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(54) **Title:** A DEVICE FOR REMOVING LIQUID FOODSTUFF SUBSTANCES FROM A CONTAINER

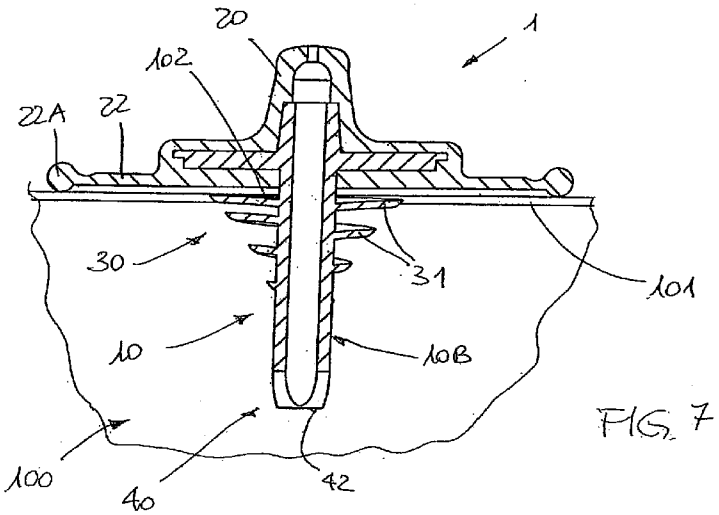

FIG. 7

(57) **Abstract:** The device (1) comprises a cannula (10), constituted by an upper portion (10A) and a lower portion (10B), divided by a plate (11); a teat (20) is associated to the upper portion (10A), which at a base thereof forms an annular appendage (21) for covering the plate (11) and, externally of the appendage (21), a bonnet (22). The lower portion (10B) is externally provided with a helical tongue (31) and at a lower end (14) thereof is equipped with means for perforating (40), and inserts in a hole (102, 202) made in a wall (101, 201) of a container (100, 200). For tetrapak brick containers (100), means for perforating (40) are used to realise the hole (102), a rim of which is screw-engaged with the helical tongue (31); in this case the bonnet (22) rests on the wall (101) and protects the hole (102). For containers (200) constituted by plastic bottles, the lower portion (10B) is inserted in the hole (202), the bonnet (22) is bent to adhere to a neck (201) of the bottle (200) and is connected-up to anchor the device (1) to the bottle (200).

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A DEVICE FOR REMOVING LIQUID FOODSTUFF SUBSTANCES FROM A CONTAINER

TECHNICAL FIELD

The invention relates to the technical sector of articles of foodstuffs, with special references to liquid foods.

BACKGROUND ART

It is known that many drinks in the prior art are sold in semi-rigid containers such as plastic bottles, or "bricks", the latter being made with a material known as tetrapak.

In the case of bottles, for example water bottles, a cap is present, screwed with a security seal to be removed at moment of consumption; the content can be drunk directly from the mouth of bottle, or can be poured into a glass.

In other type of bottles, of higher quality, for example energy drinks, fitness drinks and the like, caps are provided having a nozzle which enables the drink to be consumed without having to remove the cap itself, in a way which is similar to flasks.

Classic tetrapak bricks can be opened in one of the following ways:

by cutting at least a corner in the upper part;

tearing a portion specially prepared for this;

detaching the glued flaps of the brick in a predetermined zone, and folding the flaps in such a way as to form a sort of spout facilitating pouring.

All of these, however, involve the contents being subsequently poured into another container, as direct consumption from the container itself would be rather impractical.

Some bricks, for example containing fruit or drinks, are provided with an eyelet closed by a membrane exhibiting perforations for easy opening, and are sold with a straw packed in a sealed pack and applied externally of the brick.

The consumer, once the straw has been extracted, forces the straw into the eyelet, perforating the membrane, and inserts the straw into the brick so that the contents can be drunk.

Only some especially refined tetrapak packs are provided with an applied cap, similar to what happens with bottles, which facilitates pouring or direct consumption of the contents.

The described systems, which enable a direct consumption of the drink once the container has been opened, whether bottle or brick, have been developed for adult consumers or at least children of a certain age (at least three years old); for smaller children, even assisted by adults, these containers can be unsuitable and in some case potentially dangerous.

With reference to the bottles, it is clearly unsuitable for children to

drink from the mouth, and might be difficult for them to access the beverage through the nozzle, which in order to get at the liquid requires combining a certain sucking power with a crushing action on the bottle itself, because the pressure inside the bottle tends to drop.

With reference to bricks provided with straws, there is some difficulty in extracting the contents, which difficulty grows as the liquid level drops. Children are also liable to swallow badly, sending the liquid towards the respiratory apparatus, with all the attendant dangers.

Apart from the above, the absolute non-toxicity of the materials which are to be placed in the mouth have to be guaranteed; and last but not least, the foodstuffs inside the container must be entirely secure.

It is common practice, therefore, when giving a drink to small children, even simply water, to transfer the liquid into a baby's bottle with a teat.

The problem can be of little relevance when the child and the adults looking after him are at home, with everything they need to hand; but the same problem can take on different proportions in other circumstances, when away from home or in the open, perhaps following fortuitous events such as the bottle's falling onto the floor and getting dirty, preventing its use; or possibly the drink's getting spoiled due to high temperatures or exposure to ultraviolet rays.

SUMMARY OF THE INVENTION

The aim of the present invention is to provide a device for removing liquid foodstuffs from a container, which can be easily applied to the container, whether the container is a bottle or a brick, with the device conformed such as to enable easy and safe use thereof, in particular for very young users.

A further aim of the invention is to provide a device which, due to the nature of the materials used, and special production processes adopted, and the use of a very small sterilising adhesive film to be applied in the seating of the hole, can be marketed with a guarantee of non-toxicity and sterility, such as to be suitable for the needs of small children.

A further aim of the invention consists in proposing a device of simple conception and with contained production costs, such that the selling price is proportional to the envisaged use that will be made of it.

The above aims are obtained by a device for removing liquid foodstuffs from a container, characterised in that it comprises: a cannula, destined to be partially inserted in a hole made in a wall of the container; a plate, made in a single body with the cannula, arranged transversally thereto, for delimiting the lower and upper portions of the cannula, destined respectively to insert in the hole and project therefrom; a teat, associated to the upper portion of the cannula and provided with an annular appendage destined to

cover the plate; a bonnet, extending from the annular appendage towards the outside, destined to encounter the wall of the container elastically surrounding the entry hole of the cannula; hooking organs for anchoring the device to the container.

BRIEF DESCRIPTION OF THE DRAWINGS

The characteristics of the invention will emerge from the following description of preferred embodiments of the device, in agreement with what is written in the claims and with the aid of the figures of the drawings, in which:

figure 1 illustrates a lateral view of a first embodiment of the device;

figure 2 is a plan view from above of the device of figure 1;

figure 3 is an axial section of the device according to plan III-III of figure 2;

figure 4 is a further axial section of the device, in a perpendicular plane to that of figure 3;

figure 5 is a perspective view from below of the device of figure 1;

figure 6 is a perspective view from above of the device of figure 1;

figure 7 is a sectioned lateral view of the device applied to a first type of container;

figure 8 is a sectioned lateral view of the device applied to a

second type of container;

figure 9 is a lateral view of a second embodiment of the device;

figure 10 is a plant view from above of the device of figure 9;

figure 11 is an axial section of the device along plane XI-XI of figure 10;

figure 12 is a further axial section of the device according to a plane which is perpendicular to that of figure 11;

figure 13 is a perspective view from below of the device of figure 9;

figure 14 is a perspective view from above of the device of figure 9;

figure 15 is an axial section of a first variant relating to a third embodiment of the device;

figure 16 is a partial view, in enlarged scale, of a second variant relating to a third embodiment of the device.

BEST MODE FOR CARRYING OUT THE INVENTION

With reference to figures from 1 to 8, a first embodiment of the device is illustrated, denoted in its entirety by 1.

The device 1 comprises a cannula 10 realised, for example, by pressing of a suitable rigid plastic material, in a single body with a

plate 11, arranged transversally and aimed at delimiting the upper portion 10a and the lower portion 10b of the cannula 10.

A teat 20 made of an elastomer material is associated to the upper portion 10A of the cannula 10, which teat 20 is shaped such as to define an annular appendage which is destined to cover the plate 11 on both sides thereof.

A bonnet 22 extends from the appendage 21 towards the outside, the bonnet 22 being arched and provided with an enlargement 22A at a rim edge thereof, having for example a circular section (figures 3 and 4).

In a preferred constructional solution of the teat 20, the appendage 21 and the bonnet 22 are realised by overmoulding the upper portion 10A and the plate 11, which are therefore sunken into the material of the teat 20 and the appendage 21.

A chamber is afforded between the upper end 13 of the cannula 10 and the teat 20, in which a known check valve 50 is advantageously housed (not illustrated in detail).

Both the cannula 10 and the teat 20, as well as the connected elements, are advantageously realised using non-toxic, non-allergenic materials which can be sterilised using known industrial processes, for example ultraviolet rays or the like.

The device 1 further comprises hooking organs 30 which enable the device 1 to be associated to a container 100, 200 of liquids, for access thereto.

The hooking organs 30 in the example illustrated in the figures, comprise: a helical tongue 31, realised externally of the lower portion 10B of the cannula 10, in a single body there-with, having a progressively increasing diameter from bottom to top; means for connecting 60 for externally locking the bonnet 22 at a groove 22B located in proximity of the rim edge 22A.

The hooking organs 30 are used alternatively, according to the type of container, as will be more fully explained herein below.

Finally the device 1 comprises means for perforating 40, usable with containers 100 made of a perforable material, for making a hole 102, as described herein below.

The means for perforating 40, in the example of the indicated figures, comprise: a point 41, obtained with suitable tapering of the lower end 14 of the cannula 10; a cutter 42, fixed to the cannula 10 and projecting below the lower end 14.

In a first illustrated example (figure 7) the container is constituted by a brick 100 made of tetrapak material, similar to those described in the preamble, in which there is (possibly) present a closed eyelet closed by an easy-break membrane (not illustrated).

The procedure for applying the device to the brick 100 comprises, in order:

cutting the predetermined wall 101, preferably the upper horizontal wall, using the cutter 42;

pressing the point 41 of the cannula 10 downwards and, at the

same time, rotating it so that it lacerates the wall 101;

introducing the cannula 10 up to when the first part of the helical tongue 31 encounters the edge of the hole 102 which has been created;

rotating the device 1 clockwise in order to engage, substantially by a screwing motion, the helical tongue 31 with the edge, and proceeding up until the lower portion 10B of the cannula 10 is completely inserted, which is done when the plate 11, covered by the annular appendage 21, reaches in proximity of the wall 101 (figure 7).

Following the aforementioned manoeuvre, the bonnet 22 presses on the wall 101 and elastically flattens (see figure 7 again), thus defining a barrier which further prevents the loss of liquid when the brick 100 is upturned so that the liquid can be drunk.

The ingress of foreign bodies is prevented by the first part of the helical tongues 31 which, by pressing in an opposite direction (anti-gravity) on the irregular edges of the hole created, closes the edges and perfectly isolates them from the contents of the brick and, furthermore, helps to prevent loss of liquid.

In a second illustrated example (figure 8), the container is constituted by a bottle 200 made of plastic material of a type described in the preamble, provided with a screw-cap (of normal type or with a nozzle, not illustrated) which is first removed.

The process for applying the device 1 to the bottle 200 includes, in order:

introducing the cannula 10 into the upper hole 202 of the bottle, up to when the plate 11, covered by the annular appendage 21, comes into contact with the upper edge thereof;

maintaining the contact between the edge and the material of the appendage 21, bending the bonnet 22 towards the neck 201 of the bottle 200, such that it adheres thereto, and then applying the means for connecting 60 (for example a security band provided together with the device 1) at the groove 22B for locking the bonnet 22 and, consequently, obtaining a sufficient anchoring of the device 1 to the bottle 200 (see figure 8 again).

In this case, the seal against the loss of liquid with the bottle upturned and against the ingress of foreign bodies through the hole 202 is realised by a combination of the seal between the edge of the hole and the appendage 21 as well as the seal between the bonnet 22 and the neck 201.

The helical tongue 31, in this application of the device 1, has the function of at least partially closing the space between the cannula 10 and the hole 202 of the bottle 200, also obtaining in this way a centring between the two.

The greater diameter of the helical tongue 31 has been calculated in order not to exceed that of the hole 202, the size of which is practically standardised; however, for smaller hole diameters it can be necessary to force the insertion, without this prejudicing the functionality of the device.

In a variant realisation of the device, not illustrated, destined

exclusively for application on bottles, the helical tongue 31 is replaced by a simple circular tongue, or a series of tongues having progressively increasing diameters going from the bottom to the top, or a series of radial tongues having prefixed orientations.

With reference to figures from 9 to 14, a second embodiment of the device of the invention is illustrated, simplified with respect to the first, denoted by 2 in its entirety.

The device 2 is different to the above-described device 1 only because of the absence of the bonnet 22.

In the relative figures, the same numerical references have been used to corresponding elements in the first embodiment, without describing them again as they are identical.

Because of the lack of the bonnet 22, the device 2 is prevalently aimed at use with containers of the brick type, as described above.

Once the hole 102 has been made, and the screw engagement between the helical tongue 31 and the edge of the hole 102 obtained, the device 2 is screwed up to when the material of the annular appendage 21 encounters and adheres to the wall 101 to give a seal against liquid leakage and a pressurised retaining of the irregular edges of the hole 102.

Thanks to the nature of the material of the appendage 21, which is soft and affords a high degree of grip, in the predetermined use a seal against liquid leakage is obtained.

With the above-described device 2 too, then, the annular appendage 21 is extended to cover both surfaces, the upper surface 11A and the lower surface 11B, of the plate 11, and is constrained solidly thereto.

Figures 15 and 16 illustrate two variants of a third embodiment of the device, denoted by 3 in its entirety, in which the teat 20, with the annexed annular appendage 21, is removably fixed to the cannula 10.

To this end the teat 20 and the annular appendage 21 are realised in a separate die rather than being overmoulded on the cannula 10.

The first of the variants, visible in figure 15, is derived from the second embodiment of the above-described device 2: as in the previous variant the annular appendage 21 entirely covers the upper surface 11A of the plate 11, but only a portion of the lower surface 11B.

In this way it is possible to sterilise the cannula 10 and the teat 20 separately during production thereof; further, it is possible, after having used the device 3 a first time, to remove the annular appendage 21 from the plate 11 in order to newly sterilise the teat 20 and re-use it.

The second of these variants, 50% visible in figure 16, includes the annular appendage 21 being extended to cover only the upper surface of the plate 11, and the relative external bonnet21A going to meet an external edge 11C of the plate, specially shaped for

the purpose.

For removably fixing the appendage 21 to the plate 11, means are provided 110, for example a ring nut 112, destined to engage in a threaded collar 11 conformed by the plate 11, and provided with an abutment 113 which surmounts the external bonnet21A of the appendage 21 and presses it sealingly against the external edge 11C.

In this variant a commercial teat 20C can be advantageously used, preferably of a type commonly used for babies' bottles (see figure 16 once more).

This enables production costs to be reduced, as a component already present on the market can be used while the versatility of the device is at the same time enhanced thanks to the fact that the teat is interchangeable with the teat of the baby's bottle.

Each of the above-described embodiments and relative variants lend the device obtained special characteristics, which make it suitable, time by time, for various or specific applications, while being easy and quick in all cases.

Its conformation, with the presence of the teat and the check valve, makes it excellent for giving drinks to small children without having to transfer the product from the container to the baby's' bottle, which gives the invention a big practical advantage, especially when the users are not at home.

With suitable materials, construction procedures, sterilisation and packing it is possible to provide devices which respond to the

most severe safety and hygiene norms, for example the standards relating to medical-surgical environments.

The high production volumes envisaged enable a device to be offered having the above-described characteristics at a contained sale price, certainly in relation to the high levels of quality and security it provides.

The proposed device, once it has reached the end of its working life, can be eliminated in full respect of the environment: the plastic materials it is made off, where there is a separate refuse collection service, can be eliminated directly with the bottle and relative cap, while in the case of a tetrapak brick the device can be eliminated in the separation processes for dividing layers of paper, aluminium and polyethylene, or it can be eliminated separately from the brick after it has been removed therefrom.

The above is intended by way of non-limiting example, so that any modifications to details that might become necessary for constructional or functional reasons are to be considered as entering within the ambit of protection of the following claims.

CLAIMS

1). A device for removing liquid foodstuff substances from a container, characterised in that it comprises: a cannula (10), destined to be partially inserted in a hole (102, 202) made in a wall (101, 201) of the container (100, 200); a plate (11), realised in a single piece with the cannula (10), arranged transversally thereto, for delimiting a lower portion (10B) and an upper portion (10A) of the cannula (10), the lower portion (10B) and upper portion (10A) being destined respectively to insert in the hole (102, 202) and project therefrom; a teat (20) associated to the upper portion (10A) of the cannula (10) and provided with an annular appendage (21) destined to cover the plate (11); a bonnet (22) extending from the annular appendage (21) towards in an externalwise direction, destined to elastically encounter the wall (101, 201) of the container (100, 200) surrounding the entry hole (102, 202) of the cannula (10); hooking organs (30) for stabilizing an anchoring of the device (1, 2) to the container (100, 200).

2). A device for removing liquid foodstuff substances from a container, characterised in that it comprises: a cannula (10), destined to be partially inserted in a hole (102, 202) made in a wall (101, 201) of the container (100, 200); a plate (11), realised in a single piece with the cannula (10), arranged transversally thereto, for delimiting a lower portion (10B) and an upper portion (10A) of the cannula (10), the lower portion (10B) and upper portion (10A) being destined respectively to insert in the hole (102, 202) and project therefrom; a teat (20) associated to the upper portion (10A) of the cannula (10) and provided with an annular appendage (21)

destined to cover the plate (11); hooking organs (30) for establishing an anchoring of the device (1, 2) to the container (100, 200).

3). The device of claim 1, characterised in that the bonnet (22) exhibits an arched profile, provided with an enlargement (22A) at a rim edge thereof.

4). The device of claim 3, characterised in that the enlargement (22A) exhibits a circular section.

5). The device of claim 1 or 2, characterised in that between the upper end (13) of the cannula (10) and the corresponding teat (20) a chamber is afforded for housing a check valve (50).

6). The device of claim 1 or 2, destined to couple with a container (100) made of a perforable material, characterised in that it includes means for perforating (40) realised at a bottom end (14) of the cannula (10), for making a hole (102) in the wall (101) of the container (100) in order to allow the lower portion (10B) of the cannula (10) to enter the container (100), and characterised in that the hooking organs (30) comprise a helical tongue (31), solidly constrained to the lower portion (10B), having a progressively increasing diameter going from bottom to top thereof, and destined to engage screwingly with a rim of the hole (102).

7). The device of claim 6, characterised in that the means for perforating (40) comprise a point (41) realised at the lower end (14) of the cannula (10), and a cutter (42), projecting below the lower end (14).

8). The device of claim 1, characterised in that the annular appendage (21) is extended to cover both the surfaces (11A, 11B) of the plate (11), and is solidly constrained thereto.

9). The device of claim 2, characterised in that the annular appendage (21) extends to cover the upper surface (11A) of the plate (11) and at least a portion of the lower surface (11B) of the plate (11), and is removably constrained thereto.

10). The device of claim 2, characterised in that the annular appendage (21) extends to cover the upper surface (11A) of the plate (11) and to meet there-with at an external edge (11C) thereof, and characterised in that it includes means (110) for removably blocking the annular appendage (21) to the plate (11).

11). The device of claim 10, characterised in that the means for removably blocking (110) comprise a ring nut (112) destined to engage with a threaded collar (111) conformed by the plate (11), and provided with an abutment (113) which surmounts an external flap (21A) of the annular appendage (21) and presses the external flap (21A) sealingly against the external edge (11C).

12). The device of claim 1, destined to couple with a container (200) constituted by a bottle made of a plastic material, inserting in the hole (202) of the bottle after removal of a cap thereof, characterised in that the hooking organs (30) comprise means for connecting (60) which externally lock the bonnet (22) on the neck (201) of the bottle (200).

13). The device of claim 12, characterised in that it comprises a

helical tongue (31) which extends from the lower portion (10B) of the cannula (10) and at least partially closes a space between the cannula (10) and the hole (202) following insertion of the device.

14). The device of claim 12, characterised in that it includes at least a circular tongue, which extends from the lower portion (10B) of the cannula (10) and at least partially closes a space between the cannula (10) and the hole (202) following insertion of the device.

15). The device of claim 12, characterised in that it includes a series of radial tongues, which extend from the lower portion (10B) of the cannula (10) and partially close a space between the cannula (10) and the hole (202) following insertion of the device.

16). The device of claim 12, characterised in that it includes a groove (22B), realised in the external surface of the bonnet (22), which groove (22B) is destined to receive the means for connecting (60).

17). The device of claim 12 or 16, characterised in that the means for connecting (60) are constituted by a band having a security closure.

18). The device of one of the preceding claims, characterised in that the cannula (10) and the teat (20), as well as the connected elements, are made of non-toxic, non-allergenic and sterilisable materials.

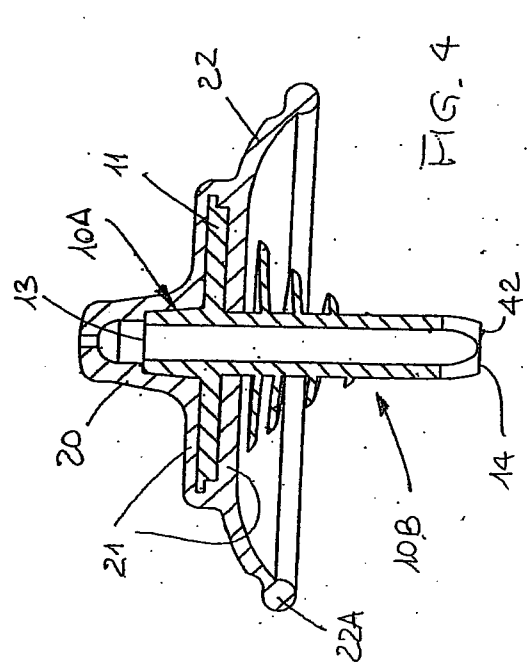


FIG. 4

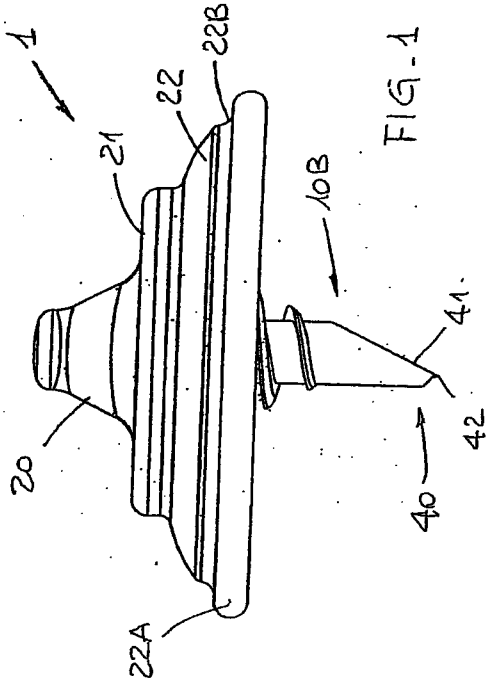


FIG. 1

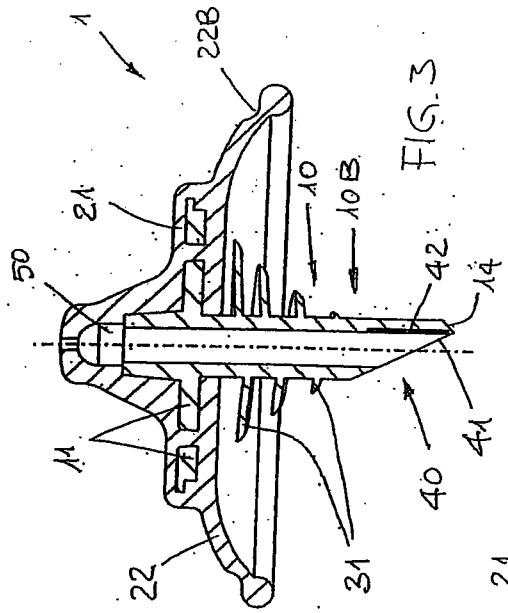


FIG. 3

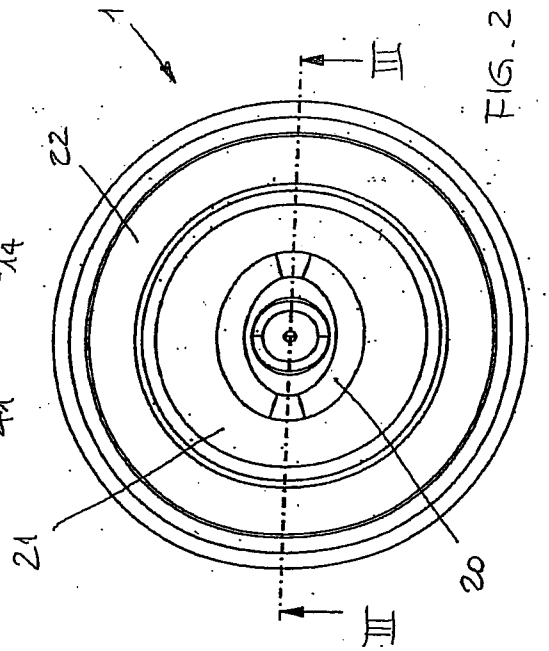


FIG. 2

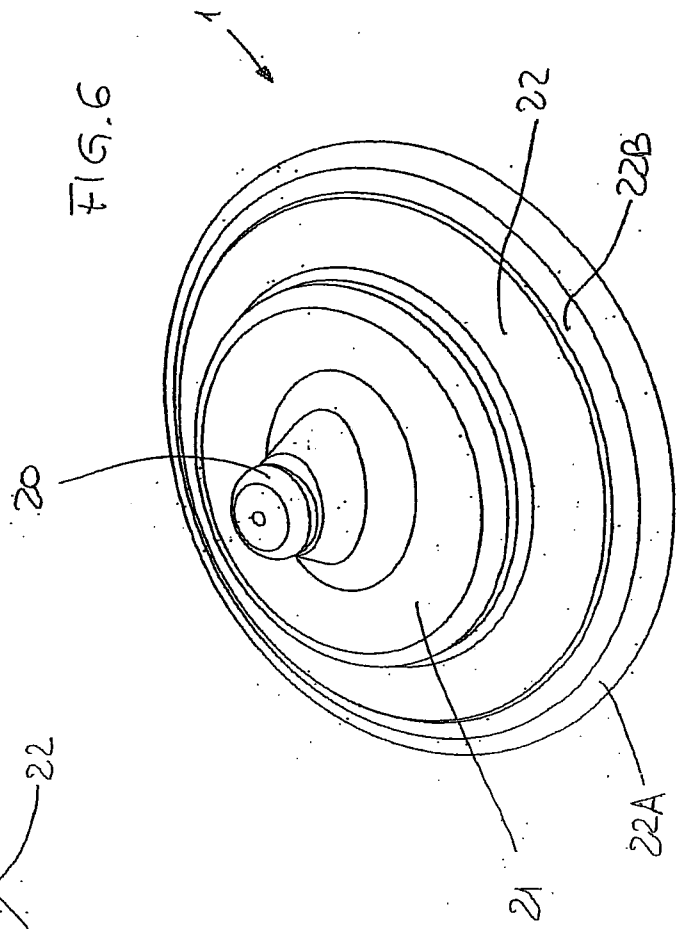


FIG.6

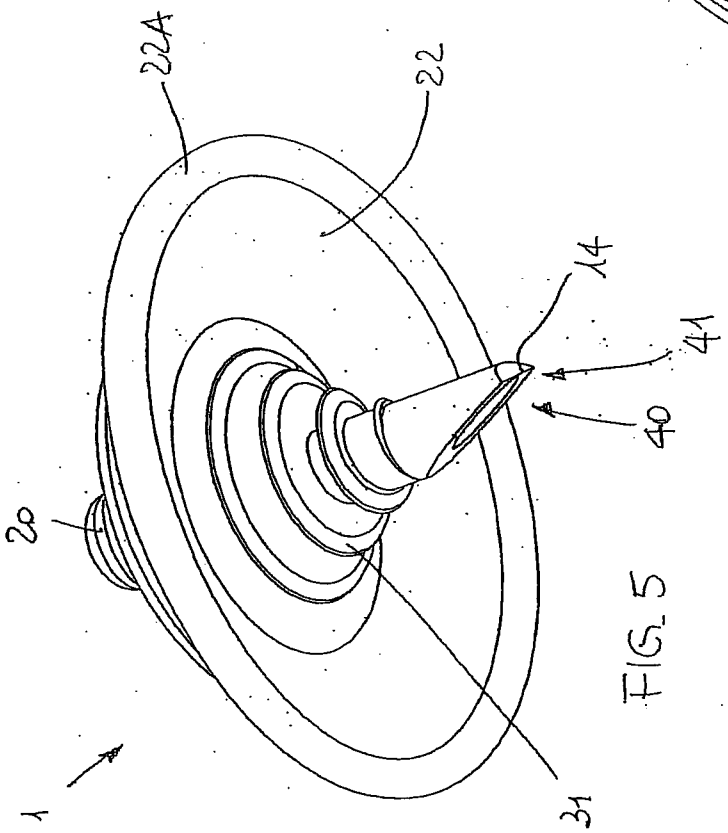


FIG. 5

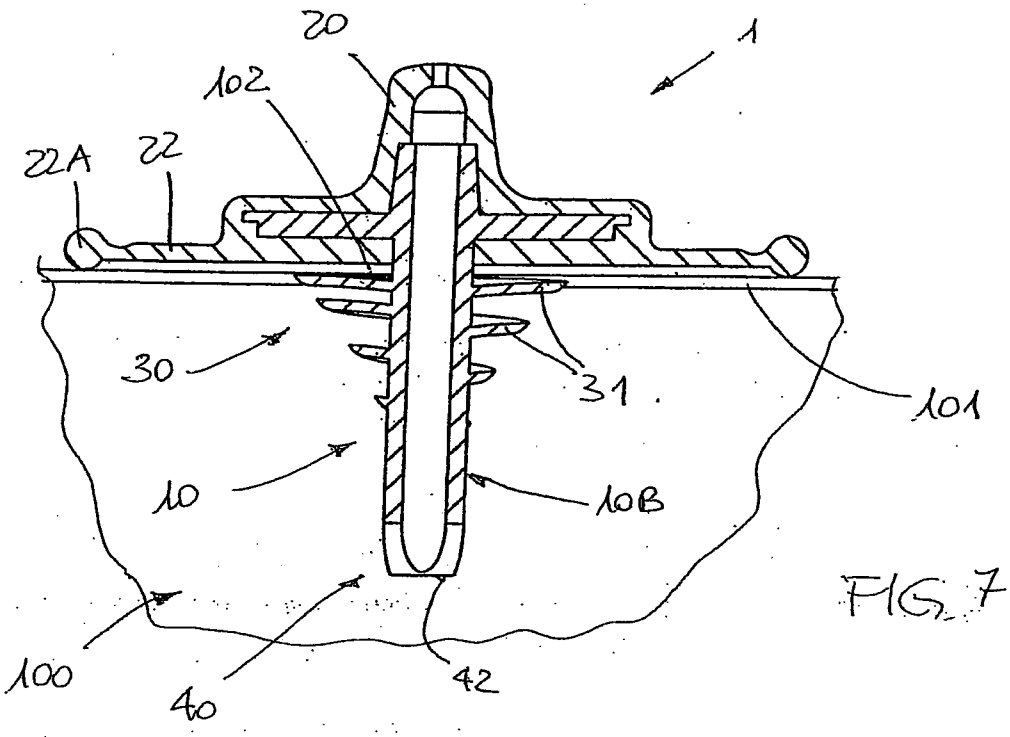

20
1
102
22A
22
30
31
101
10
10B
100
40
42

FIG. 7

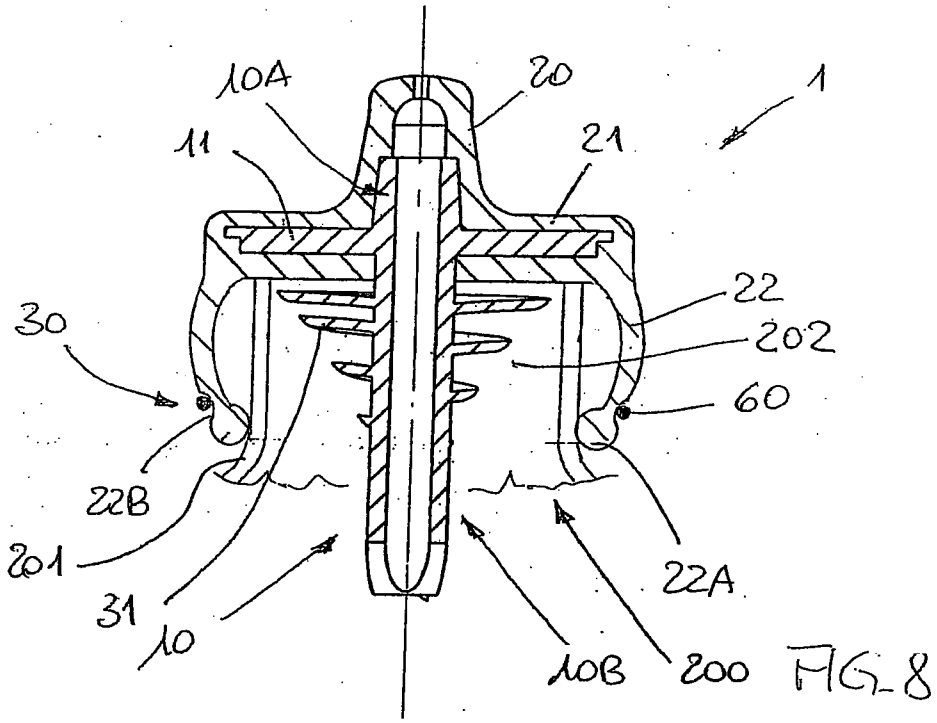

10A
20
1
11
21
22
202
30
60
22B
201
31
10
22A
10B
200

FIG. 8

FIG. 11

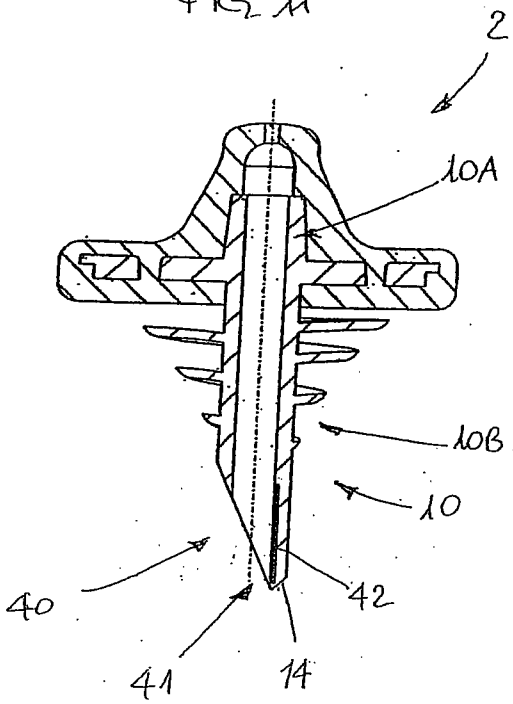
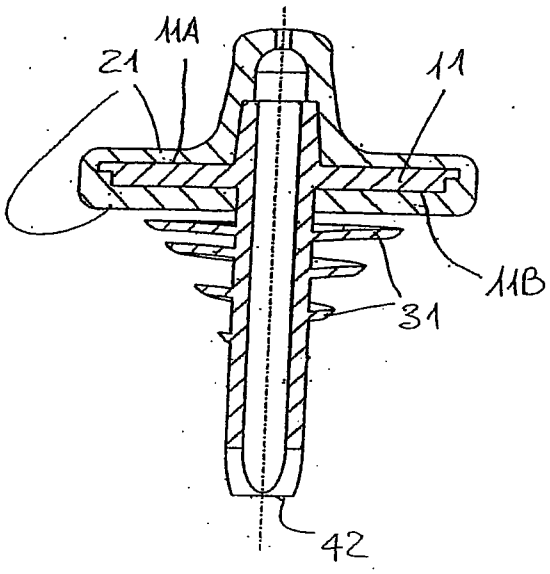


FIG. 12



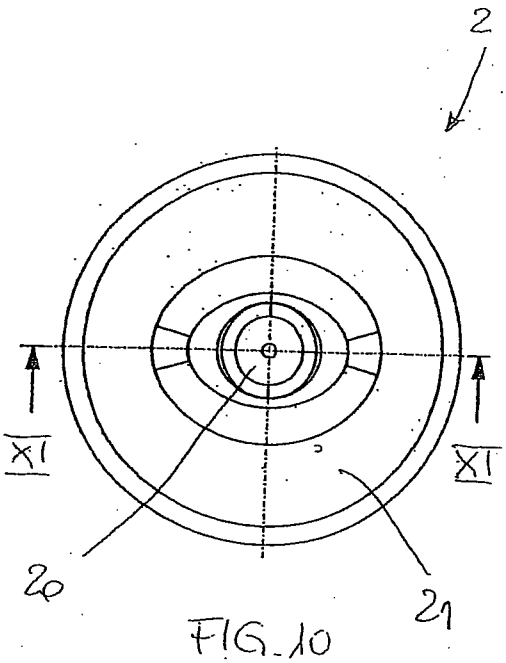


FIG. 10

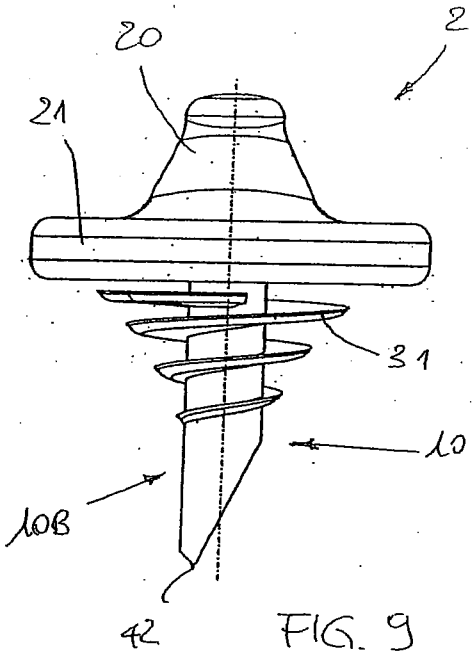


FIG. 9

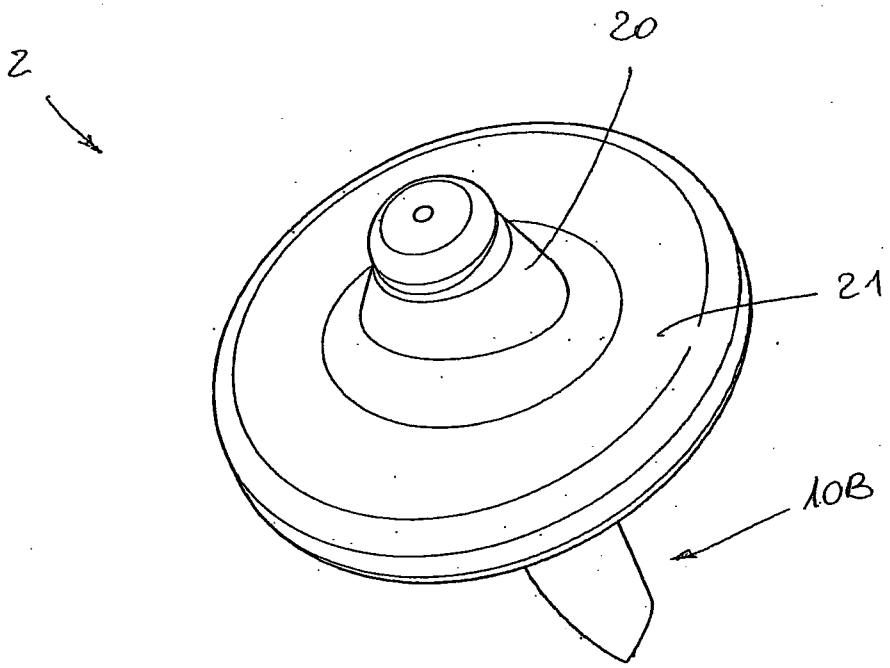


FIG_14

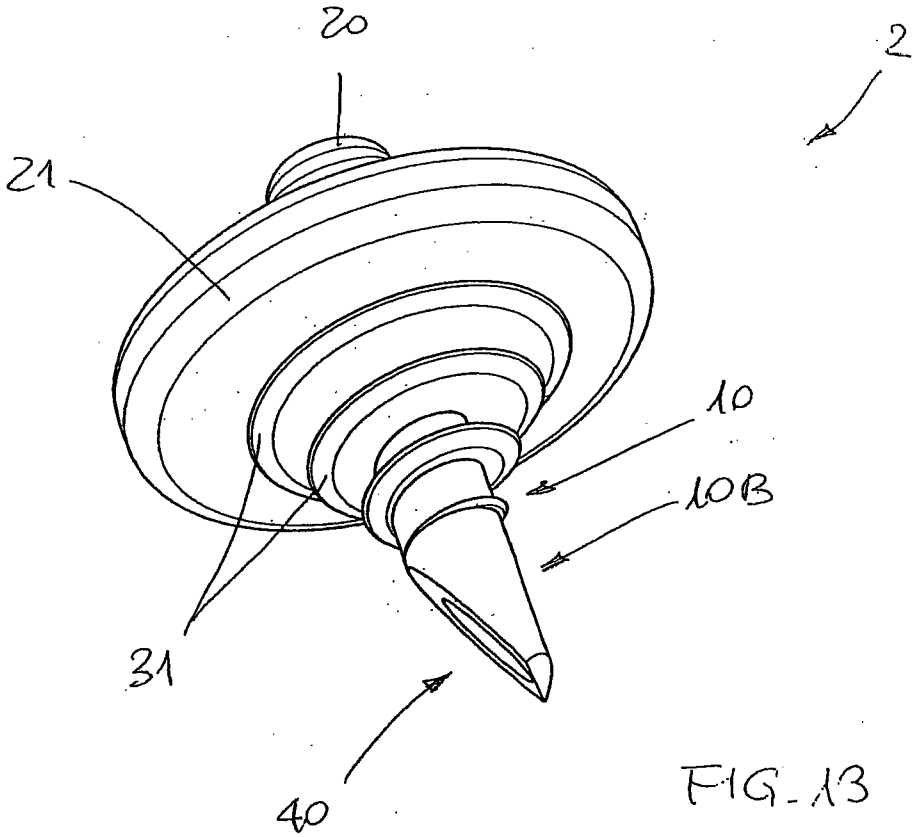


FIG_13

FIG.15

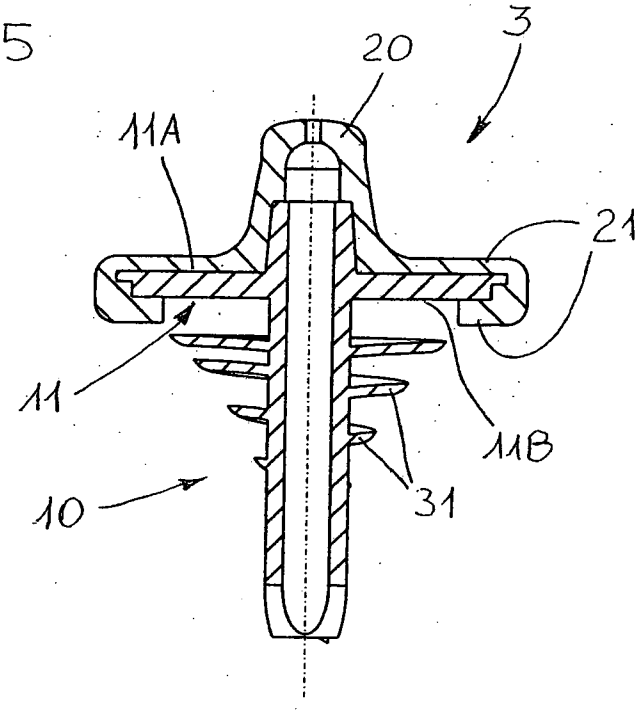
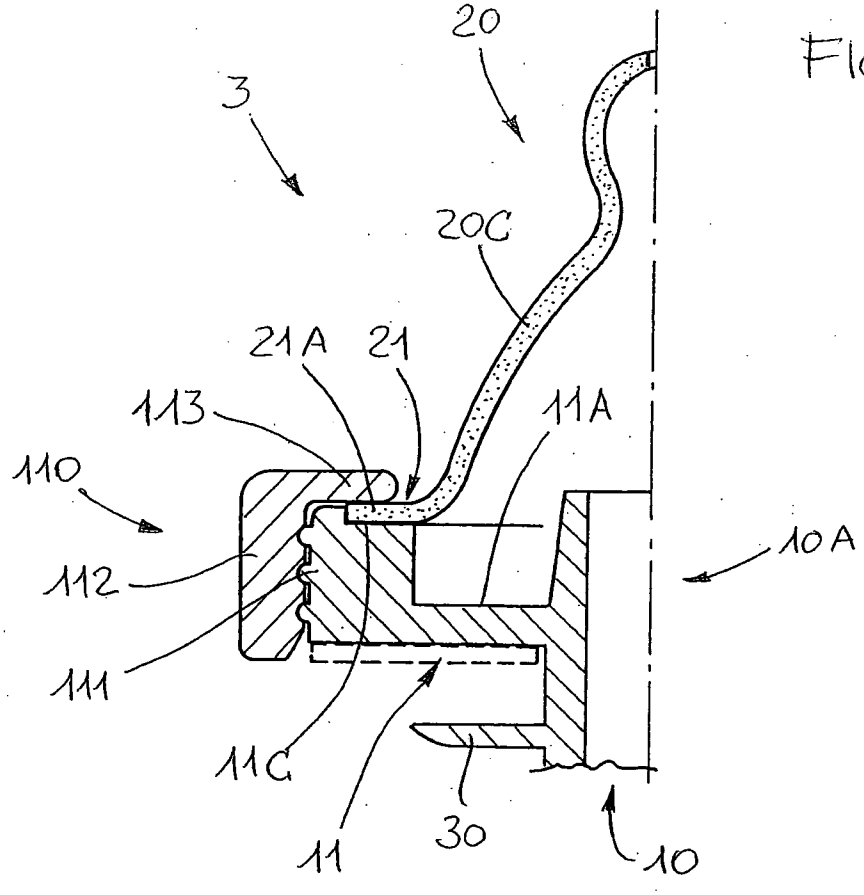

20
3
11A
21
11
11B
10
31

FIG.16


20
3
20C
21A
21
113
11A
110
10A
112
111
11C
11
30
10