has a neck, shoulder and body portion can be provided with a removal tab. Important to the invention, however, is the securing of the sleeve to the bottle in an intimate skin-to-skin relationship which thereby shields the upper portion of the bottle from contamination wherever it may be prior to use. In accordance with the method, the sleeve heat-shrunk to the bottle and is removed prior to emptying the bottle. The bottle is then uncapped and secured to the cooler. The sleeve should not be allowed to touch any portion of the bottle or cooler after its removal.			

SLEEVE FOR USE WITH A BOTTLE

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FIELD OF THE INVENTION

The present invention relates to shielding water bottles of the type normally three to five gallons capacity which are placed in inverted fashion over a water dispenser in offices, factories, homes, restaurants, and other locations.

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BACKGROUND OF THE INVENTION

The present invention is for use with water bottles that are normally prized by the manufacturers based upon the cleanliness and purity of the water which they contain. After the bottle is filled, a cap is applied to it, and the contents sanitarily sealed.

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Totally overlooked by the industry and, indeed, the consumer, is the storage location and transportation of the bottles after they leave the sanitary cocoon of the manufacturing facilities. Many time the bottles are shipped in open trucks, palletized, and even stored, outside. When stored outside, of course, they are subject to whatever particulate contaminants are in the air including bugs, bird droppings, road dust, industrial contaminants, and a whole host of unimaginable undesirables.

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Moreover, when the bottles are stored they invariably are stored with the cap up. The area below the cap and the shoulder are the very areas which, when the bottle is inverted for use in the water dispenser, come in contact with the upper cup of the dispenser and its insides. As a result, the contamination which befalls the bottle after it leaves the sanitary bottling works is all on the very area which is exposed to the dispenser and its cup and dispenses directly into the stream for the unwitting user. The contaminants can be loosened by the handling while inverted, and indeed, if the bottle is dropped in inverted fashion into the dispenser the impact will serve to dislodge even more of the contamination. Even the contamination which is encapsulated between the shoulder of the bottle and the cup of the dispenser while dispensing one bottle, may be loosened before the second, third, or fourth bottle is inserted into the dispenser, and thus assuring even more contamination of the contents of the solution. Moreover, a full water bottle,

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once inverted, splashes water within the dispenser reservoir, further increasing the risk of flushing contaminants into the fresh water stream.

5 SUMMARY OF THE INVENTION

The present invention stems from the discovery that a disposal sleeve or shield can be applied to a water bottle before leaving the filling source, heat-shrunk or otherwise caused to take the configuration of the upper portion of the bottle including the cap, and shoulder, and anchor the same to the bottle. Optionally the cover which has a neck, shoulder, and body portion to conform to the bottle can be provided with a removal tab upper portion. Important to the invention, however, is the securing of the sleeve to the bottle in an intimate skin-to-skin relationship which thereby shields the upper portion of the bottle from contamination wherever it may be prior to use. Because the heat-shrink occurs at elevated temperatures of 350°F or more, bacteria are killed in the process. The method of the invention resides in heat-shrinking or other wise securing a protective sleeve over the top of a water bottle. This is accomplished by forming a tube of a diameter larger than the bottle, cutting and forming the sleeve, positioning over the bottle neck and shoulder, and then heat-shrinking at a temperature exceeding that of boiling water. Thereafter, in accordance with the method, the sleeve is removed prior to emptying the bottle, the bottle then uncapped, and then secured to the cooler. The body of the sleeve is desirably removed before the bottle cap is removed. What is important, however, is to physically observe the removal of the sleeve to the end that the contamination which may have adhered to the outer portion of the sleeve is discarded rather than being permitted to engage any portion of the water bottle or the dispenser.

In view of the foregoing, it is a principal object of the present invention to provide a sanitary protective sleeve to the upper portion of a water bottle which shields the same from contamination while being transported and stored.

30 A related object of the present invention is to provide such a sanitary sleeve for a water bottle which is not only easily applied to the bottle, firmly attached to the bottle, but also easily removable at the site of installation of the bottle to the dispenser.

Another important object of the invention is to achieve and extend the sanitary
35 processing of the water in the bottle by applying a sleeve to the upper portion of the bottle which,
because it is heat-shrunk onto the bottle at a temperature exceed 350°F, will further ensure the

inhibition of residual bacterial activity on the exterior portion of the bottle adjacent the area from which the water will be dispensed. A correlative advantage results from using an air impervious material to thereby kill any aerobic bacteria, or alternatively inhibit the passage of same to the inner face between the sleeve and the bottle itself.

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A further important object of the present invention is to provide a sanitary upper sleeve for a water bottle which is relatively inexpensive compared to the total cost of the bottle and susceptible of alternative constructions and applications to the bottle.

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BRIEF DESCRIPTION OF THE ILLUSTRATIVE DRAWINGS

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Further objects and advantages of the present invention will become apparent as the following description of an illustrative embodiment proceeds, taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a perspective view of a typical three to five gallon water bottle for use on a dispenser;

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FIG. 2 is an exploded perspective view of the bottle, bottle cap, and importantly the sanitary sleeve of the subject invention;

FIG. 3 is a vertical transverse section, in enlarged scale, taken along section line 3-3 of FIG. 1;

FIG. 4 is a front elevation of the sanitary sleeve;

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FIG. 5 is a transverse vertical sectional view of the sleeve shown in FIG. 4 taken along section line 5-5 of FIG. 4;

FIG. 6 discloses an alternative embodiment of the cover illustrating a tab for removing the same;

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FIG. 7 shows the removal of the sanitary cover without a tear tab or line of weakness by pulling it off of a top of a bottle, much in the same fashion as one would remove a sock; and

FIG. 8 is yet another alternative embodiment showing lifting the sanitary sleeve off utilizing an optional tear tab and also an optional line of weakness;

FIG. 9 is a diagrammatic view of a tube being fed onto a conveyor line for subsequent forming into the sleeve for the bottle;

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FIG. 10 is a sequential view from FIG. 9, showing how the sleeve is cut to remove a portion leaving the blank remaining for placing over the bottle;

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FIG. 11 is yet a sequential view showing the sleeve over the bottle loose fittingly engaging the same; and

FIG. 12 is a final diagrammatic view of the bottle being passed through a heat chamber which will cause the sleeve, at an elevated temperature of 350°F desirably, to shrink itself onto the bottle and at the same time sterilize from bacteria and subsequently shield against the growth of aerobic bacteria which may be trapped between the sleeve and the bottle.

DESCRIPTION OF A PREFERRED EMBODIMENT

The invention is best described in its environment of a water bottle 10, such as shown in FIG. 1. The bottle invariably has a cap 11 which is press fitted to the bottle neck 12. Beneath the neck 12 is a shoulder 14 followed by a barrel-shaped bottle body portion having a plurality of ribs such as ribs 15 and 16. The upper rib 15 becomes the important part of the anchor for the sanitary sleeve 20 of the present invention. The bottle bottom 18 is at the opposite end of the application of the sanitary sleeve. Normally the bottle is provided with a tab 19 on the cap 11 for the removal of the bottle cap. The sequential relationship between the bottle 10, the bottle cap 11, and the sanitary sleeve 20 is shown in FIG. 2.

Turning now to FIG. 3, in enlarged detail it will be seen that the sleeve 20 has been secured over the upper portion of the bottle 10 to follow the contour of the cap 11, the neck 12, the shoulder 14 and to engage itself in a skirt-like gripping relationship to the upper rib 15 of the bottle 10. This skirt like gripping form of sleeve 20 forms a peripheral gripping means to anchor the sleeve into place.

As shown in FIG. 4, the sleeve 20 has a top portion 21 and a bottom portion 22 with a bell-shaped seam 24 joining two opposed sheets of material as shown in FIG. 5 defining an interior portion 29. The front 26 and rear 28 are shown in FIG. 5. FIG. 4 further shows the sleeve 20 to have a cap portion 36, neck portion 37, shoulder portion 38 and shoulder covering portion 39.

In FIG. 6 there is a showing of the sleeve 20 with a tear-line 30, and an optional tab 31 thus defining a removable cover 32 as shown in FIG. 8. Particularly as shown in FIG. 7, it will be appreciated that desirably the lower portion may be removed before the upper portion of the sleeve to thereby isolate the bulk of the contaminants from the bottle top before the bottle cap 11 is removed. As shown in FIG. 7, the simplest approach to the removal of the sanitary sleeve 20 is to grasp it at the bottom edge 22, and remove the same from the upper portion of the bottle in much the same fashion as removing a sock from the foot. FIG. 8 shows yet another

AMENDED SHEET

- 5 -

alternative embodiment in which optionally either a tab 31 is provided at the upper portion of the sleeve 20, or a line of weakness 30 is provided along a vertical edge. In either event, the thrust of the invention is directed to totally encapsulating the upper portion of the bottle 10 with a removable sleeve 20, with variations as to how the same is applied and as to how the same is removed.

The material employed for the sanitary sleeve 20 is desirably heat-shrinkable, compatible with food and drug regulations, tough and durable to withstand the type of handling that the water bottle 10 will have. Such a material is exemplified by the DuPont product known as Clysar which is a shrink package film. It is available in gages 60, 75, 100, 125 and 150, either flat or folded. More specifically, it is described as strong, clear, biaxially oriented, heat-shrinkable, and comprised of a linear low density polyolefin film. The product can be obtained from the DuPont packaging group at 1007 Market Street, Wilmington, Delaware 19898.

Plastics recommended for use are the following:

- 1) Rigid Plastics can be:
 - a. extruded
 - b. molded
 - c. vacuum-formed.
- 2) Semi-Rigid Plastics can be:
 - a. wax or wax based products
 - b. spray base application.
- 3) Flexible Plastics can be:
 - a. stretch - saran factor
 - b. elastic - latex
 - c. heat-shrink - polyolefin, PVC film of 1 mil. (.025 gauge), LD & HD polyethylene other latex, petroleum, polymer, resin, natural, organic or synthetic based materials commonly referred to as "plastics".

The dwell time in the heat-shrink area is 3-5 seconds at 350-400°F.

Exemplary of the bottles are the Reid "Aqua-Lite" round water bottles. They come primarily in three and five gallon capacities. More particularly, they have protruding ribs encircling the body portion. Alternatively, the rib 15 may be concavely formed in the bottle such as rib 15, as shown in FIG. 7. In either event, the important aspect of use is to heat-shrink the lower edge 22 of the sanitary sleeve 20 onto a depression formed either by a concave rib or the bottom of a protruding rib of the bottle 10.

AMENDED SHEET

5 The method of the invention contemplates primarily developing a sleeve 20 for encapsulating the upper portion of a water bottle 10 which is proportioned so that its lower edge is anchored by being shrunk into a depression associated with the first rib 15 of the bottle. After the sleeve 20 is placed over the bottle, it is heat-shrunk or otherwise shrunk to conform in a skin-tight relationship to the bottle essentially as shown in FIGS. 3 and 6. Thereafter, the method contemplates the step of removing the sleeve cover and the sleeve body portion from the bottle prior to inverting the bottle over the dispenser where employed. Desirably, the sleeve 20 should be wiped with a damp cloth or other cleansing technique prior to being removed to thereby further ensure that the handler of the bottle does not indulge in cross-contamination.

10 In more specific detail the method contemplates the use of a pair of opposed sheets of DuPont Clysar, or alternatively a tube 35, the diameter of which exceeds the bottle 10, a distance sufficient to permit the same to be shaped into a circular form and dropped over the bottle, such as shown in FIG. 9. Thereafter, as shown in FIG. 10, the tubular form is cut at its upper corners in order to develop a smaller area to pass over the neck and the cap of the bottle.

20 As shown in FIG. 11, the sleeve is then dropped over the bottle totally surrounding the same and dropping below the shoulder portion of the bottle, with the neck of the sleeve resting atop the bottle cap. Thereafter, as shown in FIG. 12, the bottle is passed into a heat tunnel 40 desirably held at a temperature of 350°F. At this time, optionally blowers are provided to heat the sleeve portion to a temperature elevated from that of the ambient in the tunnel. The curing time for the material to shrink into a skin-type relationship is approximately 3-5 seconds. This dwell time does not significantly increase the temperature of the contents of the bottle, but is rather concentrated on the sleeve to promote its shrinkage. Optionally, ultra-violet and/or infrared may be applied to the material, depending upon its characteristics and shrink promoting properties. Once the bottle is removed from the heating area, it is then passed on in traditional fashion for transport to the customer.

30 Alternatives of the method are contemplated, but basic to the method is heat-shrinking the sleeve into place for the insurance of a skin-tight fit, and the application of a temperature which will enhance the sterile relationship between the inside of the sleeve and the upper portion of the bottle. An alternative includes the preforming of the sleeve by a hot knife application to two sheets of the material. In addition, a tubular form of the material can be heated at the upper area and stretched which thereby reduces the neck portion for conformance to the neck of the bottle.

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- 7 -

Alternatives are also contemplated including an under-sized sleeve **20** which is expanded with pure or inert air or otherwise expanded prior to pulling over the bottle **10** and then conforming to the shape of the bottle as the opening force is relaxed.

5 It will be understood that various changes in the details, materials and arrangements of parts which have been herein described and illustrated in order to explain the nature of the invention, may be made by those skilled in the art within the principle and scope of the invention as expressed in the appended claims.

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The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A water bottle and sanitary sleeve comprising, in combination:
 - said water bottle having a body with a cap, neck, shoulder with a rib portion there beneath, and a body portion and a bottom therebelow,
 - said sanitary sleeve having a body with a cap portion, neck portion, shoulder portion with a depending lower rib covering portion, all conforming to the corresponding exterior surface of the bottle,
 - said sleeve being so secured to the bottle in skin-tight relationship as to fully cover the corresponding exterior surface of the bottle which may be exposed to contamination, and with said lower rib covering portion engaging said rib portion to secure same thereto.
2. The water bottle and sanitary sleeve according to claim 1 in which
 - said sanitary sleeve includes a line of weakness extending in a direction from said lower rib covering portion thereof to said cap portion whereby separation along the line of weakness is achieved under a suitable load applied in opposed relation to the direction of the line of weakness.
3. A water bottle and sanitary sleeve comprising, in combination;
 - said bottle having a body with a cap, neck, shoulder, substantially cylindrical body portion, and a bottom;
 - said body portion having a rib portion below the shoulder,
 - said sanitary sleeve having a body with a cap portion, neck portion and a shoulder covering portion, all conforming to the corresponding exterior configuration of the bottle,
 - said sanitary sleeve being secured to the bottle in skin-tight relationship to overlie and cover the entire cap, neck and shoulder of the upper portion of the bottle which

- is exposed to contamination,
 - and with said shoulder covering portion extending sufficiently below so as to engage said rib portion of said bottle and secure same thereto..
4. In a sleeve and water bottle combination for use in protecting the upper portion of said water bottle from contamination,
- said upper portion of said water bottle comprising a cap, a neck, a shoulder and with at least one rib formation below the shoulder,
 - said sleeve being imperforate, heat shrinkable and shaped so as to conform to and overlie the entire exterior configuration of the upper portion of the water bottle and includes a cap portion, a neck portion and a shoulder covering portion,
 - said imperforate sleeve being heat-shrinkingly secured to the upper portion of the bottle in skin-tight relationship so as to completely cover same and
 - with said imperforate sleeve extending sufficiently below said shoulder for anchoring same in place by engagement with said one rib formation and terminating in a surrounding edge formation.
5. The combination of claim 4 wherein said imperforate sleeve is shrunk at its lower extremity to conform to said one rib formation by applying a temperature exceeding that of boiling water to kill bacteria.
6. The combination of claims 4 or 5 wherein said imperforate sleeve includes a line of weakness extending from said surrounding edge formation to the upper portion of said bottle so as to facilitate separation under the application of force and thereby remove the cap portion, neck portion and shoulder covering portion thereof from the water bottle prior to usage.
7. The combination of claim 6 wherein an integral tab is presented by said imperforate sleeve

in the region of said cap portion adjacent said line of weakness for applying force thereto and so facilitate separation of said imperforate sleeve from said bottle.

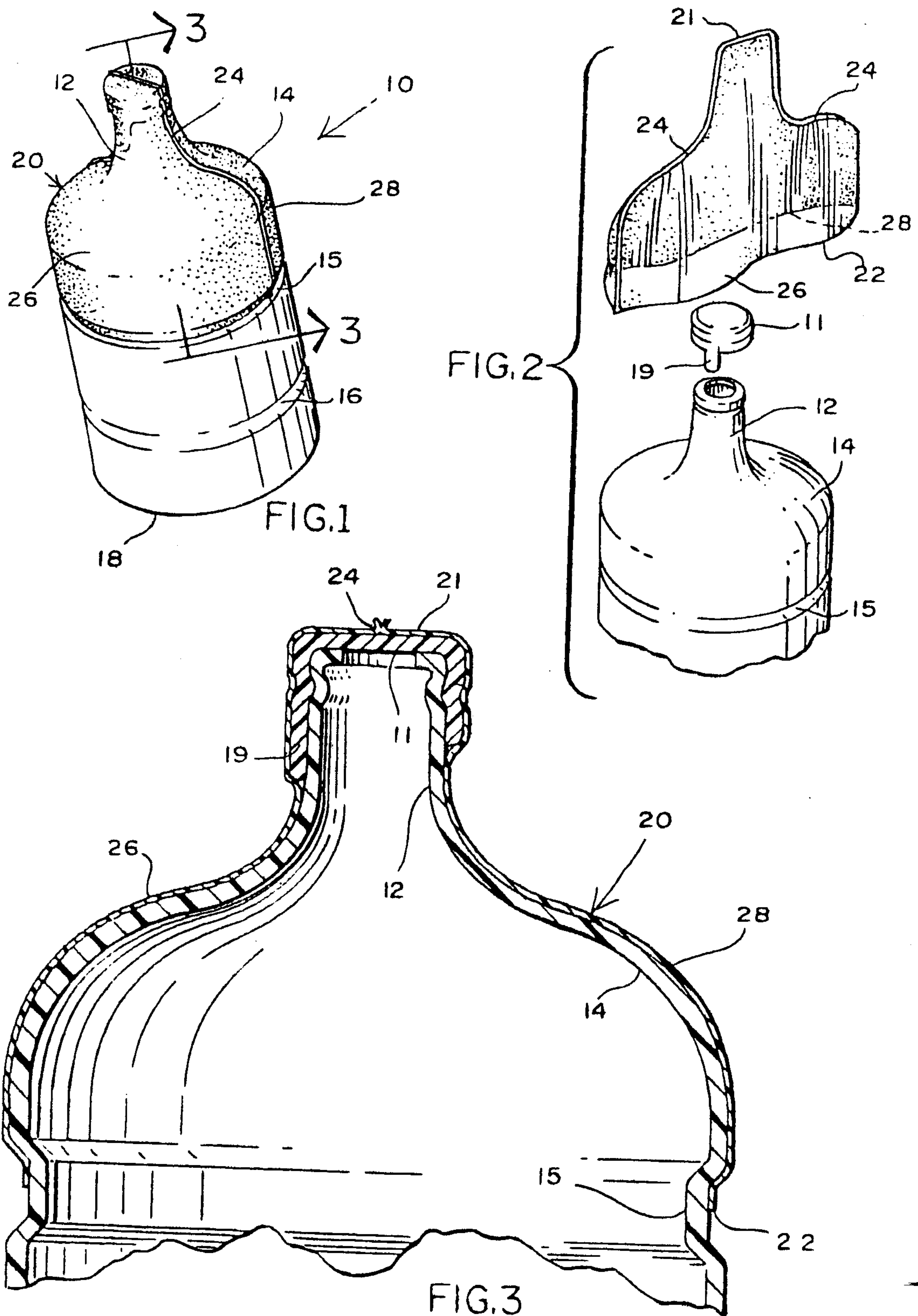
8. An imperforate sanitary sleeve for combination with a filled water bottle that presents a cap, a neck and with a shoulder portion presenting a peripheral projection therebelow all so as to avoid exposure to exterior contamination after said water bottle has been filled and capped prior to usage, in which,
 - said imperforate sanitary sleeve includes an integral entirely overlying cap covering portion, a neck covering portion and a shoulder covering portion all conformable in skin tight relationship to the shaping of the corresponding cap, neck and shoulder portion of said bottle, and wherein
 - said shoulder covering portion extends so as to overlie said peripheral projection so as to secure same thereover and so enhance a skin tight relationship throughout.
9. The combination of claim 8 wherein said imperforate sleeve is heat shrinkable and so configured as to substantially uniformly shrink throughout its extent under the application of a suitable heat source to the respective integral sleeve portions.
10. The combination of claims 1 to 9 inclusive wherein said sleeve is derived from a low linear density polyolefin film.
11. The combination of claim 10 wherein said polyolefin film is transparent.
12. A method for securing the sanitary transportation, storage, or handling at an installation site of a water bottle having a cap, neck, shoulder with a peripheral projection, body portion and a bottom, comprising the steps of:
 - providing a sanitary imperforate heat shrinkable sleeve having a body with a

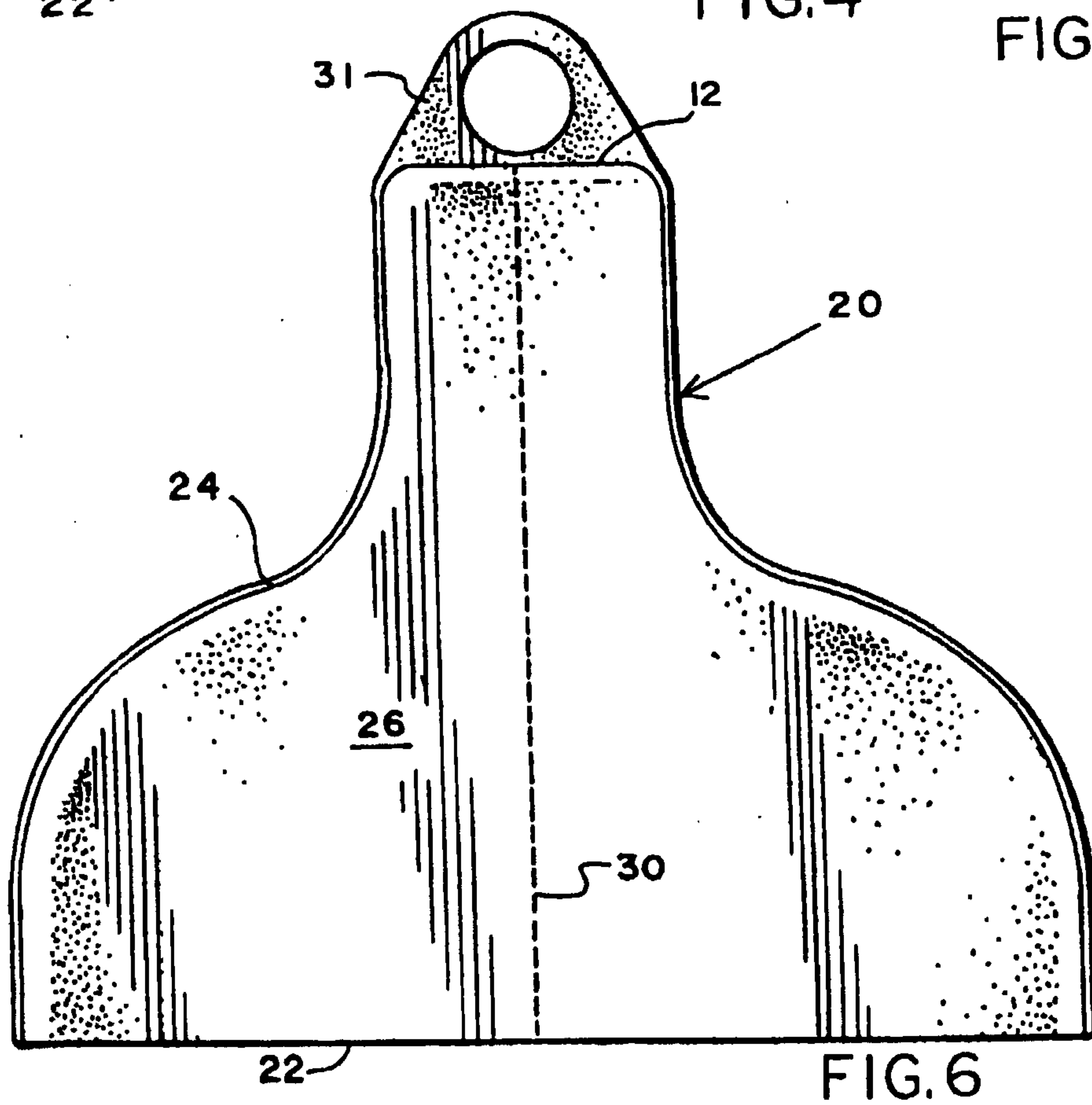
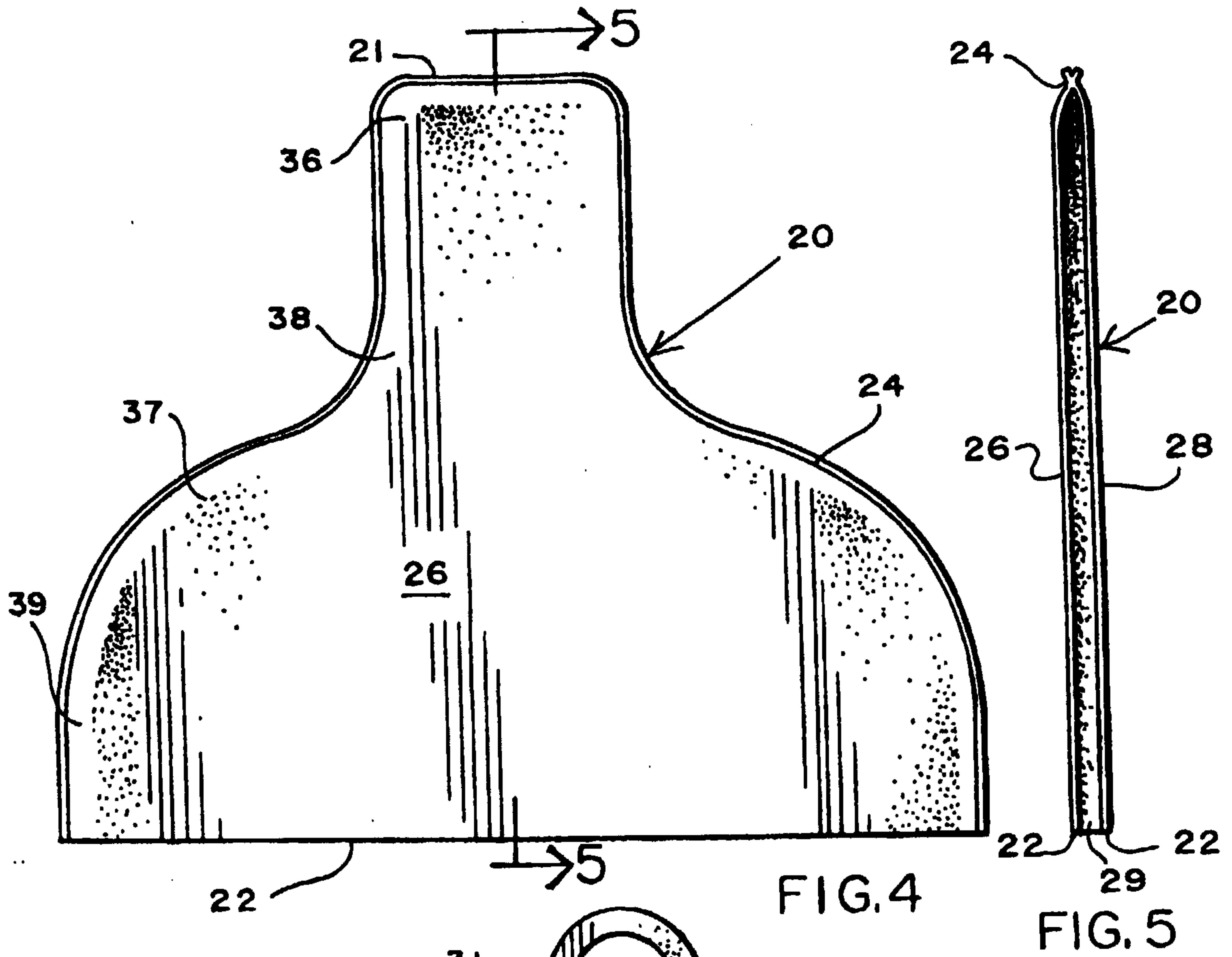
cap portion, neck portion, shoulder portion with a peripheral projection covering portion for registering with and to overlie the entire surface of the corresponding cap, neck, shoulder portions of said bottle and extending therebeyond to overlie said peripheral projection;

- overlying said sleeve on said bottle so that the cap portion of said sleeve covers the entire cap of said bottle and with the neck portion, shoulder portion and the peripheral projection covering portion registering with the corresponding exterior configuration of the bottle below the cap and after the bottle has been filled;
- conforming said sleeve portions to a substantially skin-tight relationship to said bottle by heat shrinking same at a temperature of at least the order of 212 °F; and
- removing the skin-tight sleeve from the bottle at the installation site to thereby remove contaminants attached to same in transit, in storage or in the handling of same.

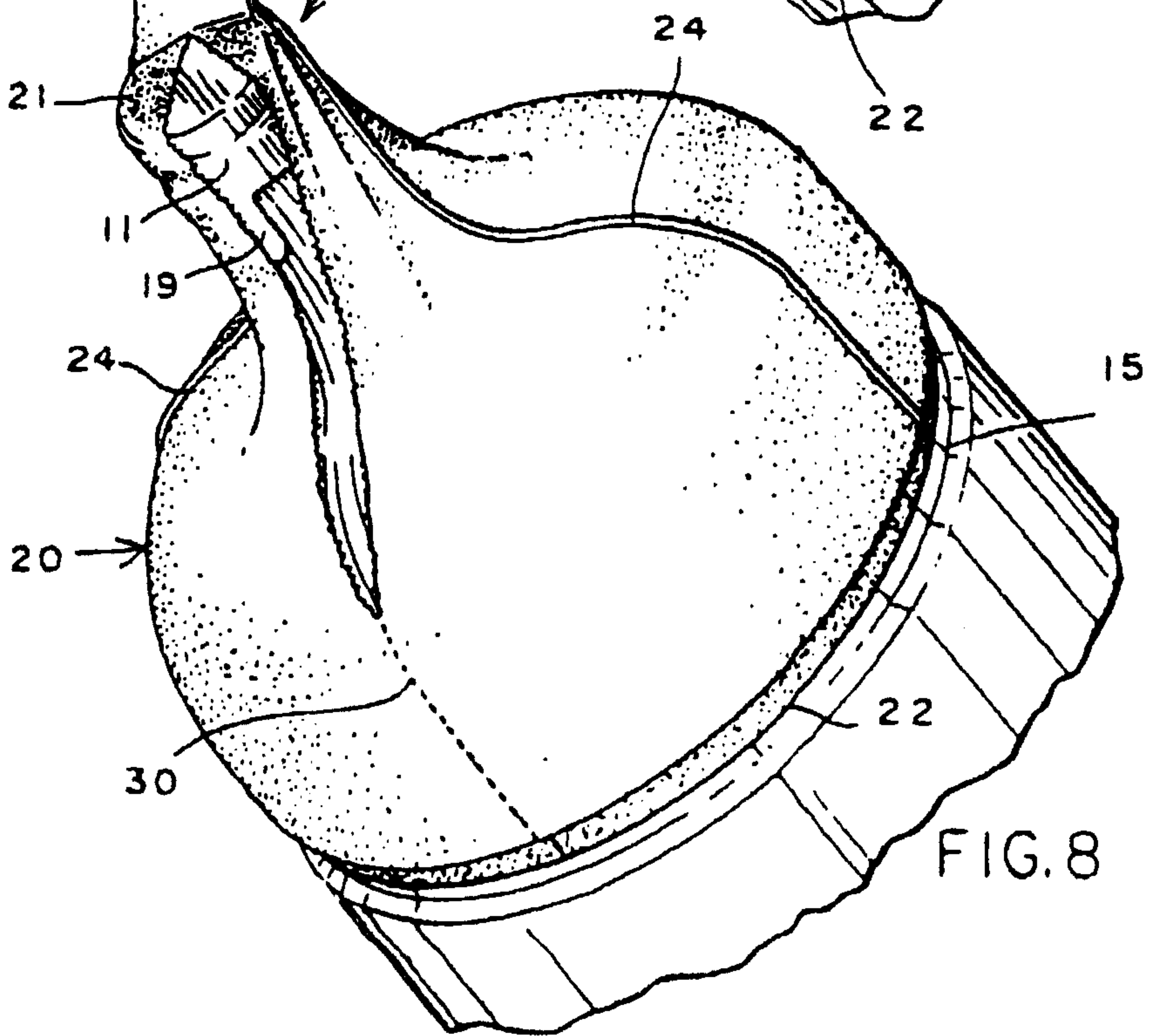
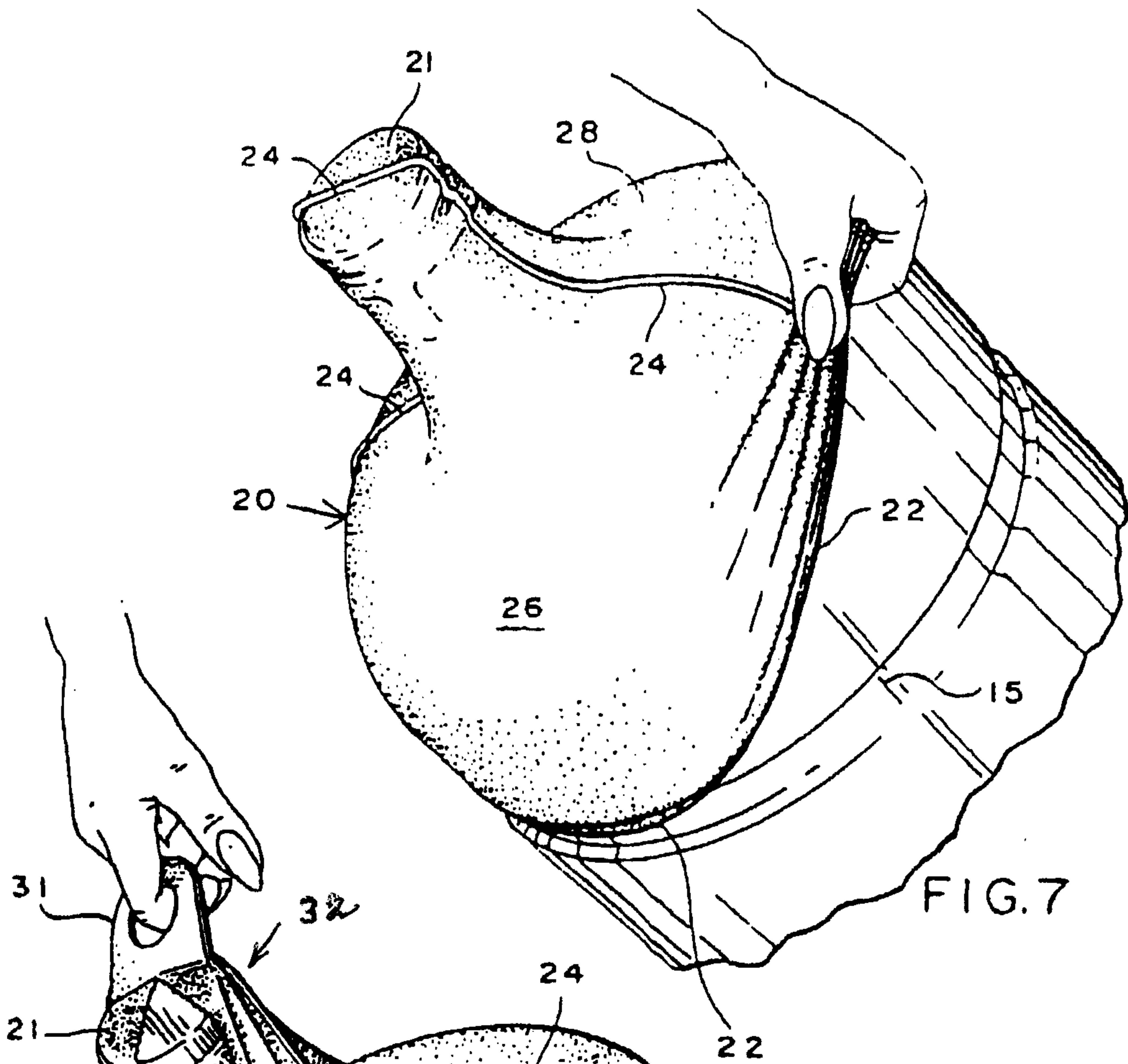
13. The method of claim 12 wherein the sleeve is derived from a sheet of low linear density polyolefin film having a substantially uniform thickness.

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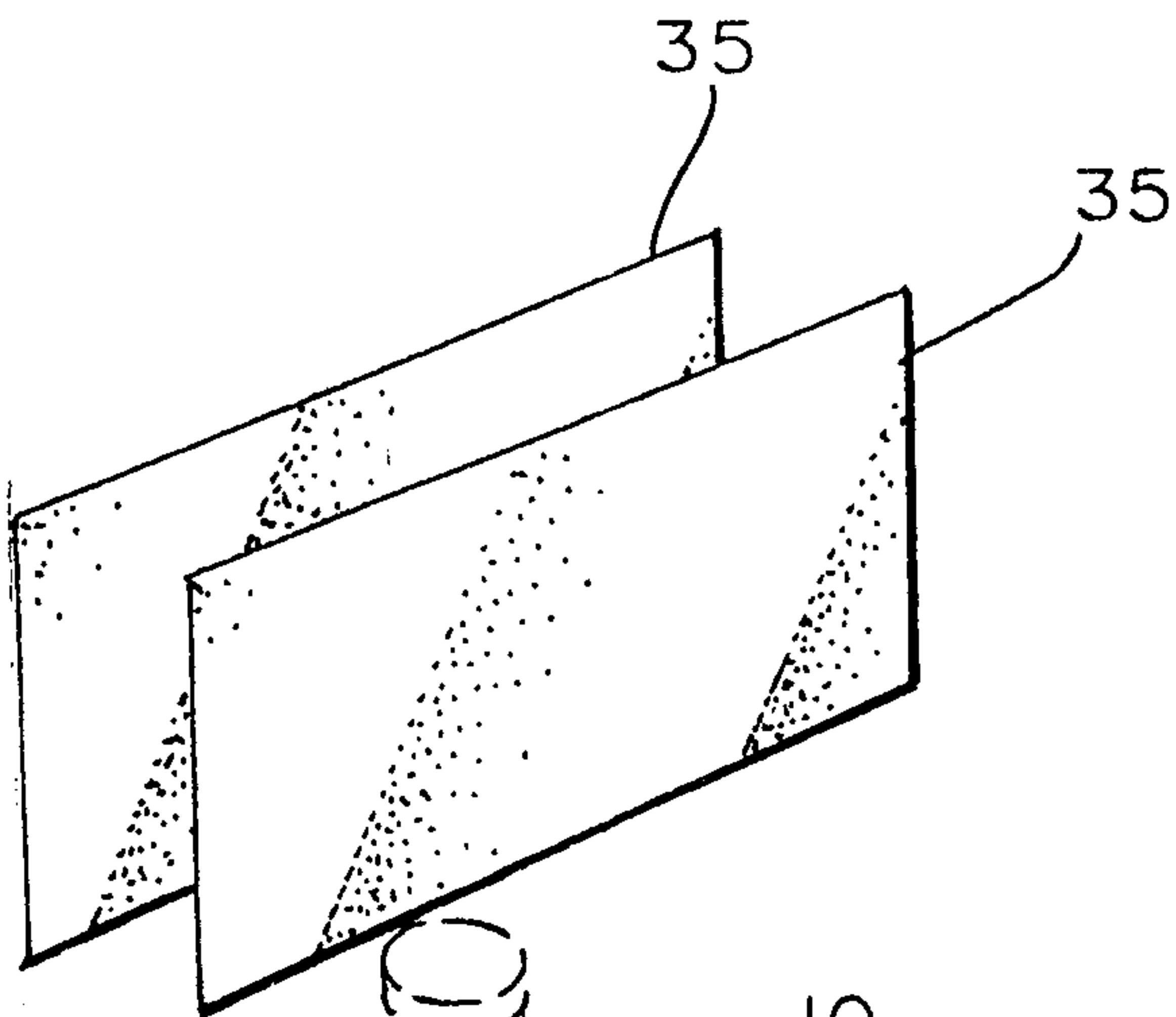


FIG. 9

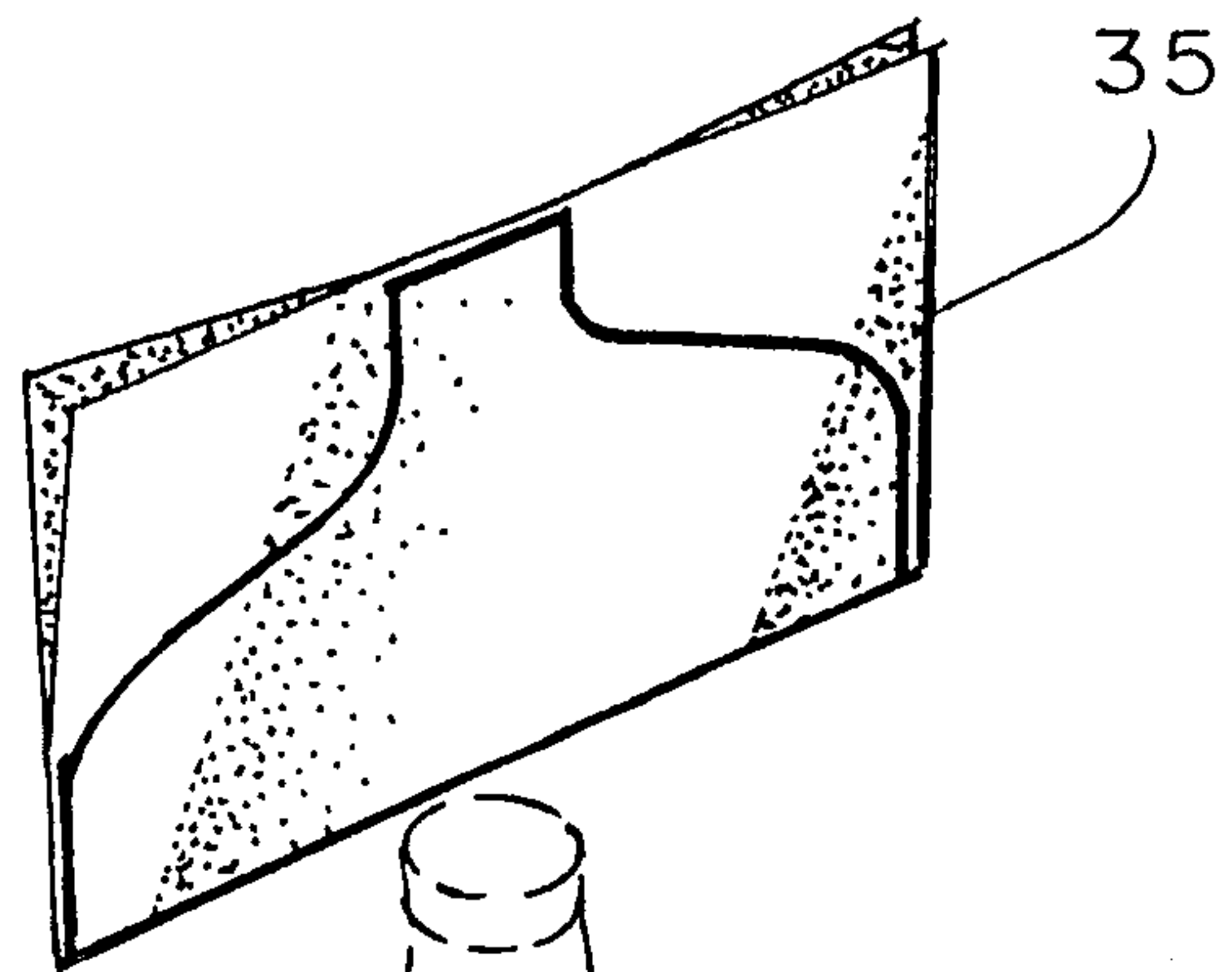


FIG. 10

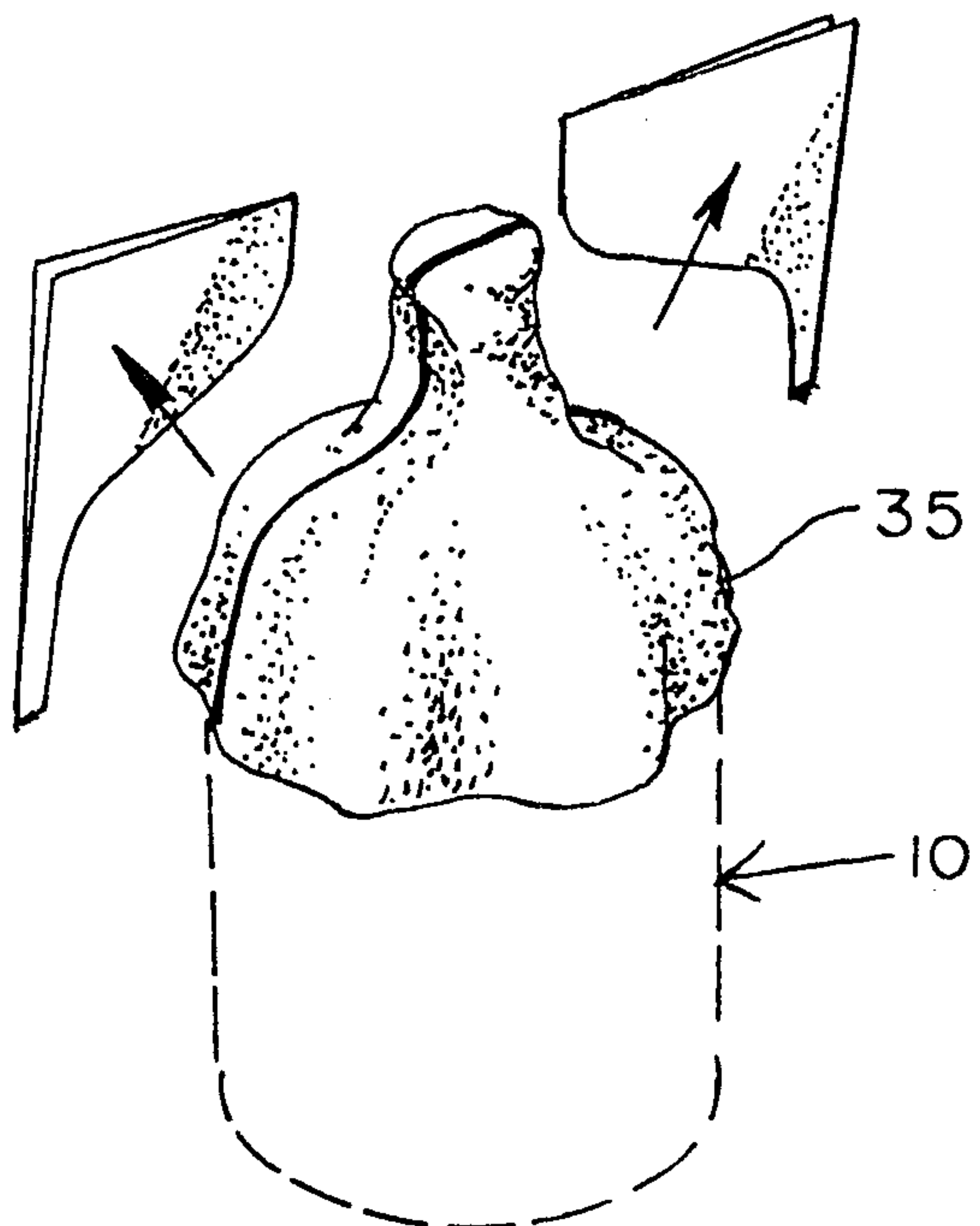


FIG. 11

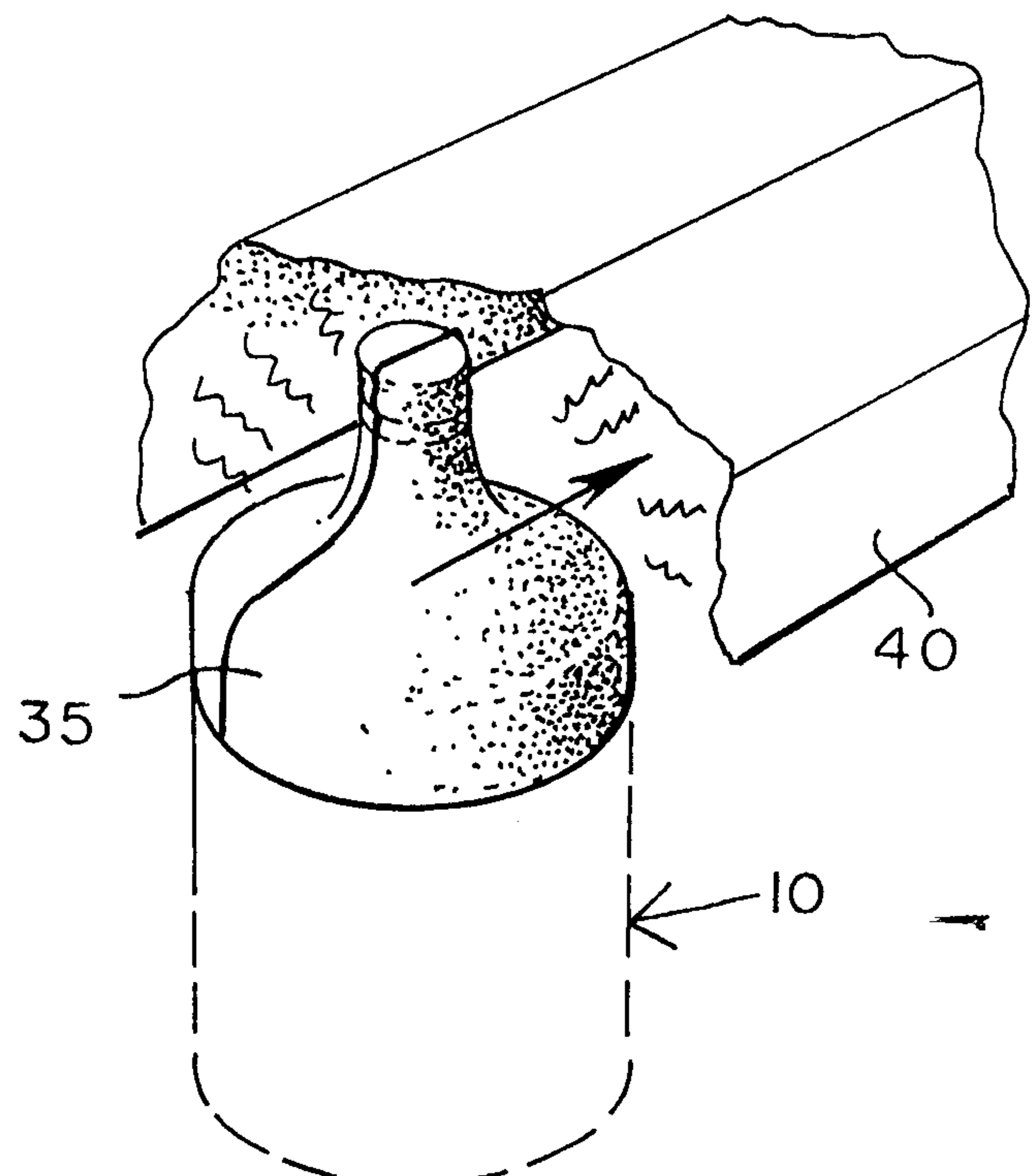


FIG. 12

