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

(11) EP 1 072 531 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
31.01.2001 Bulletin 2001/05

(51) Int. Cl.[7]: **B65D 75/58**

(21) Application number: **00116339.3**

(22) Date of filing: **27.07.2000**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **29.07.1999 IT RN990026**

(71) Applicant: **Poggi, Gino**
47824 Poggio Berni (Rimini) (IT)

(72) Inventor: **Poggi, Gino**
47824 Poggio Berni (Rimini) (IT)

(74) Representative: **Negrini, Elena**
Agazzani & Associati S.r.l.
Via dell'Angelo Custode 11/6
40141 Bologna (IT)

(54) Flexible container for liquids

(57) A liquid flexible container (1) includes a bag (2) for containing the liquid having a welded area (3), a tubular element (4) for delivering the liquid inserted in the welded area (3) and having a first end (4a) flowing into the bag (2) and a closing element (5) of the tubular element (4).

The welded area (3) has a protrusion (3a) extending until including the second end (4b) of the tubular element (4) and defining the closing element (5).

Between the welded area (3) and the protrusion (3a) a cut area (6) is provided for separating the protrusion (3a) from the bag (2).

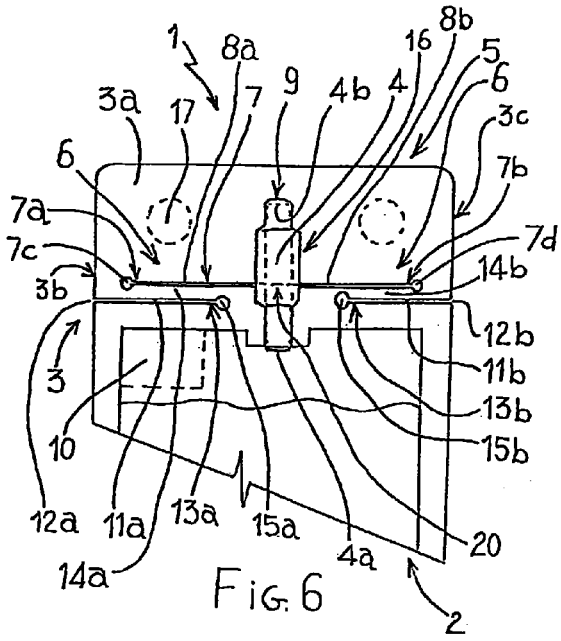

Fig. 6

EP 1 072 531 A2

Description

[0001] The invention refers to a liquid flexible container.

[0002] The liquid flexible containers are normally used for containing drinks, seasonings, medicinal, products for the personal hygiene, perfumes and cosmetics.

[0003] The bag of such containers is generally disposable and can be realized in a single piece or superimposing two sheets.

[0004] In the first case a single sheet is used, that is refolded and welded along the edges, except a part of suitable length to allow the filling of the bag with the desired liquid.

[0005] In the second case two separate sheets are joined and welded together, always leaving opened a portion of the edge for filling the bag

[0006] In both cases, after the filling, these containers are normally sealed in correspondence of the opened portion of the bag and can be subsequently opened, for the product fruition, simply tearing partially or totally the bag in proximity of an edge.

[0007] The containers above-described have some drawbacks.

[0008] Particularly when the contained liquid is constituted by a drink, the drink fruition causes problems, because the consumer usually brings the bag container directly to his mouth. In these conditions, due to the difficult regulation of the product pouring, a partial product loss occurs, or even a shedding onto the consumer wears. The containers cannot be closed again and, therefore, their content must be completely used or poured in other suitable container, but these conditions doesn't normally occur, because these containers are used in difficult conditions, such as exhibitions or sporting shows, for instance.

[0009] Liquid flexible containers are known, having a tubular element inserted partially in the bag in correspondence of a bag sealing for liquid pouring. Such tubular element is closed by a stopper. The stopper can be screwed to the tubular element and has a control seal in order to guarantee the first opening of the container.

[0010] This solution, besides allowing to close again the container, allows to drink the content easily and to reduce the risk to pour the liquid while opening the bag.

[0011] Therefore this type of bag container has drawbacks. The presence of the tubular element with the relative stopper makes, in fact, the container more rigid and increases its volume, with consequent limitation of the number of pieces that can be stored in a box or similar for the transport.

[0012] In another embodiment, the stopper is joined upside-down to the tubular element of the container. In this case, the container is opened breaking the stopper and closed again, once consumed part of the content, by means of the cup shape of the stopper. Inside the cup cavity of the stopper a pin, insertable in the tubular body to improve the closing, can be provided.

[0013] This solution doesn't guarantee the hygiene of the content, because the inside of the cup cavity of the stopper remains in contact with the outside until the first container opening.

[0014] The object of the present invention is to overcome the drawbacks above mentioned, providing a liquid flexible container which allows an easy opening and an easy consumption of the content and guarantees, on the other side, a hygienic closure of the same container.

[0015] These objects and others as well, that will better appear during the following description, are achieved, in accordance with the present invention, by a liquid flexible container, which is provided with a bag containing the liquid, having at least one welded area, a tubular element for the liquid pouring, inserted in the welded area and having a first end inside the bag, a closing element of the tubular element. The container has the welded area with a protrusion till to include the second end of the tubular element and defines the closing element, and a cut area is provided between the welded area and the protrusion for separating the bag protrusion.

[0016] Advantageously, at least one notch with a direction transversal to the tubular element in the cut area is provided, in order to facilitate the tear and the separation of the protrusion from the welded area.

[0017] Furthermore advantageously, the notch includes at least two portions disposed at the opposed sides with reference to the tubular element.

[0018] Furthermore the welded area has at least one cut substantially parallel and below the notch and having an initial end in correspondence of the first side edge of the welded area and a final end substantially spaced out from the tubular element; the portion of the welded area between the cut and the notch provides a flexible strip which keeps joined the bag to the closing element of the tubular element, after the opening of the container

[0019] The invention is described in following with reference to the drawings, showing an embodiment purely exemplifying and not restrictive.

- Figure 1 shows a schematic perspective view of a container at a closing position in accordance with the present invention;
- Figure 2 shows a detail of the container of Figure 1 at an opening position;
- Figure 3 shows a schematic perspective view of a second embodiment of the container at the closing position;
- Figure 4 shows a partial front view of a third embodiment of the container at the closing position;
- Figure 5 shows the container of figure 4 at the opening position;
- Figure 6 shows a partial front view of a fourth embodiment of the container at the closing position;

- Figure 7 shows the container of figure 6 at the opening position;
- Figure 8 shows a fifth embodiment of the container shown in figure 6;
- Figure 9 shows the detail of the second end of the tubular element in a sixth embodiment of the container.

[0020] With reference to the figures 1 and 2, a liquid flexible container 1, in accordance with the present invention, includes a bag 2 for containing the liquid, having at least one welded area 3. A tubular element 4 of liquid delivery is inserted in the welded area 3 and has a first end 4a coming into the bag 2.

[0021] In accordance with the present invention, the welded area 3 has a protrusion 3a, extending till to include the second end 4b of the tubular element 4 and defining a closing element 5.

[0022] A cut area 6 is placed between the welded area 3 and the protrusion 3a, in order to separate the protrusion 3a from the bag 2.

In accordance with the example of the realization shown in figures 1 and 2, advantageously, in the cut area 6 there is an notch 7 transversally displaced towards the tubular element 4, in order to facilitate the tear and the separation of the protrusion 3a of the welded area 3.

[0023] Such notch 7 extends from a first side edge 3b to a second side edge 3c of the welded area 3 and includes two notched lines 8a and 8b, spaced out between them and disposed at the opposed sides with reference to the tubular element 4.

[0024] Said lines 8a and 8b of the notch 7 extend to the tubular element 4, without interfering with the welded area 3 and its protrusion 3a in correspondence of the tubular element 4 and without putting in connection the outside with the inside of the container 1.

[0025] As shown in figure 2 the protrusion 3a of the welded area 3 has, in the opening position of the container 1, a cavity 9 for the insertion of the tubular element 4.

[0026] With reference to the figure 3, in a variant of the container 1, the notch 7 consists of a tear off line further including the two notched lines 8a and 8b. Besides the welded area 3, in correspondence of the its protrusion 3a, has a narrowing around the tubular element 4, in order to minimize the use of the bag material in case of large size containers.

[0027] With reference to the figures 4 and 5, in a third embodiment of container 1, the welded area 3 has at least a holding area 10 below the notch 7, in order to avoid liquid pouring during tearing.

[0028] A first end 7a of the notch 7 is located to a predefined distance from the first side edge 3b of the welded area 3. A second end 7b of the same notch 7 is in correspondence of the second side edge 3c of the welded area 3.

[0029] The notch 7 always includes the two notched lines 8a and 8b. Advantageously, the welded area 3 has, at the first end 7a of the notch 7, a crack arrester 7c with curved edges, in order to avoid the fracture propagation of the welded area 3, in correspondence of the first end 7a, when the container 1 is opened. The first crack arrester 7c may have an elliptical or circular shape.

[0030] The welded area 3 has a cut 11a, substantially parallel and below the notch 7. Such cut 11a has an initial end 12a in correspondence of the first side edge 3b of the welded area 3 and a final end 13a substantially spaced out from the tubular element 4. The fraction of the welded area 3, included between the cut 11a and the notch 7, defines a flexible strip 14a that maintains connected the bag 2 to the closing element 5 of the tubular element 4, after the opening of the container 1.

[0031] Advantageously, the welded area 3 has, at the end 13a of the cut 11a, a crack arrester 15a with curved edges, in order to prevent the welded area 3 fracture in correspondence of the end 13a of the cut 11a. The crack arrester 15a may have an elliptical or circular shape.

[0032] The protrusion 3a of the welded area 3 has a cavity 9, complementary shaped in comparison to the second end 4b of the tubular element 4, and a tubular portion 16 extending from said cavity 9. The tubular portion 16 has a transversal section wider than the transversal section of the tubular element 4, in order to facilitate the further insertion of the closing element 5 onto the tubular element 4 for the liquid delivery.

[0033] As shown in the figures 4-8, the lower end 4a of the tubular element 4 is located in correspondence of the border, between the welded area 3 and the inside of the bag 2, to allow the whole liquid consumption without leaving residual thereof in the container 1.

[0034] Furthermore, as shown in the figures from 4 to 8, the welded area 3 has, above the notch 7, at least one service hole 17 for hanging the bag 2 in a display.

[0035] With reference to the figures 6 and 7, a fourth embodiment of the container 1 differs from the previously described embodiment and shown in the figures 4 and 5, in having located also the second end 7b of the notch 7 to a predefined distance from the second side edge 3c of the welded area 3 and in including, besides the cut 11a, a second cut 11b, that is located at the opposed side respect to the tubular element 4 and has all the features of the cut 11a.

[0036] Particularly, the second cut 11b has an initial end 12b in correspondence of the second side edge 3c of the welded area 3 and a final end 13b substantially spaced out from the tubular element 4. The second cut 11b defines, with the notch 7, a second flexible strip 14b of the welded area 3, that co-operates with the first flexible strip 14a to maintain connected the bag 2 to the closing element 5, after the opening of the container 1.

[0037] Advantageously, the welded area 3 has a crack arrester 15b with curved edges at the end 13b of the cut 11b, in order to prevent the fracture of the

welded area 3, in correspondence of the final end 13b of the second cut 11b. The hole 15b may have an elliptical or circular shape.

[0038] Furthermore the welded area 3 has advantageously a second crack arrester 7d with curved edges, at the second end 7b of the notch 7, in order to avoid the fracture propagation of the welded area 3, in correspondence of the second end 7b, when the container 1 is opened. The second crack arrester 7d may have an elliptical or circular shape.

[0039] If the notch 7 is not too short because of the dimensions of the protrusion 3a of the welded area 3, the second cut 11b cannot be done. Once more, the notch 7 includes the two lines 8a and 8b.

[0040] With reference to the figure 8, a fifth embodiment of the container 1 differs from the previously described embodiment and illustrated in the figures 6 and 7, since it includes connection elements 18 between the two sides of the cut 11a and between the two sides of the cut 11b, in order to prevent the protrusion 3a of the welded area 3 bends inappropriately during the container placement into a transport box. Furthermore, according to the embodiment shown in figure 3, the notch 7 is constituted by a tear off line and includes the two notched lines 8a and 8b. The welded area 3 has a narrowing around the tubular element 4, in correspondence of its protrusion 3a.

[0041] Figure 9 shows the detail of the second end 4b of the tubular element 4 in a sixth embodiment of the container 1 having the second end 4b of the tubular element 4 which includes a stopper 19, putted on the same tubular element 4.

[0042] The operation of the liquid flexible container 1 object of the present invention, is as follow. Once gripped the container, the cut area 6 has to be managed to separate the protrusion 3a of the welded area 3 from the bag 2. Particularly in the embodiments shown in the figures, a torsion and a light traction on the protrusion 3a have to be exerted in order to break the protrusion, in correspondence of the notch 7.

[0043] More in the detail, the fracture is initiated in correspondence of the two notched lines 8a, 8b or the tear off line and extends along the direction defined by the notch 7, interesting also the portion 20 of the protrusion 3a, shown in the figures by means of a dashed line.

[0044] Advantageously, to avoid pouring liquid while tearing, the container 1 can be gripped using the holding area 10, arranged below the notch 7.

[0045] So the closing element 5 can be unthread from the tubular element 4, in order to use the content of the bag 2.

[0046] Furthermore, the closing element 5 is attached to the bag 2 by the means of the flexible strips 14a, 14b and can be rotated sideways or refolded on one side, without being lost, once unthread from the tubular element 4 during the liquid fruition.

[0047] The liquid is delivered by the tubular element 4. At the end of the use, the container 1 can be closed again steadily and tightly, inserting again the closing element 5 onto the tubular element 4 by means of the cavity 9. Advantageously, the presence of the tubular portion 16 allows a facilitated insertion, while the cavity 9, being complementary shaped in comparison to the tubular element 4, forces to press the closing element, determining a steady and hermetic closing of the container 1.

[0048] The invention achieves important advantages.

[0049] First of all, this solution is particularly simple since the container 1 has small dimensions and does not limit seriously the number of pieces that can be stored in a transport box or the like. The presence of the tubular element 4 allows an easy delivery of the liquid contained in the bag 2. The container 1 can be closed again, using the closing element 5. Furthermore, since the inside walls of the cavity 9 never become in contact with the outside before opening the container 1, the hygiene of the liquid contained therein is guaranteed.

[0050] While opening the liquid escapes from the container 1 are limited and a steady and hermetic closing of the same container 1 is realized after the opening.

[0051] Secondly, both when the protrusion 3a of the welded area 3 is torn off, in correspondence of the notch 7, and when the container 1 is reopened a second time, after its closure, there is no risk to lose the closing element 5, because of the presence of at least one flexible strip 14a, and the release of inopportune refusals in the environment is avoided.

[0052] The invention so conceived is susceptible of numerous changes and variations, all included in the inventive concept characterizing the invention.

[0053] So, for instance, the notch 7, the notched lines 8a and 8b composing this latter and the outline, does not be a passthrough openings, but they can only be superficial indentations of the container material. Such indentations can be made on side 3d of the welded area 3. Advantageously they can be made on both sides 3d, 3e of the welded area 3.

Claims

1. Liquid flexible container (1) including: a bag (2) for containing the liquid having at least a welded area (3); a tubular element (4) for delivering the liquid inserted in the welded area (3) and having a first end (4a) flowing into the bag (2); a closing element (5) of the tubular element (4), said container (1) being characterized in that the welded area (3) has a protrusion (3a) extending until including the second end (4b) of the tubular element (4) and defining the closing element (5), between the welded area (3) and the protrusion (3a), being provided at least a cut area (6) to separate the protrusion (3a) from the bag (2).

2. Container according to claim 1 characterized in that

at least one notch (7), transversally directed towards the tubular element (4), is provided in the cut area (6) to facilitate the tear off and the separation of the protrusion (3a) of the welded area (3).

3. Container according to claim 2 characterized in that the notch (7) includes at least two notched lines (8a, 8b) located at the opposed sides with reference to the tubular element (4).

4. Container according to claim 2 characterized in that the notch (7) consists of a tear off line.

5. Container according to claim 2 or 3 characterized in that a first end (7a) of the notch (7) is situated to a predefined distance from a first side edge (3b) of the welded area (3).

6. Container according to claim 5 characterized in that the welded area (3) has at the first end (7a) of the notch (7) a first crack arrester (7c) with curved edges, in order to prevent the fracture of the welded area (3), in correspondence of the first end (7a) of the notch (7).

7. Container according to claim 5 characterized in that a second end (7b) of the notch (7) is situated to a predefined distance from a second side edge (3c) of the welded area (3).

8. Container according to claim 7 characterized in that the welded area (3) has at the second end (7b) of the notch (7) a second crack arrester (7d) with curved edges, in order to prevent the fracture of the welded area (3) in correspondence of the second end (7b) of the notch (7).

9. Container according to claim 5 or 7 characterized in that the welded area (3) has at least a cut (11a) substantially parallel and below the notch (7), and having an initial end (12a) in correspondence of the first side edge (3b) of the welded area (3) and a final end (13a) substantially spaced out from the tubular element (4), with the portion of the welded area (3) between the cut (11a) and the notch (7) defining a flexible strip (14a) keeping connected the bag (2) to the closing element (5) of the tubular element (4), after the container opening.

10. Container according to claim 9 characterized in that the welded area (3) includes at least a connection element (18) between two sides of the cut (11a).

11. Container according to claim 9 characterized in that the welded area (3) has, at the final end (13a) of the cut (11a), a crack arrester (15a) with curved edges, in order to prevent the welded area (3) fracture in correspondence of the end (13a) of the cut (11a).

12. Container according to claim 9 characterized in that includes two cuts (11a, 11b) located at the opposite sides with reference to the tubular element (4).

13. Container according to claim 1 or 2 or 3 or 5 or 7 or 9 characterized in that the protrusion (3a) of the welded area (3) includes: a cavity (9) complementary shaped with respect to the second end (4b) of the tubular element (4); a tubular portion (16) extending from said cavity (9) and having a transversal section wider than the transversal section of the tubular element (4) for facilitating the insertion of the closing element (5) into the tubular element (4) for the liquid delivery.

14. Container according to claim 1 or 2 or 3 or 5 or 7 or 9 characterized in that the second end (4b) of the tubular element (4) includes a stopper (19).

15. Container according to claim 1 or 2 or 3 or 5 or 7 or 9 or 13 or 14 characterized in that the welded area (3) has at least a holding area (10) below the notch (7) to avoid liquid pouring while tearing.

16. Container according to claim 1 or 2 or 3 or 5 or 7 or 9 or 13 or 14 or 15, characterized in that the welded area (3) has above the notch (7) at least a service hole (17) for hanging the bag (2) to a display.

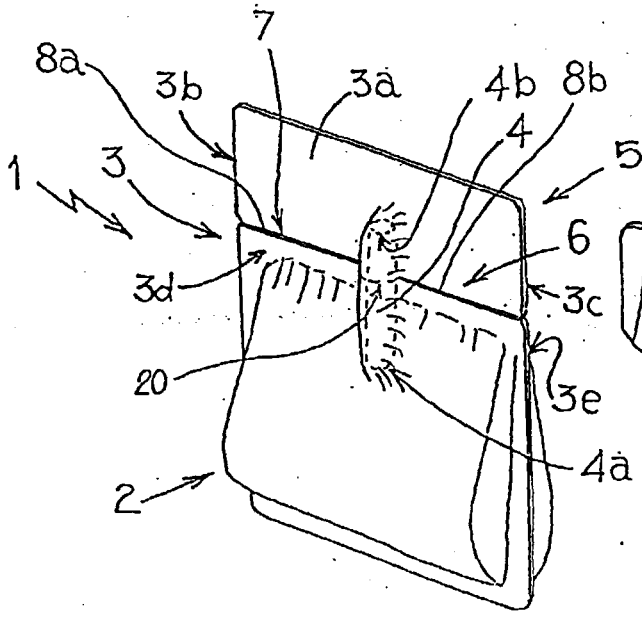

Fig. 1

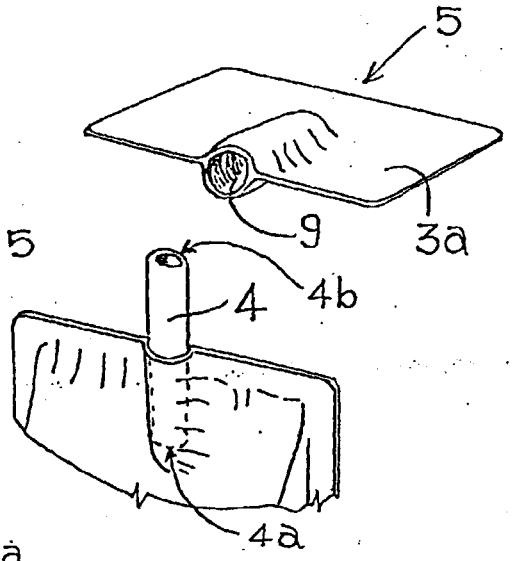

Fig. 2

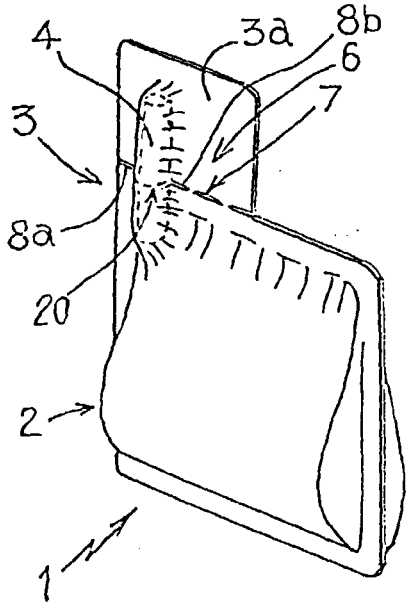

Fig. 3

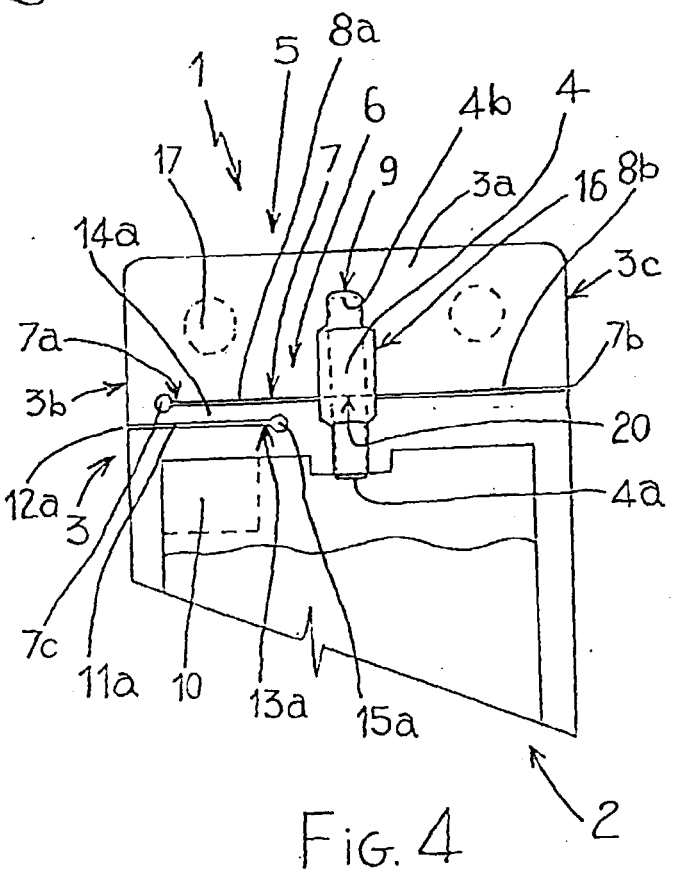

Fig. 4

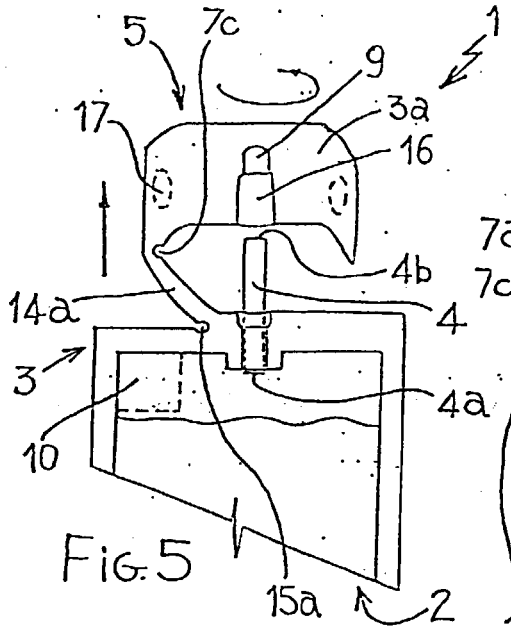

Fig.5

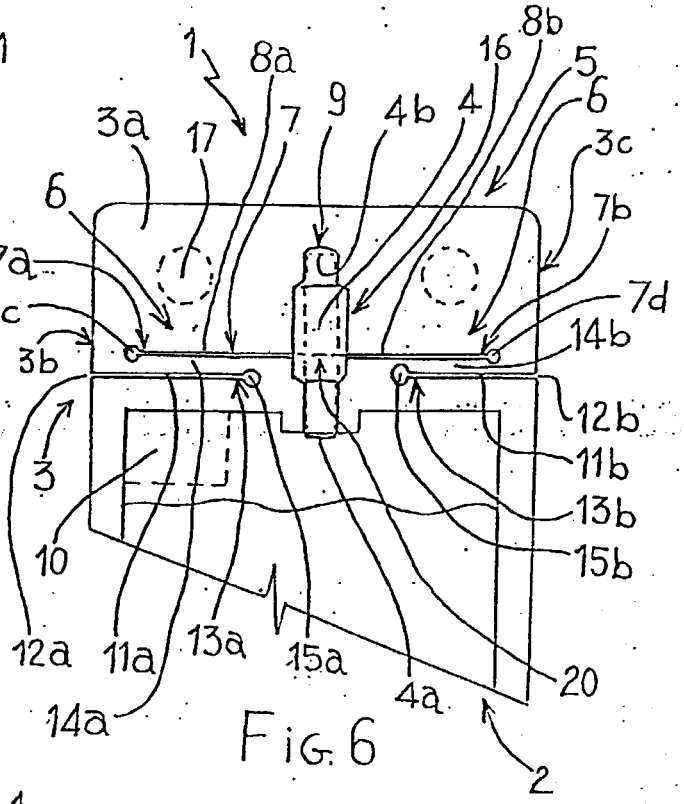

Fig.6

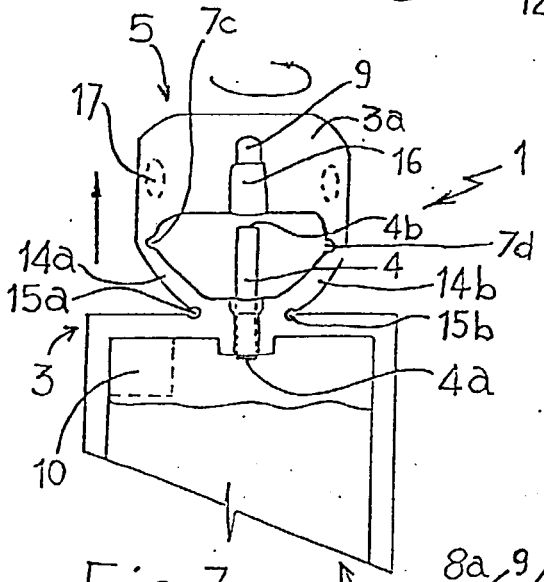

Fig.7

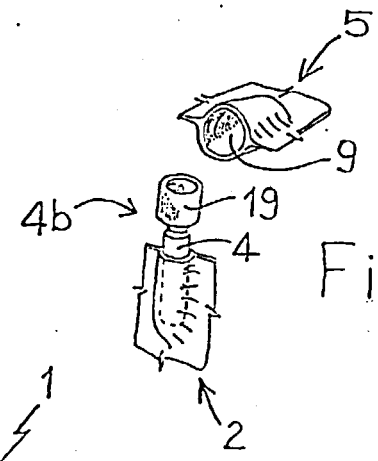

Fig.9

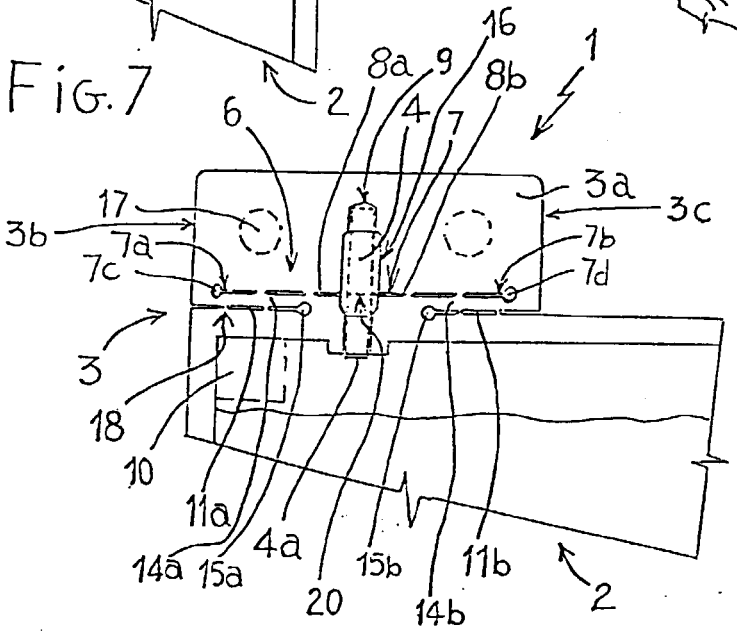

Fig.8