(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 1 501 741 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
17.01.2007 Bulletin 2007/03

(21) Application number: **02735975.1**

(22) Date of filing: **07.05.2002**

(51) Int Cl.:
B65D 55/02 *(2006.01)*

(86) International application number:
PCT/IT2002/000300

(87) International publication number:
WO 2003/095326 (20.11.2003 Gazette 2003/47)

(54) **SAFETY CLOSURE DEVICE FOR BOTTLES AND THE LIKE PROVIDED WITH A TAMPER OPTICAL INDICATOR**

SICHERHEITSVERSCHLUSS MIT OPTISCHER GARANTIEANORDNUNG FÜR FLASCHEN

DISPOSITIF DE FERMETURE DE SECURITE POUR BOUTEILLES ET SIMILAIRES COMPORTANT UN INDICATEUR VISUEL D'OUVERTURE ILLICITE

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR

(43) Date of publication of application:
02.02.2005 Bulletin 2005/05

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EP 1 501 741 B1

Printed by Jouve, 75001 PARIS (FR)

Description

[0001] The present invention relates to a safety closure device for bottles and the like, provided with tamper optical indicator, capable of providing an indication to a user as regards the previous tamper or removal of said bottle closure device.

[0002] The need of determining whether a closure device has been previously tampered or removed is widely felt by a buyer of a container.

[0003] Optical indicators are well known to satisfy this need, which act as control means to assess whether a container is in the originally closed condition or it has already been opened and/or fraudulently tampered.

[0004] In particular, US patent 4,480,760 provides for a container closing disk whose upper surface is provided with several microcapsules capable of providing an indication as to the opening and/or tampering. Such microcapsules are broken when said disk is detached from the container.

[0005] Such optical indicators thus allow control both from the hygienic and from the preservation point of view, for example as in the case of food or fluids.

[0006] However, known closure devices provided with optical indicators exhibit the drawback of needing additional operations to be installed on the container, once said container has been filled, thereby implying a higher cost both in economic terms and in terms of time needed to perform such installation.

[0007] Other known closure devices provided with optical indicators require particular sequences of operations, not easily implementable by the user, to allow access to the container content once such closure devices have been actuated.

[0008] According to the above prior art, purpose of the present invention is to realise a closure device provided with an indicator which should change appearance upon the first opening without expensive additional operations for installation, so that a user may be certain of the opening and/or tampering of the same closure device.

[0009] Another purpose of the present invention is to incorporate an indicator in a closure device, which should change its appearance upon the first opening.

[0010] A further purpose of the present invention is to facilitate the first opening of the closure device.

[0011] According to the present invention, such purpose is achieved by a safety closure device for fluid containers, especially bottles of liquor and the like, according to claim 1.

[0012] Thanks to the present invention, it is possible to realise a safety closure device for bottles of liquor and the like, which needs no additional operations to be installed.

[0013] Moreover, thanks to the present invention, it is possible to obtain a safety closure device for bottles of liquor and the like, simple and intuitive to be used.

[0014] Finally, it is possible to obtain a safety closure device for bottles of liquors and the like, provided with an easily visible and recognisable tamper and/or opening indicator.

[0015] The features and advantages of the present invention will appear more clearly from the following detailed description of a practical embodiment, made by way of a non-limiting example in the attached drawings. In such drawings:

figure 1 shows a partly sectioned view of a first embodiment in rest position, according to the present invention;
figure 2 shows the same embodiment of figure 1 in the use position;
figure 3 shows a perspective top view of a member of figure 1;
figure 4 shows another perspective bottom view of the same member of figure 3;
figure 5 shows a partly sectioned view of a second embodiment in rest position according to the present invention;
figure 6 shows the same embodiment of figure 5 in the use position;
figure 7 shows a perspective top view of a member of figure 5;
figure 8 shows another perspective bottom view of the same member of figure 7;
figure 9 shows a partly sectioned view of a third embodiment in rest position according to the present invention;
figure 10 shows the same embodiment of figure 9 in the use position;
figure 11 shows a perspective top view of a member of figure 9;
figure 12 shows another perspective bottom view of the same member of figure 11.

[0016] With reference to the attached Figures 1 - 2 and 5 - 6, reference numeral 1 globally indicates a safety closure device for bottles of liquor 2 and the like.

[0017] Device 1 comprises a cap 4 exhibiting a shell 5, a sleeve 6, and a safety seal 7 connected to shell 5 through a weakening line 8.

[0018] Bottle 2 exhibits an opening 9 delimited by a neck 10, with an outer surface 11 and an inner surface 12.

[0019] Cap 4 exhibits an inner surface 13 and shell 5 consists of a hollow cylinder extending from said inner surface 13 of cap 4 along an axis X - X perpendicular to the plane of the same cap 4 for a predetermined length towards a free end 14.

[0020] In particular, the inner surface 13 of cap 4 is a bottom 13 substantially shaped as a flat disk, where shell 5 exhibits an inner surface 15 extending along axis X - X up to the level of the free end 14.

[0021] Moreover, shell 5 exhibits support means 16 comprising a projection facing axis X - X, such projection being, for example, a shoulder.

[0022] Such support means or shoulder 16 preferably consist of a step-wise profile of the inner surface 15 of

shell 5, obtained in such way as to create a rise 17 substantially perpendicular to the inner surface 15 of the same shell.

[0023] In particular, with reference to figures 1 - 2, the shoulder supports changing means 18, or a blotting paper or a fabric, on which there is breakable container means 19.

[0024] Such changing means 18 consists, for example, of a suitably treated felt shaped as a toroid, whereas such breakable containers 19 are, for example, a container, shaped as toroid as well, containing a fluid.

[0025] Moreover, in such embodiment, it can be noted that cap 4 exhibits a transparent surface 20 in the cap 4 portion of shell 5. Such transparent surface 20, for example, is at felt 18.

[0026] In this way, a sort of transparent band in shell 5 of cap 4 is created.

[0027] With reference to figures 5 - 6 the shoulder supports a container shaped as microcapsule 19, containing a fluid as well.

[0028] In such embodiment, moreover, it can be noted that cap 4 exhibits a transparent surface 21 in the head portion of cap 4. Also such transparent surface 21 is at the changing means 18.

[0029] In this way, a flat, transparent surface is substantially created for the entire head surface of cap 4.

[0030] For both embodiments of figures 1 - 2 and 5 - 6 it can be understood that the free end 14 of shell 5 is connected to the safety seal 7 by a plurality of connection bonds 22 breakable upon the first opening of bottle 2.

[0031] The presence of a lock 23 is also to be noted, which is stiffly connected to the inner surface 15 of shell 5 through a portion of contact surface 24.

[0032] Lock 23 exhibits a collar 25 extending in parallel with axis X - X of cap 4 towards the body of bottle 2, and integrally engages with the inner surface 12 of neck 10 of the same bottle.

[0033] Moreover, in the proximity of the safety seal 7, such shell 5 exhibits an annular rib sector or thread 26 adapted to engage with a corresponding groove 27 of sleeve 6.

[0034] Sleeve 6, which is constrained to neck 10 of bottle 2 according to known techniques to an expert of the art, has a substantially cylindrical or tubular shape, exhibits an axis coinciding with axis X - X of cap 4, and in its outer surface is provided with an upper edge 28 and with a thread 29, such thread 29 consisting of at least one pair of cams 30 and 31.

[0035] In particular, the upper edge 28 forms an upper flanged surface which extends substantially perpendicular to axis X - X towards the exterior of sleeve 6.

[0036] Moreover, at the same time, such edge 28 is an integral part of a cam 32 that extends for a predetermined length onto said sleeve 6.

[0037] Such cam 32, for example, exhibits a first portion that is substantially rectilinear or flat 33, a second portion 34 that is substantially ascending or cutting, and finally a third portion 35 that is substantially rectilinear or flat. Such configuration of cam 32 is advantageous in view of what described hereinafter.

[0038] Cam 31, whose length is predetermined during design, is adapted to engage screw-wise on the inner surface 15 of shell 5 of cap 4, and it exhibits, for example, a first portion 36 that is substantially rectilinear or flat, and a second portion 38bis that is substantially ascending or cutting, like cam 30, which also contributes to engaging screw-wise on the inner surface 15 of shell 5 of cap 4; in fact, such cam 30 exhibits a first portion that is substantially rectilinear or flat 37, and a second portion 38 that is substantially ascending or cutting.

[0039] Such configuration of cams 31 and 30 is advantageous in view of what described hereinafter.

[0040] Moreover, also the upper edge 28 acts as support base for a bar-shaped projection 39.

[0041] The disk member 40 thus exhibits at least one pair of bar-shaped projections 39.

[0042] In fact, the disk member 40 is provided with a predetermined thickness provided during design, so as to form an upper surface 41 and a lower surface 42. Projection 39 is part of the lower surface 42.

[0043] Moreover, the disk member 40 on the upper surface 41 is also provided with another projection 43 extending in parallel with axis X - X of cap 4 towards bottom 13 of said cap 4.

[0044] As it can be understood from the series of figure 1 - 8, there is a difference between the length of projection 43 belonging to the upper surface 41 and projection 39 belonging to the lower surface 42 of the disk member 40. Such difference is advantageous in view of what described hereinafter.

[0045] In this first and second embodiment of the present invention, the position of the disk member 40 is especially important. In fact, such disk member 40 is arranged in the upper portion of said lock 23.

[0046] As it can be understood in particular from figure 1, projection 43 wedges in a special seat 44 obtained in rise 17 and such projection 43 extends up to lapping the toroid-shaped containers 19.

[0047] On the other hand, from figure 5 it can be understood that projection 43 extends up to lapping said breakable container means 19 shaped as microcapsule without passing through any seat.

[0048] With reference to figures 3 - 4, a perspective top and bottom view of the disk member 40 of the first embodiment can be seen, respectively, that is, of the embodiment shown in figures 1 - 2.

[0049] In such figures 3 - 4 it is possible to see the presence of a plurality of projections 43 on the upper surface 41 of the disk member 40. Such projections 43 are arranged at the periphery of the disk member 40 and in a reciprocally symmetric manner.

[0050] It can also be noted that the bar-shaped projections 39 of the lower surface 42 are less than projections 43 of the upper surface 41. This is because a single pair of bar-shaped projections 39 is sufficient to obtain the desired purpose.

[0051] As it can be noted from the specific embodiments, projections 43 of surface 41 are perforating members having such cone shape as to allow breaking container 19, but they could also be means having such shape as to allow breaking container means 19 through a squashing action. For example, container means 19 may be glass wafers.

[0052] With reference to figures 7 - 8, that is, to the perspective views of the disk member 40 in the case of the second embodiment, it can be noted that projections 43 present on the upper surface 41 of the disk member 40 are in an innermost position compared to what shown in the perspective views of figures 3-4, whereas projections 39 of the lower surface 42 are arranged in a similar way to what shown in the previous perspective views of figures 3-4.

[0053] Also in the case of the embodiments of figures 7-8 projections 43 are perforating members having such cone shape as to allow breaking container 19, but they could also be members having such shape as to allow breaking container means 19 through a squashing action.

[0054] For both embodiments, the safety closure device 1 according to the present invention is assembled to form a whole that can be singly handled so as to be pressure-applied onto said neck 10 until it is engaged snap-wise onto the same neck of bottle 2.

[0055] Such situation is that shown in figures 1 and 5, that is the first and the second embodiment of the present invention, when in the so-called rest condition.

[0056] Once a user performs the action of opening the safety device, that is, unscrews cap 4 with respect to sleeve 6, the thread portion 26 engages in groove 27 of sleeve 6, thus causing an angular rotation of cap 4.

[0057] In other words, such angular rotation imposed by the user only causes a rotational movement of cap 4 around its axis X - X thereby causing the breakage of the connection bonds 15 of the safety seal 7.

[0058] At the same time, the bar-shaped projection 39, which acts as coupling means between profile 32 and disk member 40, follows the rectilinear or flat portion 33 of cam 32, since it is stiffly axially connected to the inner surface 15 of shell 5 of cap 4.

[0059] In other words, in this first step of rotation of cap 4, the disk member 40 with the upper 43 and lower projections 39 only follows the horizontal profile 33 of cam 32.

[0060] At the same time, the thread portion (or rib) 26 of shell 5 follows groove 27, consisting of cams 31 and 30 for the rectilinear portion of the same, that is, portion 36 of cam 31 and portion 37 of cam 30 respectively.

[0061] During this step, as already described, the weakening line 8 connecting cap 4 with the safety seal 7 breaks by rotation.

[0062] In fact, such safety seal 7 is stiffly connected to the end portion of sleeve 6, preventing the seal from rotating through suitable connection means 7a.

[0063] As the user continues its rotation of cap 4, the bar-shaped projection 39 meets the cutting (ascending) profile 34 of cam 32, thus causing an axial movement along axis X - X of the disk member 40 with its projections 39 and 43. Such axial movement of the disk member 40 causes the perforation of the breakable container means 19 by projections 43, thereby causing the discharge of the fluid contained in the same containers 19.

[0064] The fluid spreads on felt 18, thus causing a chromatic change of the same, as shown in figures 2 and 6.

[0065] In the first embodiment, shown in figures 1 - 2, this means that the user can see, through the transparent surface or band 20, the inner zone while it takes a different colour with respect to the original one, thereby allowing an easy verification of the opening and/or tampering of the closure device 1.

[0066] In the second embodiment, shown in figures 5 - 6, the discharge of fluid from microcapsule 13 causers a chromatic change that can be seen through the entire head surface 21 of cap 4, ensuring in this situation an immediate and intuitive verification as to the opening and/or tampering of the closure device 1.

[0067] At the end of the ascending portion 34 of cam 32 there is a further rectilinear or flat portion 35; such flat portion 35 locks disk 40 by projections 39 and 43 irreversibly against surface 17 of rise 16 through suitable means 15a obtained on the inner surface 15 of shell 5.

[0068] At the same time, as rib 26 continues its path, it meets the ascending portion 38 and 38bis of cams 30 and 31; such ascending or cutting portions 38 and 38bis allow cap 4 to perform an axial movement along their axis X - X so as to cause unscrewing cap 4 from sleeve 6, as shown in figures 2 and 6.

[0069] In both embodiments described so far, at the end of the operation for unscrewing cap 4, the disk member 40 with projections 43 of the upper surface 41 and the bar-shaped projections 39 of the lower surface 42 remain removably inserted in the positions shown in figures 2 and 6, that is, in the so-called use position.

[0070] With reference to figures 9 - 10, showing the third embodiment of the present invention, where identical numbering is used for already described members, it is possible to immediately note the presence of a pouring member 45 fitted on bottle 2 according to normal techniques well known to an expert of the art.

[0071] Shell 5 of cap 4 exhibits support means 46 comprising a projection facing axis X - X, such projection being a shoulder.

[0072] Such support means or shoulder 46 preferably consist of a step-wise profile of the inner surface of shell 5, obtained in such way as to create a rise 47 which is substantially perpendicular to the inner surface 15 of the same shell.

[0073] Such rise 47 acts as support for a profile or thread 48 of the pouring member 45.

[0074] Such profile 48, for example, exhibits a first substantially rectilinear or flat portion 49, a second substantially ascending portion 50.

[0075] Such configuration of profile 48 is advanta-

geous in view of what described hereinafter.

[0076] Moreover, it can be noted that cap 4 exhibits a transparent surface 21 in the head portion of cap 4. Such transparent surface 21 is at the changing means 18.

[0077] In particular, the pouring member 45, substantially having a cylindrical or tubular shape, exhibits an axis coinciding with axis X - X of cap 4 and since it is provided, in its outside portion, of threading 48, it engages screw-wise on the inner surface 15 of shell 5 of cap 4.

[0078] Unlike what shown in the previous embodiments of figures 1 - 2 and 5 - 6, this embodiment exhibits coupling means 50 arranged between lock 23 and disk member 40.

[0079] In fact, considering the perspective views of figures 11 - 12 it can be noted that this coupling means 50 consists of cams obtained on the lower surface 42 of said disk member 40.

[0080] In fact, said cams 50 exhibit a flat portion 51 and a cutting portion 52, whose purpose of illustrated hereinafter.

[0081] Moreover in figure 12 it is possible to note the presence of a grooved peduncle 53 that extends axially along axis X - X of cap 4 and is coaxial with respect to opening 9 of the pouring member 45 of bottle 2.

[0082] Also in this last embodiment, once a user opens the safety device 1, that is, unscrews cap 4 from the pouring member 45, shoulder 46 follows threading 47, thereby causing an angular rotation of cap 4.

[0083] In other words, such angular rotation, imposed by the user, causes at the same time a rotational movement and a translation of cap 4 around its axis X - X, thereby causing the breakage of the weakening line 8 and the perforation of container 19 by projections 43.

[0084] Thus, when cap 4 is rotated by the user, lock 23 rotates pulled by cap 4, since it is stiffly connected to the inside surface 15 of shell 5 through the contact portion 24, whereas the disk member 40 is held still by the central grooved peduncle 53.

[0085] The disk member 40 remains still both angularly and axially until the ascending profile 52 of cams 50 is engaged.

[0086] When such condition occurs, there occurs an axial movement along axis X - X of the disk member 40 and through projections 43, that is, the cone-shaped ones, thereby causing the perforation of the breakable container means 19.

[0087] Afterwards, there occurs the discharge of the fluid contained in the same containers 19, and the fluid spreads on the changing means 18, thus causing a change of their colour.

[0088] Since cap 4 is provided with a transparent head surface 21, the user can immediately see whether cap 4 has been opened and/or tampered.

[0089] Advantageously, all of the above embodiments also provide for the breakable container means 19 to contain substances rather than a fluid, that can be activated by the gaseous elements present in the atmosphere.

[0090] In particular and advantageously, this solution allows eliminating the changing means 18, with a consequent cost and production time saving.

[0091] In fact, for example, it is possible to provide containers that can be broken by perforation or squashing, containing a substance that oxidises when in contact with oxygen, thus changing its appearance, once the projections have performed their breaking action on the container means.

[0092] Such substance can be a gel or salt grains that change their chromatic appearance when in contact with the air.

Claims

1. Safety closure device for fluid containers (2), particularly for liquor bottles and the like, with an opening (9) delimited by a neck (10) that axially extends from the body of said container (2) comprising:

· a cap (4) having at least one transparent surface portion (20; 21), a shell (5) and a bottom (13);
· said shell (5) extending along a longitudinal axis (X-X) perpendicular to said cap (4) and being connected to a safety ring (7) through a weakening line (8);
· said opening (9) being closed by a lock (23); said lock (23) being provided with a collar (25);
· said collar (25) extending axially towards the body of said container (2) and engaging with the neck (10) of said container (2);
· a disk member (40) arranged in the upper portion of said lock (23) and transversally with respect to said shell (5), and having a diameter substantially equal to the diameter of said opening (9) and being provided with an upper surface (41) and a lower surface (42);
· said upper surface (41) of said disk member (40) being provided with at least one projection (43) that extends towards the bottom (13) of said cap (4);
· breakable container means (19) inserted between said at least one projection (43) and the bottom (13) of said cap (4), and being adapted to contain substances capable of changing the conditions of the visible zone through said at least one transparent portion (20; 21) of said cap (4);

characterised in that

· it comprises coupling means (39; 50) which determine a relative movement between said disk member (40) and said breakable container means (19) when said shell (5) follows said profiles (30; 31; 32; 48) whereby said at least one

projection (43) penetrates said breakable container means (19) thereby breaking said breakable container means (19);
· said shell (5) is engageable screw-wise on the neck (10) of said container (2) though a plurality of profiles (30; 31; 32; 48), and
· said lock (23) is connected to said shell (5).

2. Closure device according to claim 1, **characterised in that** said coupling means (39; 50) consists of a further at least one projection (39) that extends longitudinally with respect to the axis of said neck (10) towards the body of said container (2) protruding from said lower surface (42) of said disk member (40).

3. Closure device according to claim 2, **characterised in that** said neck (10) is provided with a tubular sleeve (6) provided with said plurality of profiles (30; 31; 32) said sleeve (6) being fitted from the outside on neck (10).

4. Closure device according to claim 3, **characterised in that** said further at least one projection (39) engages with one (32) of said plurality of profiles (30; 31; 32) of said tubular sleeve (6).

5. Closure device according to claim 4, **characterised in that** said profile (32) of said plurality of profiles (30; 31; 32) is a cam with a smaller length than the remaining profiles.

6. Closure device according to claim 5, **characterised in that** said profile (32) of said plurality of profiles (30; 31; 32) has an entirely ascending pattern.

7. Closure device according to claim 5, **characterised in that** said profile (32) of said plurality of profiles (30; 31; 32) has a first portion (33) of profile with rectilinear pattern, and a second portion (34) of profile with ascending pattern.

8. Closure device according to claim 7, **characterised in that** said second (34) portion of profile exhibits a further portion (35) of profile with a rectilinear pattern arranged at the end on the ascending one (34).

9. Closure device according to claim 1, **characterised in that** said coupling means (39, 50) is a plurality of cams (50) and a grooved peduncle (53) protruding from said lower surface (42) of said disk member (40).

10. Closure device according to claim 9, **characterised in that** said plurality of cams (50) is arranged along the circumference and exhibits a flat portion (51) and an ascending portion (52).

11. Closure device according to claim 6, **characterised in that** said grooved peduncle (53) is coaxial to said disk member (40).

12. Closure device according to claim 1, **characterised in that** said breakable container means (19) consists of a plurality of microcapsules.

13. Closure device according to claim 1, **characterised in that** said breakable container means (19) is toroid shaped.

14. Closure device according to claim 1, **characterised in that** said substances capable of changing the conditions of the visible zone through said at least one transparent portion (20, 21) of said cap (4) are of the type sensitive to gaseous elements present in the atmosphere.

15. Closure device according to claim 1, **characterised in that** said upper surface (41) of said disk member (40) is provided with means (18) adapted to change its chromatic status.

16. Closure device according to claim 15, **characterised in that** said means (18) adapted to change its chromatic status consists of felt, fabric or blotting paper, or litmus paper, gel or salt grains.

17. Closure device according to claim 16, **characterised in that** said substances capable of changing the conditions of the visible zone through said at least one transparent portion (20, 21) of said cap (4) consist of a fluid reacting with said felt (18).

18. Closure device according to claim 1, **characterised in that** said portion of transparent surface (20) of said cap is an annular portion of said shell (5).

19. Closure device according to claim 1, **characterised in that** said portion (21) of transparent surface of said cap (4) is an upper plan portion of said cap.

Patentansprüche

1. Sicherheitsverschlussvorrichtung für Flüssigkeitsbehälter (2), insbesondere für Likörflaschen und Ähnliches, mit einer Öffnung (9), die durch einen sich axial vom Körper des Behälters (2) erstreckenden Hals begrenzt ist, umfassend:

eine Verschlusskappe (4) mit mindestens einem durchsichtigen Flächenabschnitt (20; 21), einer Hülle (5), sowie einem Boden (13);
wobei die Hülle (5) sich eine zu dieser Verschlusskappe (4) senkrechte Längsachse (X-X) entlang erstreckt und an einem Sicherungsring

(7) durch eine Abschwächungslinie (8) angeschlossen ist;
wobei die Öffnung (9) durch eine Sperre (23) geschlossen ist und wobei die Sperre (23) mit einer Hülse (25) versehen ist;
wobei die Hülse sich axial nach dem Körper des Behälters (2) erstreckt und in den Hals (10) des Behälters (2) eingreift;
ein im oberen Abschnitt der Sperre (23) und quer zur Hülle angeordnetes Scheibestück (40), dessen Durchmesser im Wesentlichen wie der Durchmesser der Öffnung (9) gleich ist und das mit einer oberen Fläche (41) und einer unteren Fläche (42) versehen ist;
wobei die obere Fläche (41) des Scheibestücks (40) mit mindestens einem nach dem Boden der Verschlusskappe (4) sich erstreckenden Vorsprung (43) versehen ist;
ein brechbares, zwischen mindestens einem Vorsprung (43) und dem Boden (13) der Verschlusskappe (4) angeordnetes Behältermittel (19), welches zum Enthalten solcher Stoffe geeignet ist, die imstande sind, den Stand des durch mindestens einen durchsichtigen Abschnitt (20; 21) der Verschlusskappe (4) sichtbaren Gebiets zu verändern;

dadurch gekennzeichnet, dass
sie Kopplungsmittel (39; 50) aufweist, die eine relative Verschiebung zwischen das Scheibestück (40) und das brechbare Behältermittel (19) verursachen, wenn die Hülle (5) den Profilen (30; 31; 32; 48) folgt, wobei mindestens ein Vorsprung (43) ins brechbare Behältermittel (19) hineindringt, wodurch das brechbare Behältermittel (19) gebrochen wird;
die Hülle (5) schraubenartig auf das Hals (10) des Behälters (2) durch eine Vielfältigkeit von Profilen (30; 31; 32; 48) eingreifen kann, und
die Sperre (23) an der Hülle (5) angeschlossen ist.

2. Verschlussvorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** das Kopplungsmittel (39; 50) aus mindestens einem weiteren Vorsprung (39) besteht, der sich in Längsrichtung zur Achse des Halses (10) nach dem Körper des Behälters (2) erstreckt und aus der unteren Fläche (42) des Scheibestücks (40) hervorragt.

3. Verschlussvorrichtung nach Anspruch 2, **dadurch gekennzeichnet, dass** der Hals (10) mit einer rohrartigen, mit der Vielfältigkeit von Profilen (30; 31; 32) ausgerüsteten Hülse (6) versehen ist, wobei die Hülse (6) von außen auf den Hals (10) angepasst wird.

4. Verschlussvorrichtung nach Anspruch 3, **dadurch gekennzeichnet, dass** mindestens ein weiterer Vorsprung (39) in ein Profil (32) aus der Vielfältigkeit von Profilen (30; 31; 32) in der rohrartigen Hülse (6) eingreift.

5. Verschlussvorrichtung nach Anspruch 4, **dadurch gekennzeichnet, dass** das Profil (32) aus der Vielfältigkeit von Profilen (30; 31; 32) ein Nocken mit kleinerer Länge, als die übrigen Profile ist.

6. Verschlussvorrichtung nach Anspruch 5, **dadurch gekennzeichnet, dass** das Profil (32) aus der Vielfältigkeit von Profilen (30; 31; 32) einen vollkommen steigenden Verlauf hat.

7. Verschlussvorrichtung nach Anspruch 5, **dadurch gekennzeichnet, dass** das Profil (32) aus der Vielfältigkeit von Profilen (30; 31; 32) einen ersten Profilabschnitt (33) mit geradlinigem Verlauf und einen zweiten Profilabschnitt (34) mit steigendem Verlauf hat.

8. Verschlussvorrichtung nach Anspruch 7, **dadurch gekennzeichnet, dass** der zweite Profilabschnitt (34) einen weiteren Profilabschnitt (35) mit einem geradlinigen Verlauf aufweist, der am Ende des steigenden Profilabschnitts (34) angeordnet ist.

9. Verschlussvorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** das Kopplungsmittel (39, 50) eine Vielfältigkeit von Nocken (50) und ein aus der unteren Fläche (42) des Scheibestücks (40) hervorragender, mit Nuten versehener Schaft (53) ist.

10. Verschlussvorrichtung nach Anspruch 9, **dadurch gekennzeichnet, dass** die Vielfältigkeit von Nocken (50) den Kreisumfang entlang angeordnet ist und einen flachen Abschnitt (51), sowie einen steigenden Abschnitt (52) aufweist.

11. Verschlussvorrichtung nach Anspruch 6, **dadurch gekennzeichnet, dass** der mit Nuten versehene Schaft (53) mit dem Scheibestück (40) koaxial ist.

12. Verschlussvorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** das brechbare Behältermittel (19) aus einer Vielfältigkeit von Mikrokapseln besteht.

13. Verschlussvorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** das brechbare Behältermittel (19) toroidal ausgebildet ist.

14. Verschlussvorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** die Stoffe, welche imstande sind, den Stand des durch mindestens einen durchsichtigen Abschnitt (20; 21) der Verschlusskappe (4) sichtbaren Gebiets zu verändern, des Typs der gegen in der Atmosphäre vorhandene gasförmige Elemente empfindlichen Stoffe sind.

15. Verschlussvorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** die obere Fläche (41) des Scheibestucks (40) mit zum Verändern deren Farbenzustands geeigneten Mitteln (18) versehen ist.

16. Verschlussvorrichtung nach Anspruch 15, **dadurch gekennzeichnet, dass** das zum Verändern deren Farbenzustands geeignete Mittel (18) aus Filz, Gewebe oder Saugpapier, bzw. Lackmuspapier, Gel oder Salzkörnern besteht.

17. Verschlussvorrichtung nach Anspruch 16, **dadurch gekennzeichnet, dass** die Stoffe, welche imstande sind, den Stand des durch mindestens einen durchsichtigen Abschnitt (20; 21) der Verschlusskappe (4) sichtbaren Gebiets zu verändern, aus einer mit dem Filz (18) reagierenden Flüssigkeit bestehen.

18. Verschlussvorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** der Abschnitt durchsichtiger Fläche (20) der Verschlusskappe ein ringförmige Abschnitt der Hülle (5) ist.

19. Verschlussvorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** der Abschnitt (21) durchsichtiger Fläche der Verschlusskappe (4) ein obere flache Abschnitt der Verschlusskappe ist.

Revendications

1. Dispositif de fermeture de sécurité affecté aux conteneurs pour liquides (2), particulièrement aux bouteilles pour liqueurs et similaires, avec une ouverture (9) délimitée par un col (10) qui s'étend axialement depuis le corps dudit conteneur (2) comportant :

un couvercle (4) ayant au moins une portion de surface transparente (20 ; 21), une gaine (5) et un fond (13) ;
ladite gaine (5) s'étendant le long d'un axe longitudinal (X-X) perpendiculaire par rapport au couvercle susdit (4) et étant reliée à un anneau de sûreté (7) par le biais d'une ligne d'affaiblissement (8) ;
ladite ouverture (9) étant fermée par une serrure (23) ; ladite serrure (23) étant munie d'un collier (25) ;
ledit collier (25) s'étendant axialement vers le corps dudit conteneur (2) et s'emboîtant avec le col (10) dudit conteneur (2) ;
un élément discoïdal (40) aménagé dans la portion supérieure de ladite serrure (23) et transversalement par rapport à ladite gaine (5), et ayant un diamètre substantiellement égal au diamètre de ladite ouverture (9) et étant muni d'une surface supérieure (41) et d'une surface inférieure (42) ;
ladite surface supérieure (41) dudit élément discoïdal (40) étant munie d'au moins une saillie (43) qui s'étend vers le fond (13) dudit couvercle (4) ;
des moyens cassants (19) du conteneur insérés entre ladite au moins une saillie (43) et le fond (13) dudit couvercle (4), et étant aptes à contenir des substances capables de modifier les conditions de la zone visible à travers ladite au moins une portion transparente (20 ; 21) dudit couvercle ;

caractérisé en ce qu'il comporte un moyen d'accouplement (39 ; 50) qui engendre un mouvement relatif entre ledit élément discoïdal (40) et lesdits moyens cassants (19) du conteneur aussitôt que ladite gaine (5) suit lesdits profils (30 ; 31 ; 32 ; 48) tandis que ladite au moins une saillie (43) pénètre dans lesdits moyens cassants (19) du conteneur, ce qui casse lesdits moyens cassants (19) du conteneur ;
ladite gaine (5) est emboîtable à vis sur le col (10) dudit conteneur (2) par une pluralité de profils (30 ; 31 ; 32 ; 48), et ladite serrure (23) est reliée à ladite gaine (5).

2. Dispositif de fermeture selon la revendication 1, **caractérisé en ce que** ledit moyen d'accouplement (39 ; 50) est constitué d'une ultérieure au moins une saillie (39) qui s'étend longitudinalement par rapport à l'axe dudit col (10) vers le corps dudit conteneur (2) débordant de ladite surface inférieure (42) dudit élément discoïdal (40).

3. Dispositif de fermeture selon la revendication 2, **caractérisé en ce que** ledit col (10) est muni d'un manchon tubulaire (6) muni d'une pluralité de profils (30 ; 31 ; 32) ledit manchon (6) étant ajusté depuis l'extérieur sur le col (10).

4. Dispositif de fermeture selon la revendication 3, **caractérisé en ce que** ladite ultérieure au moins une saillie (39) s'emboîte avec l'une (32) des pluralités susdites de profils (30 ; 31 ; 32) dudit manchon tubulaire (6).

5. Dispositif de fermeture selon la revendication 4, **caractérisé en ce que** ledit profil (32) de ladite pluralité de profils (30 ; 31 ; 32) est une came avec une longueur inférieure par rapport aux profils résiduels.

6. Dispositif de fermeture selon la revendication 5, **caractérisé en ce que** ledit profil (32) de ladite pluralité de profils (30 ; 31 ; 32) a une configuration entièrement ascendante.

7. Dispositif de fermeture selon la revendication 5, **caractérisé en ce que** ledit profil (32) de ladite pluralité

de profils (30 ; 31 ; 32) a une première portion (33) de profil avec une configuration rectiligne, et une seconde portion (34) de profil avec une configuration ascendante.

8. Dispositif de fermeture selon la revendication 7, **caractérisé en ce que** ladite seconde (34) portion de profil affiche une ultérieure portion (35) de profil avec une configuration rectiligne aménagée à l'extrémité sur l'ascendante (34).

9. Dispositif de fermeture selon la revendication 1, **caractérisé en ce que** ledit moyen d'accouplement (39, 50) est une pluralité de cames (50) et un pédicule rainuré (53) débordant de ladite surface inférieure (42) dudit élément discoïdal (40).

10. Dispositif de fermeture selon la revendication 9, **caractérisé en ce que** ladite pluralité de cames (50) est aménagée le long de la circonférence et qu'elle affiche une portion plate (51) et une portion ascendante (52).

11. Dispositif de fermeture selon la revendication 6, **caractérisé en ce que** ledit pédicule rainuré (53) est coaxial par rapport à l'élément discoïdal susdit (40).

12. Dispositif de fermeture selon la revendication 1, **caractérisé en ce que** ledit moyen cassant (19) du conteneur est constitué d'une pluralité de microcapsules.

13. Dispositif de fermeture selon la revendication 1, **caractérisé en ce que** ledit moyen cassant (19) du conteneur a une forme toroïdale.

14. Dispositif de fermeture selon la revendication 1, **caractérisé en ce que** lesdites substances capables de modifier les conditions de la zone visible par le biais de ladite au moins une portion transparente (20, 21) dudit couvercle (4) sont du type sensible aux éléments gazeux présents dans l'atmosphère.

15. Dispositif de fermeture selon la revendication 1, **caractérisé en ce que** ladite surface supérieure (41) dudit élément discoïdal (40) est munie d'un moyen (18) apte à modifier son état chromatique.

16. Dispositif de fermeture selon la revendication 15, **caractérisé en ce que** ledit moyen (18) apte à modifier son état chromatique est constitué de feutre, tissu ou papier absorbant, ou de papier tournesol, gel ou grains de sel.

17. Dispositif de fermeture selon la revendication 16, **caractérisé en ce que** lesdites substances capables de modifier les conditions de la zone visible à travers ladite au moins une portion transparente (20, 21) dudit couvercle (4) sont constituées d'un fluide réagissant au feutre susdit (18).

18. Dispositif de fermeture selon la revendication 1, **caractérisé en ce que** ladite portion de surface transparente (20) dudit couvercle est une portion annulaire de ladite gaine (5).

19. Dispositif de fermeture selon la revendication 1, **caractérisé en ce que** ladite portion (21) de surface transparente dudit couvercle (4) est une portion plane supérieure dudit couvercle.

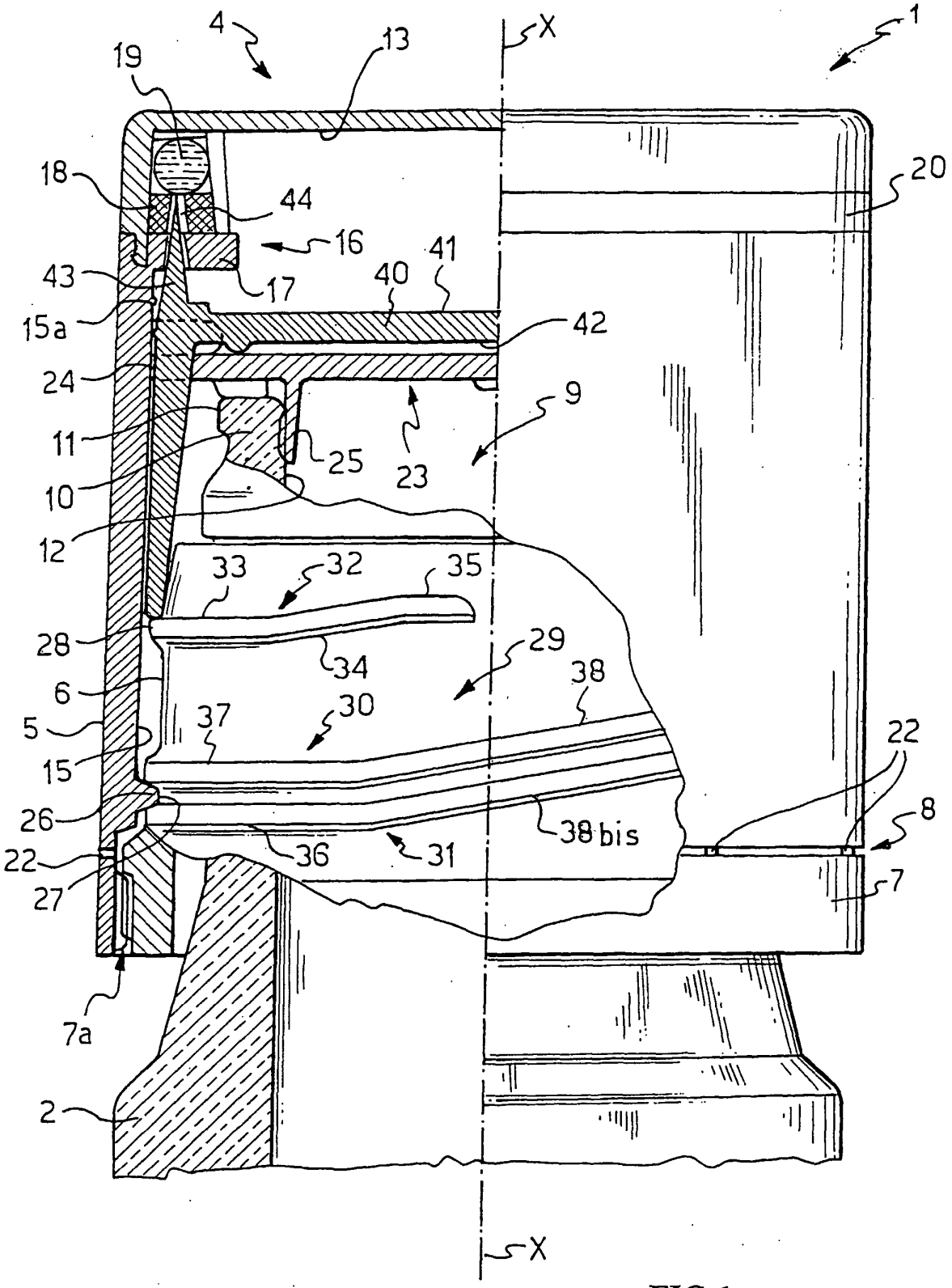

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FIG.1

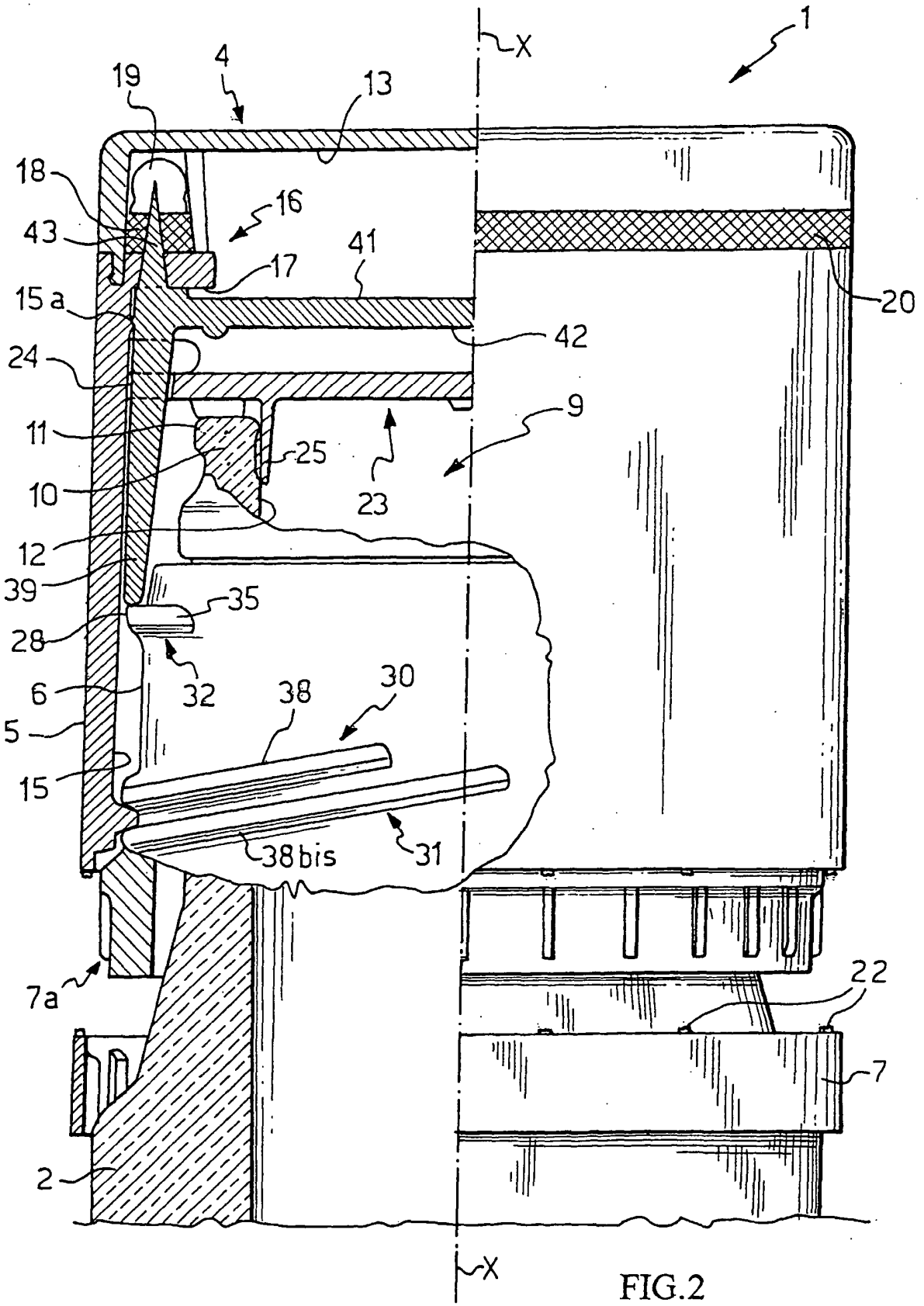

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FIG.2

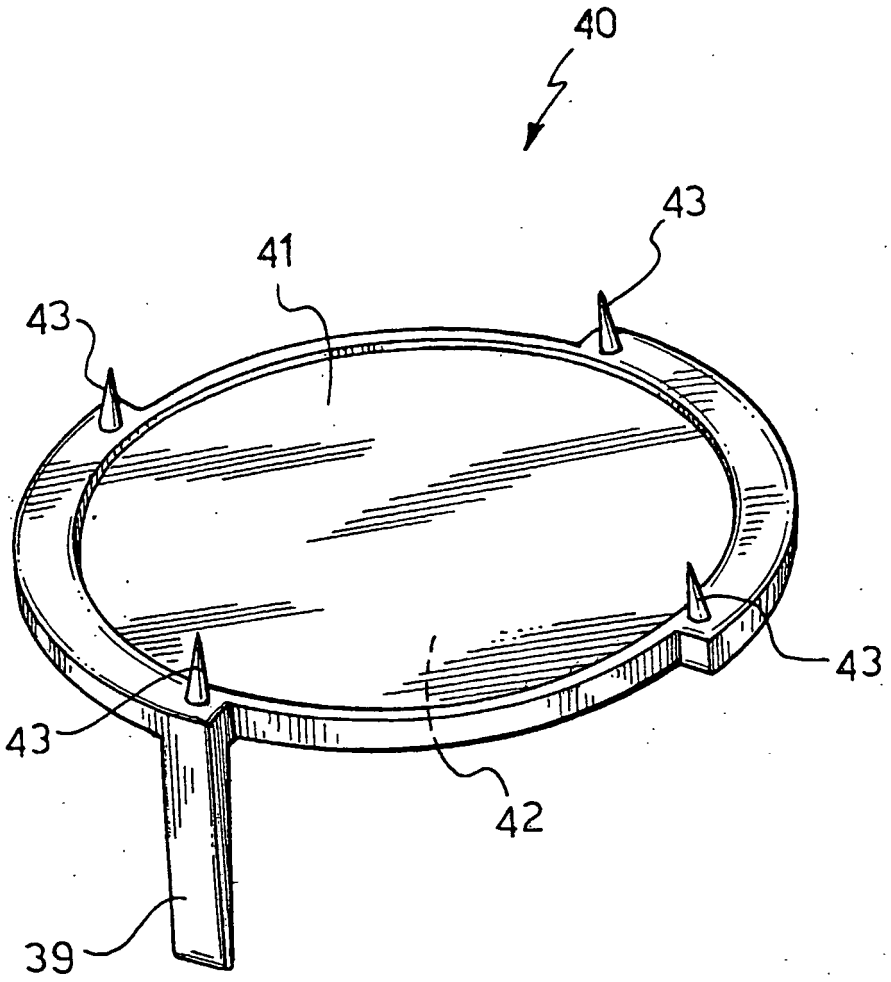


FIG.3

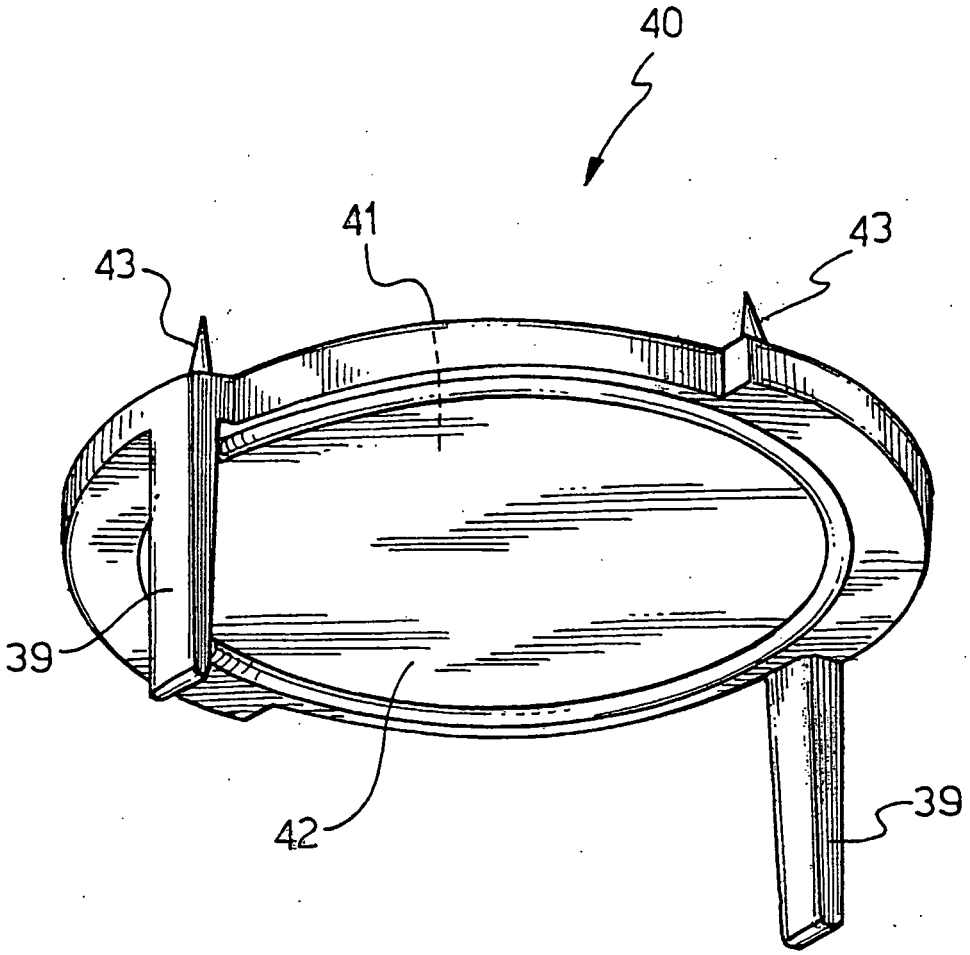


FIG.4

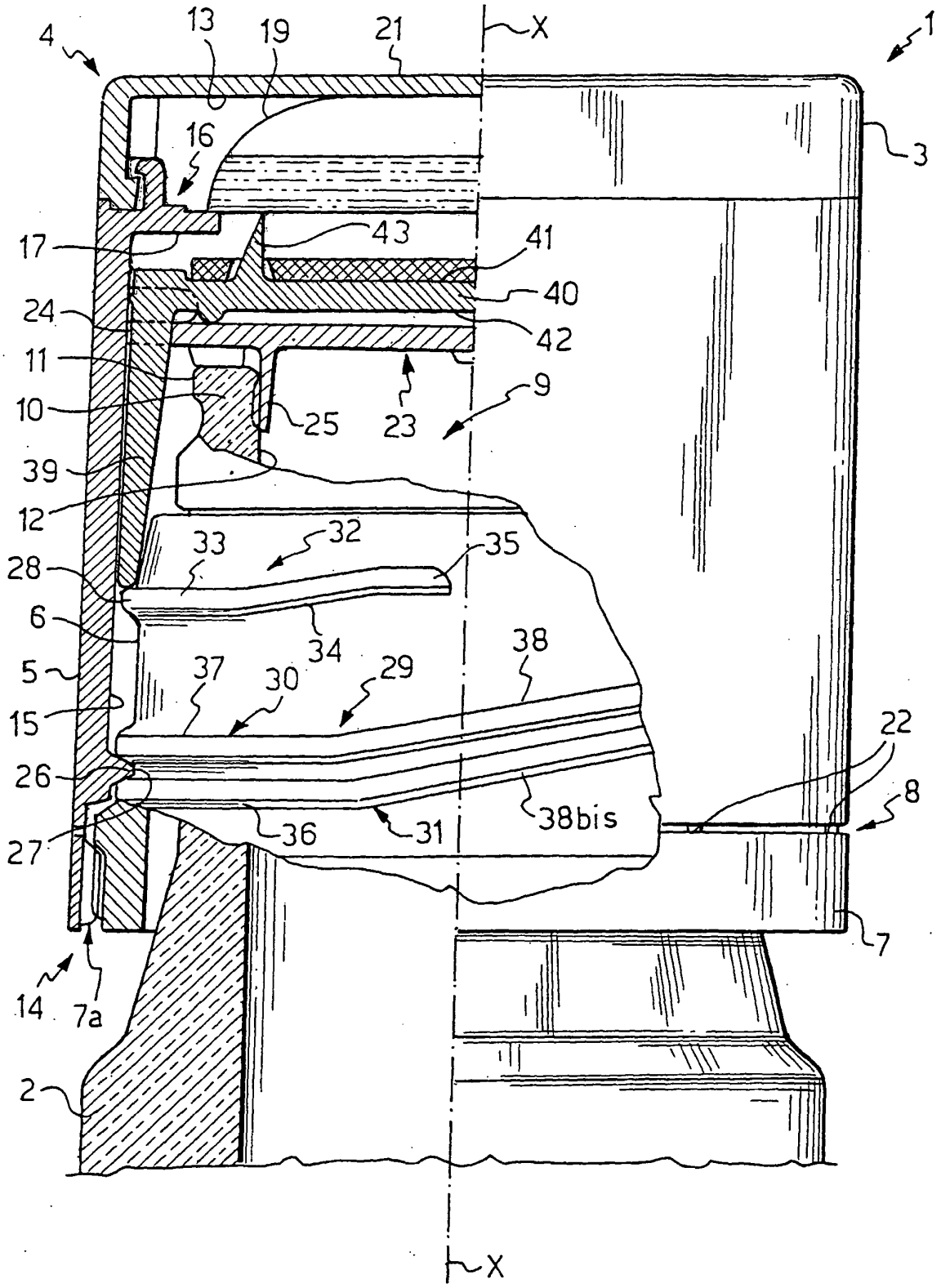

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FIG.5

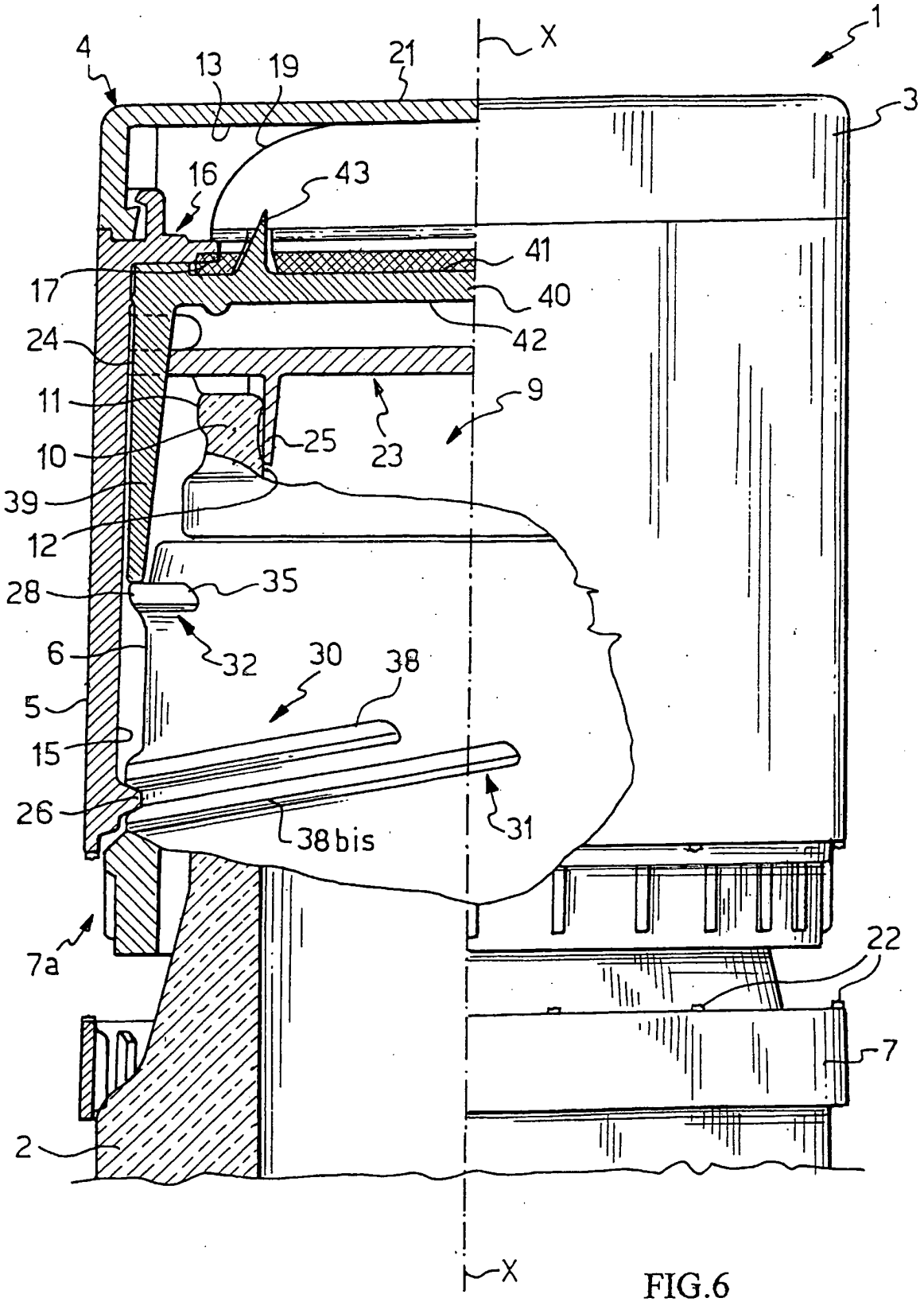

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FIG.6

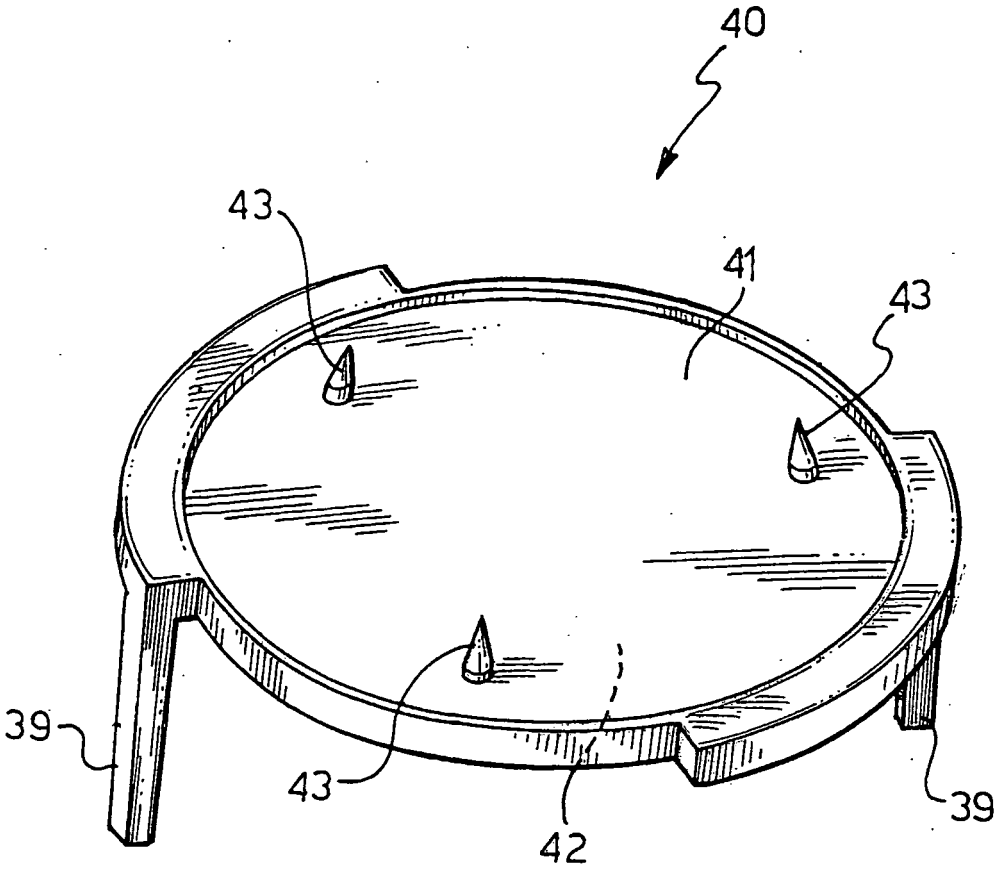


FIG.7

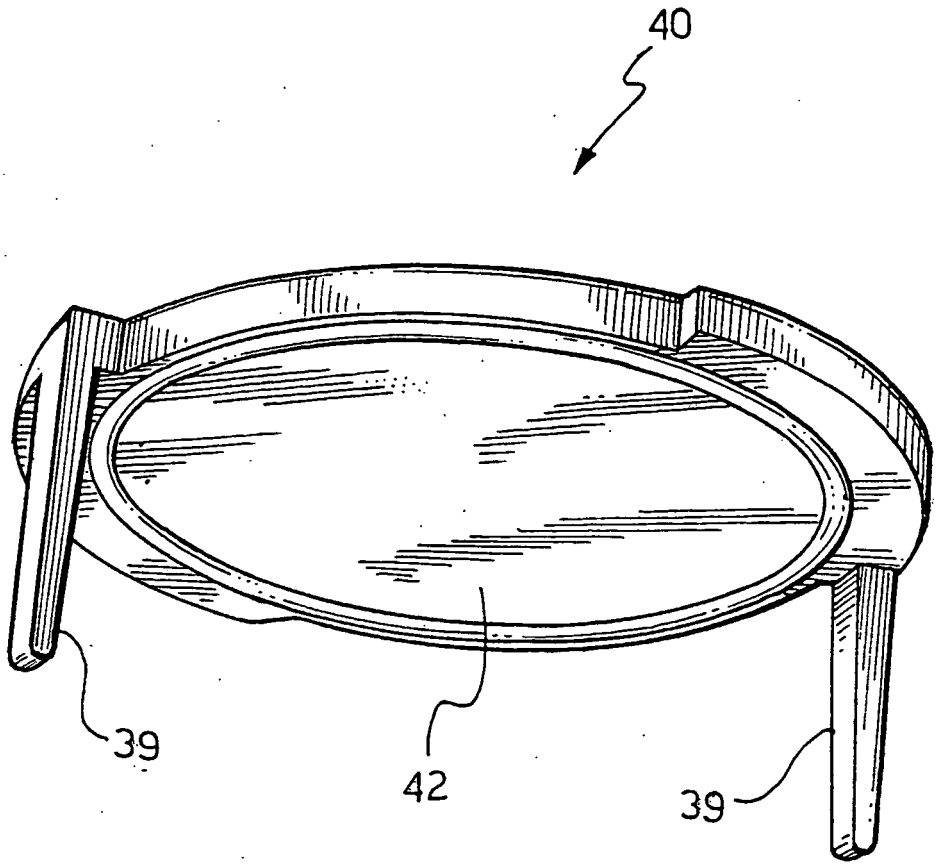


FIG.8

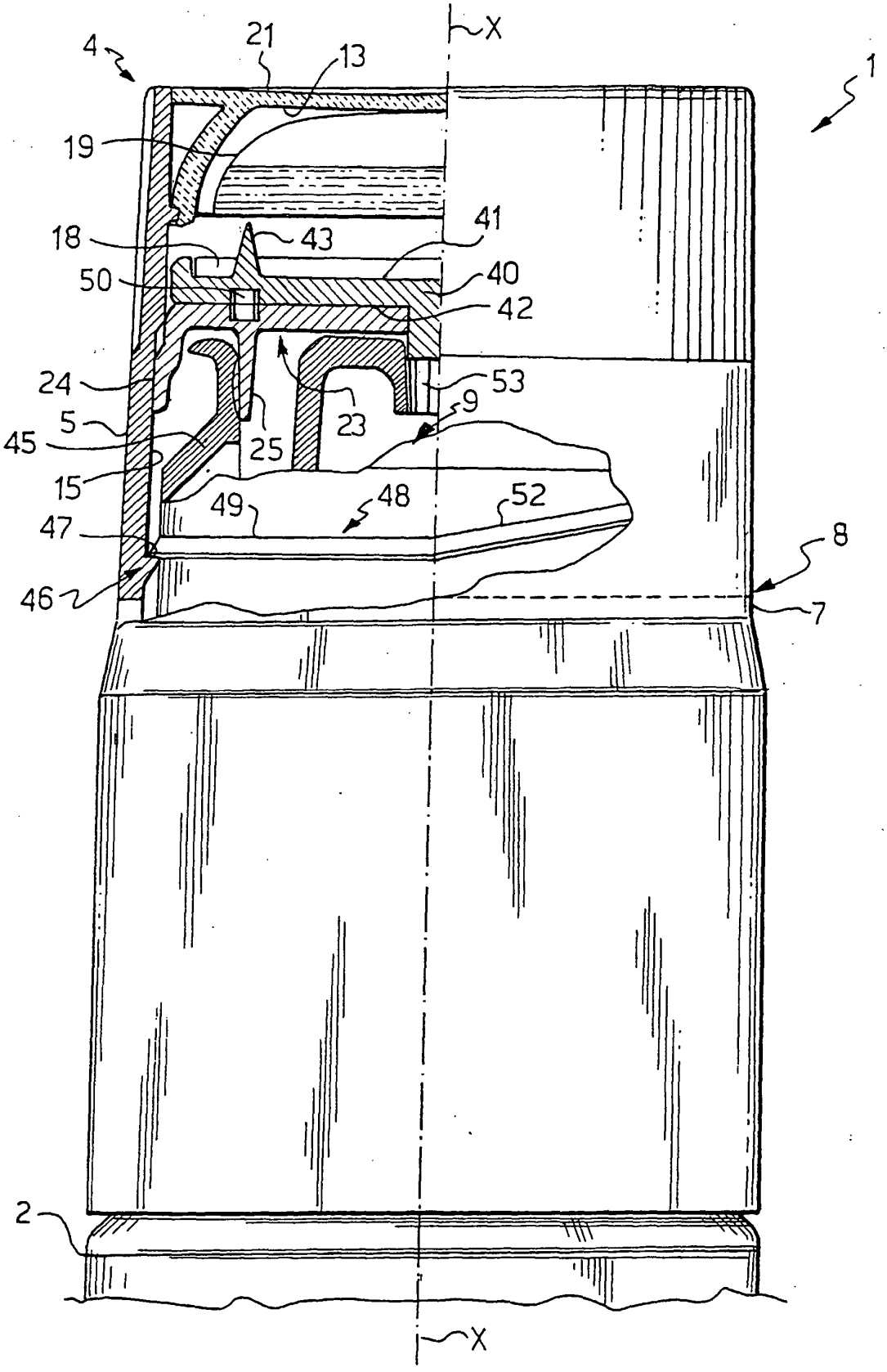


FIG.9

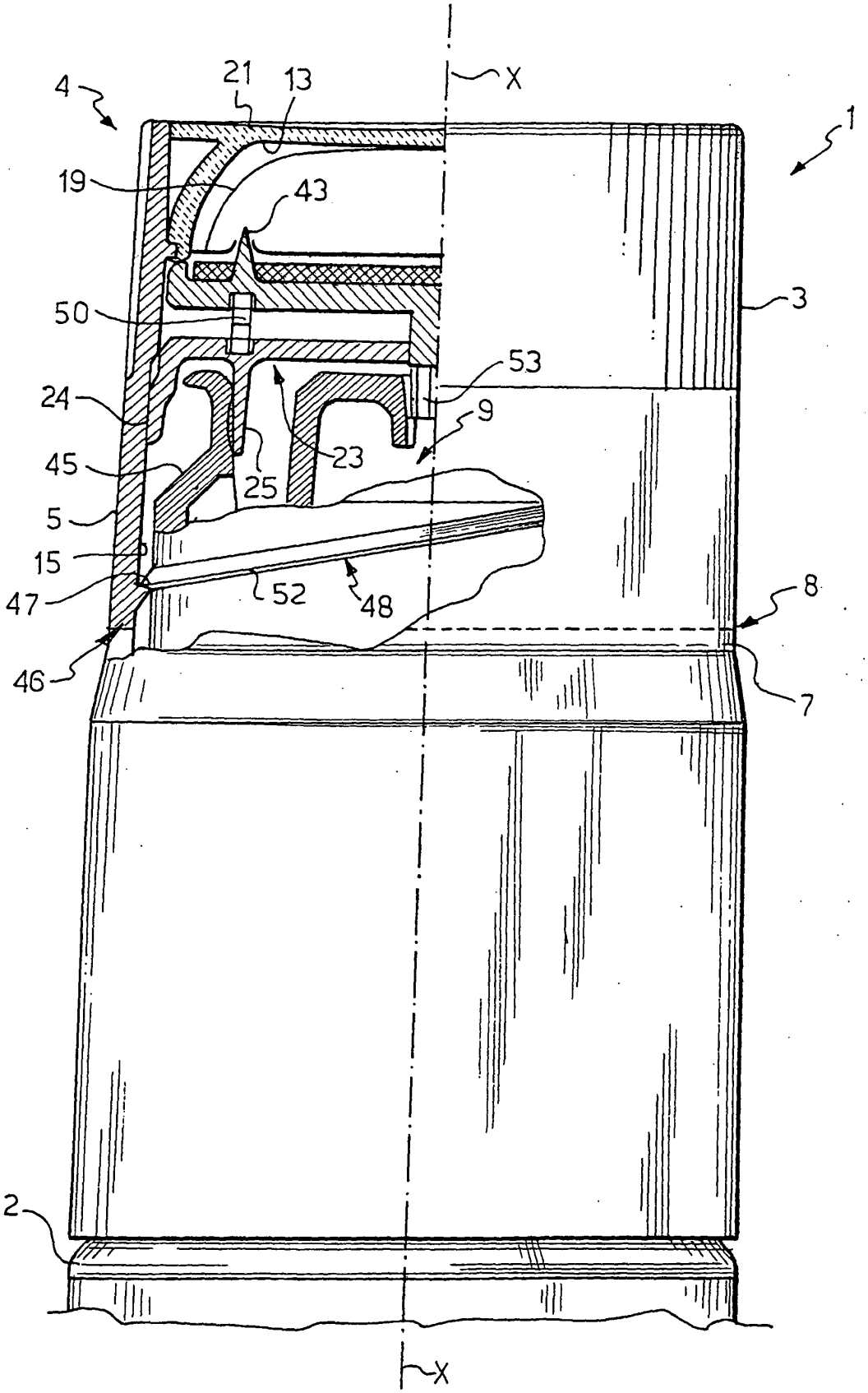


FIG.10

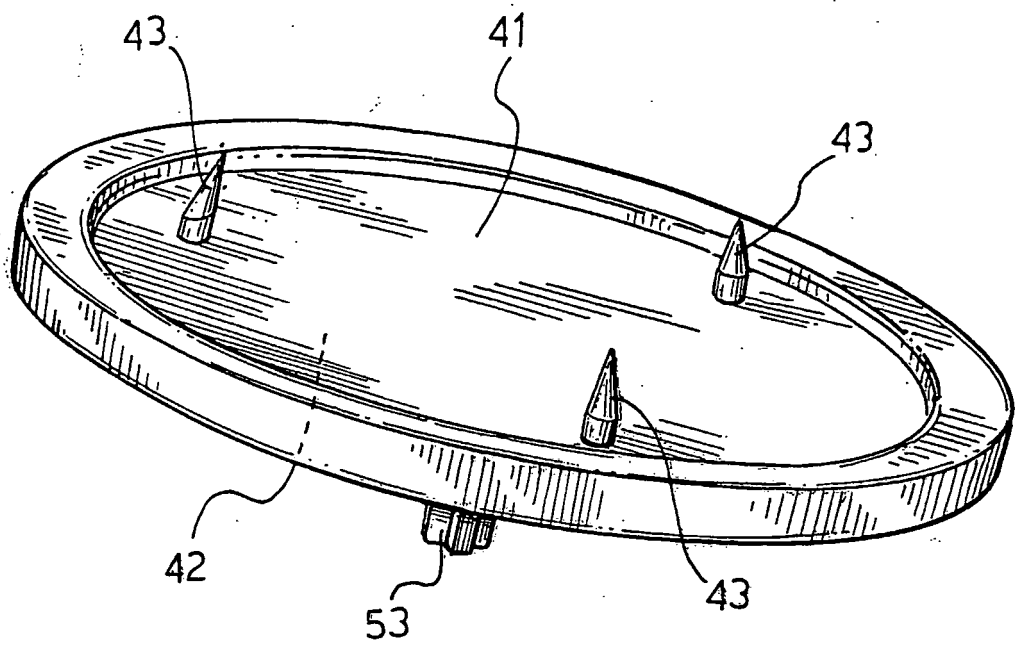


FIG.11

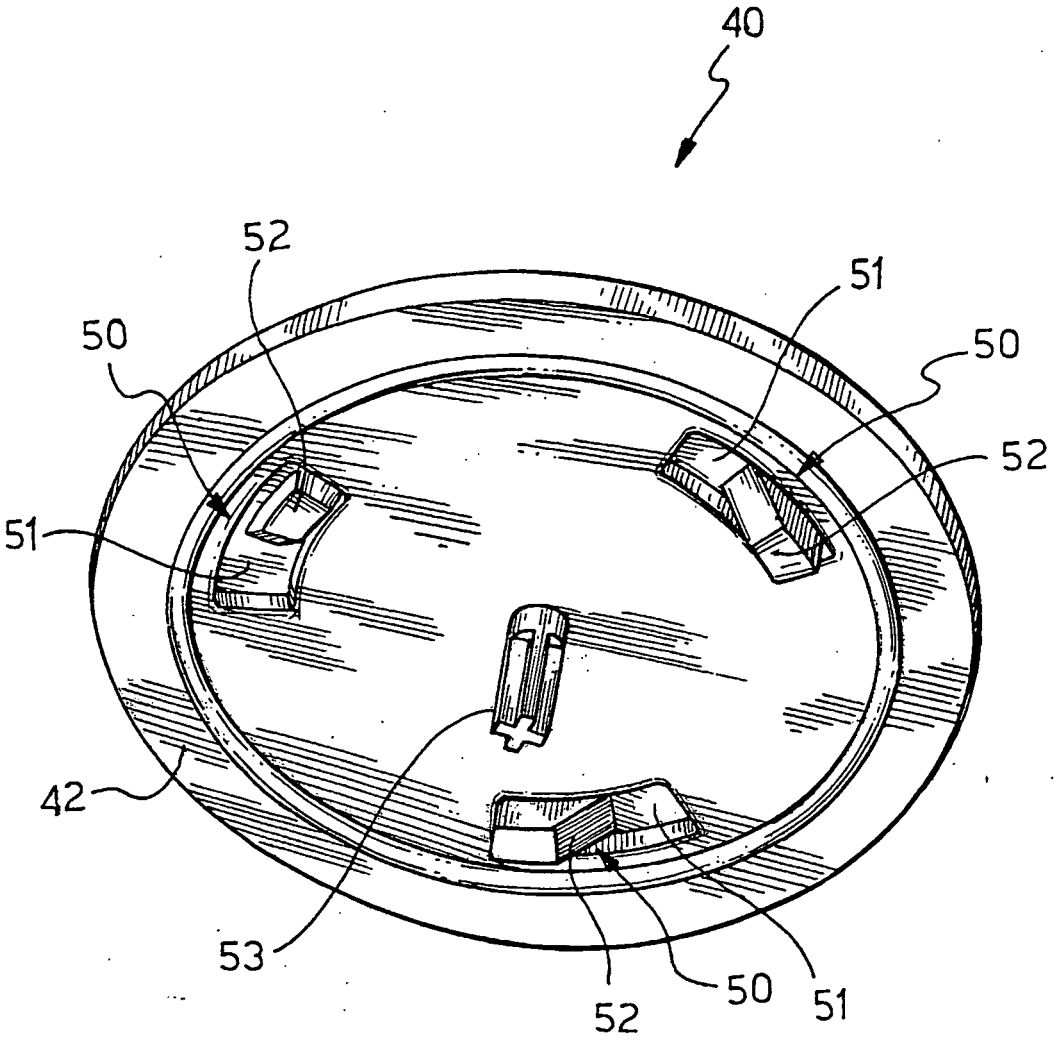


FIG.12