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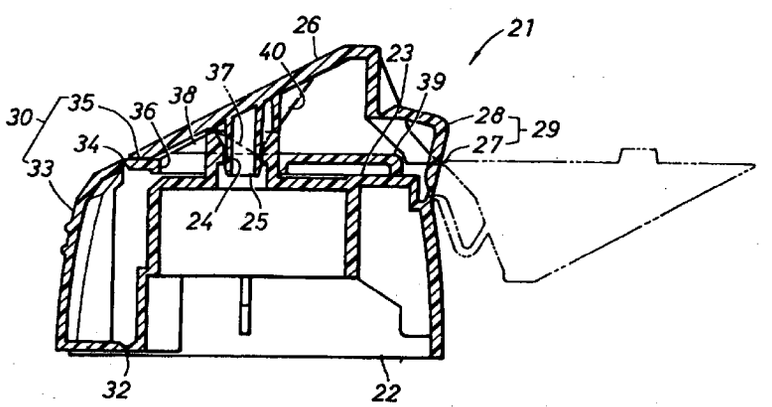
(54) Container cap including a primary cap and a secondary cap joined by a hinge

(57) Provided is a convenient container cap which can be integrally molded from synthetic resin material, and comprises a primary cap (22) adapted to be fitted on an opening of a container and provided with an outlet opening (24) in a top wall (23) thereof, and a secondary cap (26) attached to the primary cap (22) with a reversible hinge (29) and provided with a plug member (25) adapted to be fitted into the outlet opening (24) of the primary cap (22). A slide member (35) is also integrally attached to the primary cap (22) for enabling to open the secondary cap (26) with a single hand, without increasing the number of component parts or complicating the assembling process.

Fig. 5



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Description

The present invention relates to a cap adapted to be fitted on an opening of a container for foods, drugs and cosmetics, and in particular to a cap having a secondary cap hinged to a primary cap via a reversible hinge which reverses the resilient urging force thereof from a opening direction to a closing direction or vice versa depending on the angular position of the cap.

A cap made of synthetic resin material is often fitted on an opening of a container for foods, drugs and cosmetics. The cap often consists of a primary cap having an outlet opening at a top wall thereof, and a secondary cap adapted to close this outlet opening.

For instance, Japanese utility model publication (kokai) No. 1-66355 discloses a container cap including a primary cap 1 and a secondary cap 2 which are joined together by a pair of flexible hinge strips 3a having a reduced thickness, and also by a resilient piece 3b so that the direction of the biasing force of the resilient piece may be reversed from the closing direction to the opening direction and vice versa depending on the angular position of the secondary cap. This utility model publication also discloses a plate member 4 which is slidably guided on a top surface of the primary cap and provided with a tapered surface 5, and allows the secondary cap to be opened up with a single hand by pushing the plate member which in turn pushes up the secondary cap with its tapered surface and pushes the inner surface of the resilient piece 3b with a free end 6 thereof

However, according to this prior art, the thinned hinge portions show on the exterior in two places, and the resilient piece protrudes outward when the secondary cap is opened. These facts are highly detrimental to the external appearance. This conventional cap provides the advantage of allowing the secondary cap to be opened up with a single hand but involves a large number of fabricating and assembling work steps and a complex management of the component parts because a slidable member is made of a separate member, and needs to be molded separately and assembled to the primary cap.

In view of such problems of the prior art, a primary object of the present invention is to provide a container cap including a primary cap and a secondary cap joined by a reversible hinge which minimizes the part of the hinge showing on the exterior of the container and having no pronounced external protrusions.

A second object of the present invention is to provide a container cap including a primary cap and a secondary cap joined by a reversible hinge which can be opened up with a single hand, and can be made from a small number of component parts.

A third object of the present invention is to provide a container cap including a primary cap and a secondary cap joined by a reversible hinge which is convenient to use and easy to fabricate.

According to the present invention, there is provided a container cap integrally molded from synthetic resin material, comprising: a primary cap adapted to be fitted on a opening of a container, and provided with an outlet opening in a top wall thereof; a secondary cap attached to the primary cap with first hinge means, and provided with a plug member adapted to be fitted into the outlet opening of the primary cap; a slide member attached to the primary cap, diagonally opposite to the secondary cap, with second hinge means; and guide means for slidably guiding the slide member along a upper surface of the primary cap; the slide member being provided with slope means cooperating with an associated slope means provided in the secondary cap for converting a sliding movement of the slide member into an upward movement of the secondary cap, the first hinge means being configured as a reversible hinge which reverses a direction of a biasing force thereof at a certain critical opening angle of the secondary cap.

According to this structure, the primary cap, the secondary cap, the pressure member and the slide member can be all integrally molded from synthetic resin material. Furthermore, the secondary cap can be opened up with a single hand, and the entire cap assembly can be made from a small number of component parts or from a single component part.

According to a preferred embodiment of the present invention, the second hinge means is provided in a lower part of the primary cap, and the slide member further comprises a pressure member provided adjacent the second hinge means, and extending along a side wall of the primary cap so that the sliding movement of the slide member may be effected by pressing the pressure member toward the side wall of the primary cap. To achieve a favorable external appearance, the pressure member and a surrounding part of the primary cap may be configured so as to define a continuous contour.

It is also advantageous if the slide member generally overlies the outlet opening, and is provided with a slot exposing the outlet opening. Preferably, the slide member is received in a complementary recess provided in an upper surface of the primary cap. The slide member is required to be guided without rising out of the complementary recess during use, and it can be accomplished by providing a structure in which the guide means comprises a pair of lateral projections provided on either side of the slide member, and guide slots provided in side walls of the complementary recess for receiving the lateral projections.

According to one aspect of the present invention, the secondary cap can be lifted by moving the slide member which actuates the slope means, and further pushes the first hinge means to force the secondary cap in an opening direction. The slope means may comprise a pair of projections provided on an upper surface of the slide member on either side of the slot exposing the outlet opening, each defining a sloping surface, and the associated slope means may comprise a pair of projec-

tions provided on a inner surface of the secondary cap defining additional sloping surfaces each adapted to cooperate with a associated one of the sloping surfaces.

Now the present invention is described in the following with reference to the appended drawings, in which:

Figure 1 is a plan view of the container cap according to the present invention in its molded state;
Figure 2 is a bottom view of the container cap of Figure 1 in its molded state;
Figure 3 is a longitudinal sectional view of the container cap of Figure 1 in its molded state;
Figure 4 is a perspective view of the container cap of Figure 1 in its assembled state;
Figure 5 is a longitudinal sectional view of the container cap of Figure 1 with the secondary cap closed; and
Figure 6 is a longitudinal sectional view of the container cap of Figure 1 with the secondary cap opened.

Figures 1 to 3 show the container cap according to the present invention. The cap 21 is injection molded in the developed or unfolded condition as shown in these drawings, and comprises a primary cap 22 which is generally cylindrical and cup-shaped and adapted to be fitted onto an opening of a container main body (not shown in the drawings) and a secondary cap 26 having a plug member 25 for closing an outlet opening 24 provided in a top wall 23 of the primary cap 22. The cap 21 is integrally molded from highly resilient synthetic resin material such as polypropylene.

The primary cap 22 and the secondary cap 26 are connected with each other via a reversible hinge 29 consisting of a pair of flexible hinge portions 27 and an L-shaped resilient piece 28 so that the elastic biasing force acting on the secondary cap 26 may reverse its direction from the closing direction to the opening direction and vice versa at a certain critical opening angle.

The primary cap 22 is integrally molded with a push opener 30 which consists of a pressure member 33 connected to a lower portion of a side wall 31 of the primary cap 22 via a hinge portion 32, and a slide member 35 connected to a free end of the pressure member 33 via a hinge portion 34. The slide member 35 is provided with a slot 36 fitted on a annular projection of the outlet opening 24 in a middle part thereof, a pair of projections 38 each provided with a tapered surface 37 on an upper surface thereof and arranged on either side of the slot 36, and an abutting piece 39 extending from a free end of the slide member 35.

An inner surface of the secondary cap 26 is provided with a plug member 25 projecting therefrom and adapted to be fitted into the outlet opening 24 of the primary cap 22 as mentioned previously, and a pair of triangular projections 40 which can engage with the tapered surfaces 37 of the projections 38 of the slide member 35.

A pair of lateral projections 41 are provided on either side of the slide member 35, and can engage with slots 43 provided on either inner side of a complementary slide member receiving recess 42 formed in the top wall of the primary cap 22.

Now the operation of this embodiment is described in the following. First of all, the pressure member 33 in its unfolded condition is bent at the hinge portion 32, and is placed against the side wall 31 of the primary cap 22. The slide member 35 is then bent at the hinge portion 34, and placed against the top wall 23 of the primary cap 22. By pushing the lateral projections 41 provided on the lateral sides of the slide member 35 into the slots 43 provided on the inner sides of the complementary slide member receiving recess 42, the slide member 35 is prevented from rising (refer to Figure 4). In this condition, the primary cap 22 is fitted onto the opening of a container main body in advance.

The secondary cap 26 is turned about the reversible hinge 29, and the tip of the plug member 25 on the inner side of the secondary cap 26 is fitted into the outlet opening 24 of the primary cap 22. The tip of the plug member 25 is slightly oversized as compared to the outlet opening 24, and can be kept engaged in the outlet opening 24 by virtue of its own elasticity in a liquid tight condition (Figure 5). The outlet opening 24 is also provided with an annular lip which contributes to the resilient tight fit of the plug member 25 in the outlet opening 24. When the secondary cap 26 is fully closed as illustrated in Figure 5, the reversible hinge 29 produces an elastic biasing force which tends to close the secondary cap 26.

When the pressure member 33 is pressed, the slide member 35 makes a sliding movement, and the tapered surfaces 37 of the projections 38 of the slide member 35 engage the corresponding tapered surfaces of the projections 40 on the inner surface of the secondary cap 26 , thereby pushing up the secondary cap 26. As a result, the plug member 25 is disengaged from the outlet opening 24. In this condition, the reversible hinge 29 produces an elastic biasing force which still tends to close the secondary cap 26.

When the pressure member 33 is further pressed, the projecting piece 39 on the free end of the slide member 35 pushes the inner surface of the reversible hinge 29, in particular the inner surface of the resilient piece 28, and opens the secondary cap 26. When the secondary cap 26 is fully opened, the reversible hinge 29 produces an elastic biasing force which tends to keep the secondary cap 26 open, and the secondary cap 26 is thereby kept open as illustrated in Figure 9. When the pressure member 33 has ceased to be pressed, the slide member 35 and the pressure member 33 are automatically returned to their initial positions by the restoring forces of the respective hinge portions 32 and 34.

When the secondary cap 26 is desired to be closed, the secondary cap 26 is turned with a finger, and the tip

of the plug member 25 is fitted into the outlet opening 24 of the primary cap 22.

Thus, according to the present invention, the container cap can be integrally molded from synthetic resin material, and can be opened up with a single touch with the result that the handling of the cap can be significantly improved without increasing the necessary number of component parts.

Although the present invention has been described in terms of specific embodiments, it is possible to modify and alter details thereof without departing from the scope of the present invention. For instance, the outlet opening of the primary cap was closed by a plug member projecting from the inner surface of the secondary cap in the above described embodiment , but it can be replaced with other equivalent structures. For instance, the inner surface of the secondary cap may be provided with a cup shaped closure member, instead of a plug member, which fits onto an annular boss surrounding the outlet opening of the primary cap.

Claims

1. A container cap integrally molded from synthetic resin material, comprising:

   a primary cap adapted to be fitted on an opening of a container, and provided with an outlet opening in a top, wall thereof;
   a secondary cap attached to said primary cap with first hinge means, and provided with a plug member adapted to be fitted into said outlet opening of said primary cap;
   a slide member attached to said primary cap, diagonally opposite to said secondary cap, with second hinge means; and
   guide means for slidably guiding said slide member along an upper surface of said primary cap;
   said slide member being received in a complementary recess provided in an upper surface of said primary cap, and said guide means comprising a pair of lateral projections provided on either side of said slide member, and guide slots provided in side walls of said complementary recess for receiving said lateral projections;
   said slide member being provided with slope means cooperating with an associated slope means provided in said secondary cap for converting a sliding movement of said slide member into an upward movement of said secondary cap, said first hinge means being configured as a reversible hinge which reverses a direction of a biasing force thereof at a certain critical opening angle of said secondary cap.

2. A container cap according to claim 1, wherein said second hinge means is provided in a lower part of said primary cap, and said slide member further comprises a pressure member provided adjacent said second hinge means, and extending along a side wall of said primary cap so that said sliding movement of said slide member may be effected by pressing said pressure member toward said side wall of said primary cap.

3. A container cap according to claim 2, wherein said pressure member and a surrounding part of said primary cap are configured so as to define a continuous contour.

4. A container cap according to claim 1, wherein said slide member further comprises an abutting piece provided in a free end of said slide member for pushing said first hinge means to force said secondary cap in an opening direction.

5. A container cap according to claim 1, wherein said slide member generally overlies said outlet opening, and is provided with a slot exposing said outlet opening.

6. A container cap according to claim 1, wherein said slope means comprises a pair of projections provided on an upper surface of said slide member on either side of said slot exposing said outlet opening, each defining a sloping surface, and said associated slope means comprises a pair of projections provided on an inner surface of said secondary cap defining additional sloping surfaces each adapted to cooperate with an associated one of said sloping surfaces.

Fig. 1

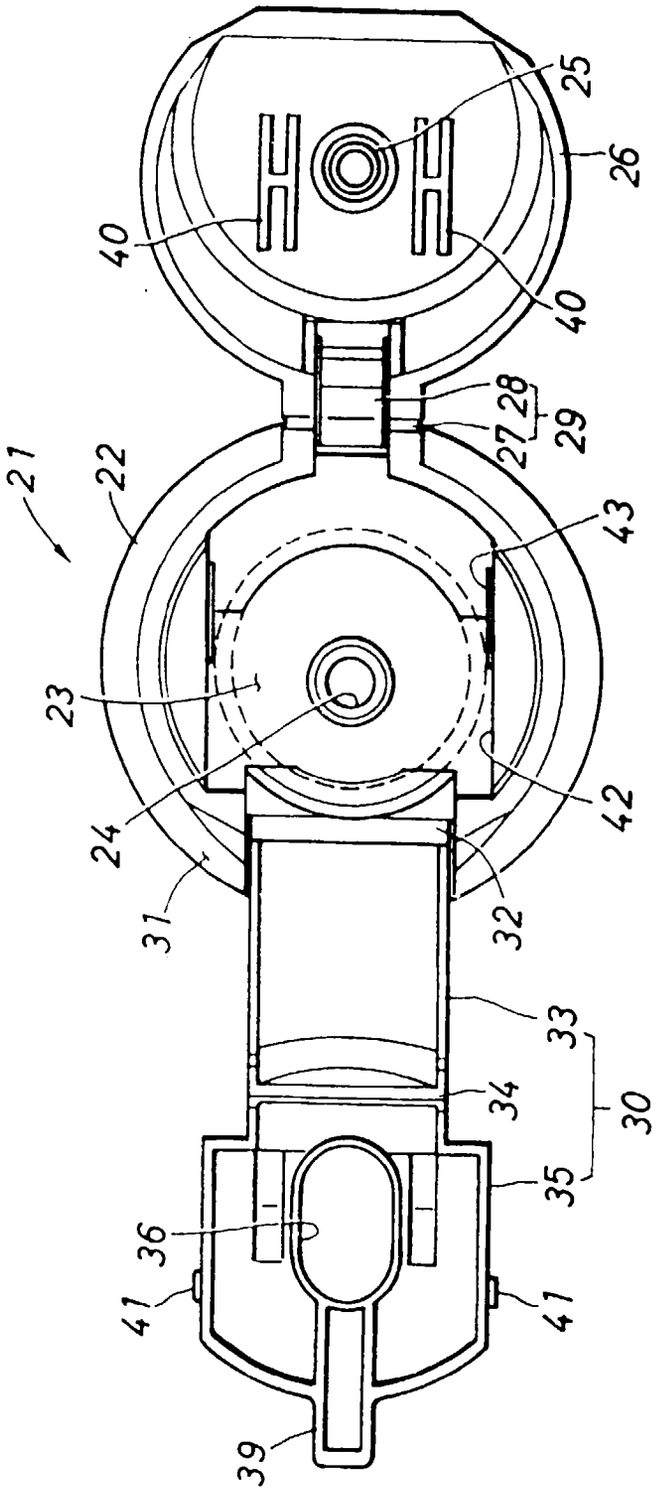


Fig. 2

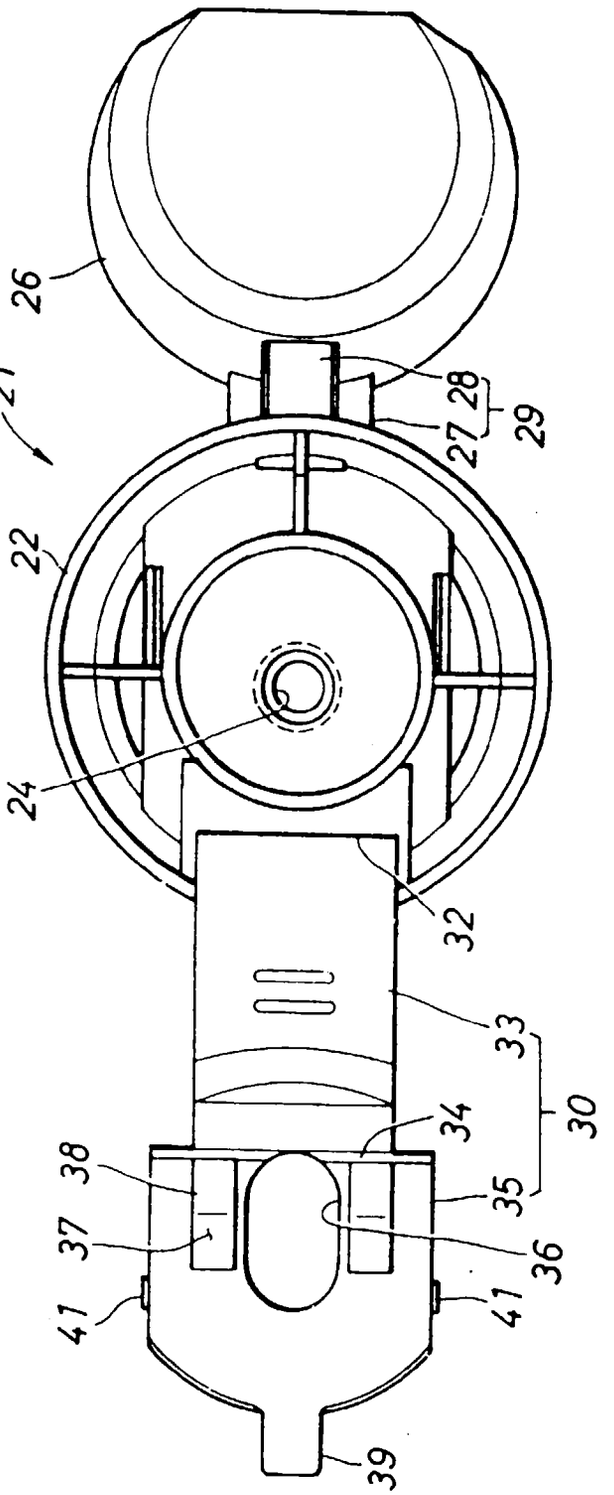


Fig. 3

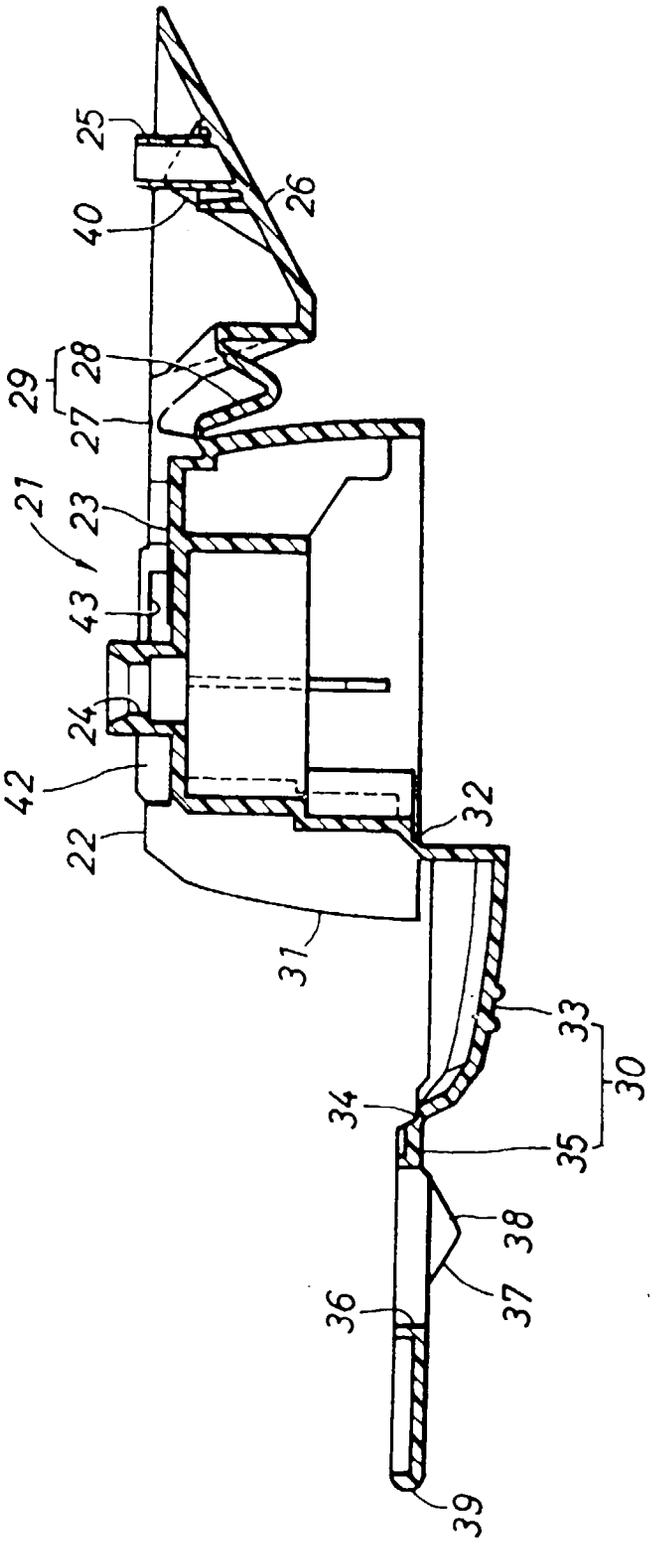


Fig. 4

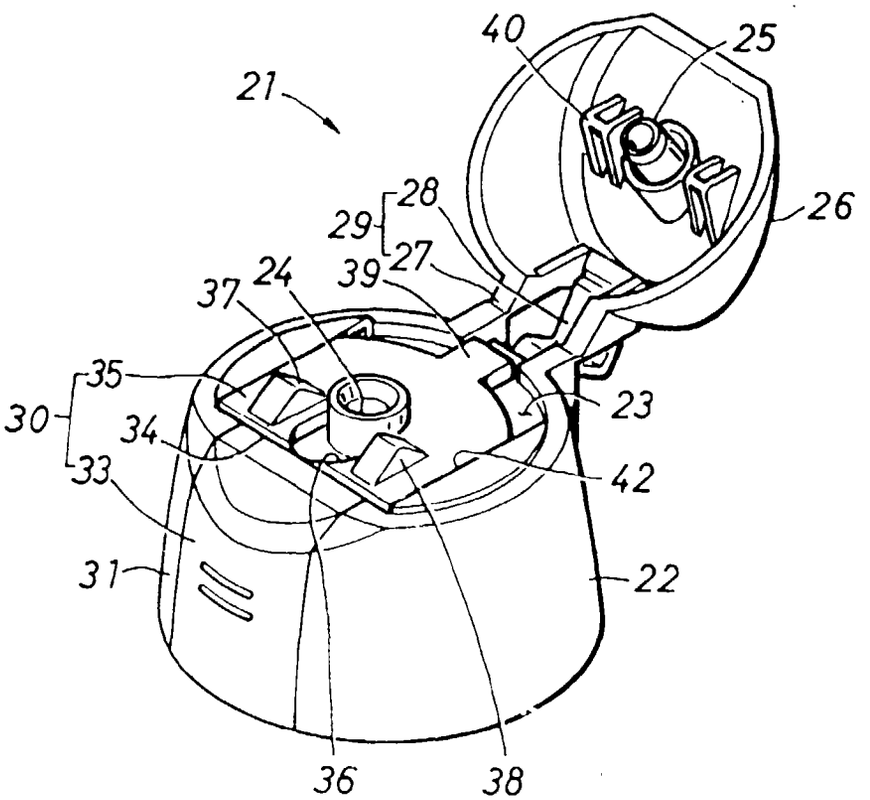


Fig. 5

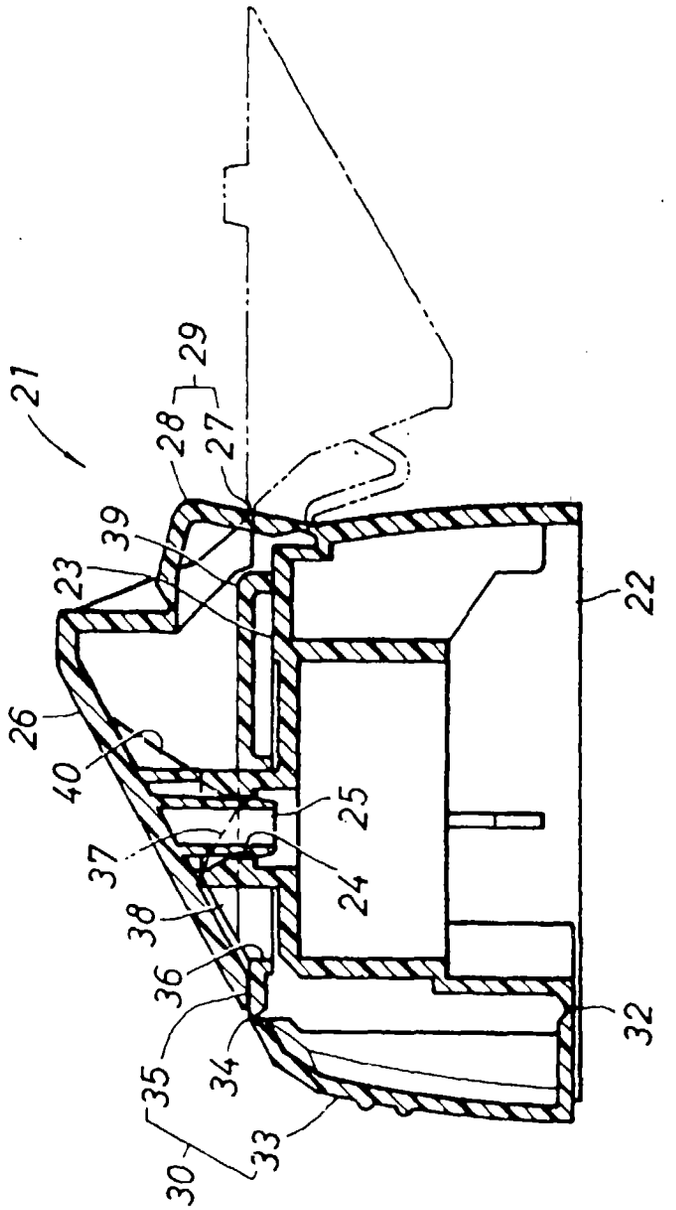
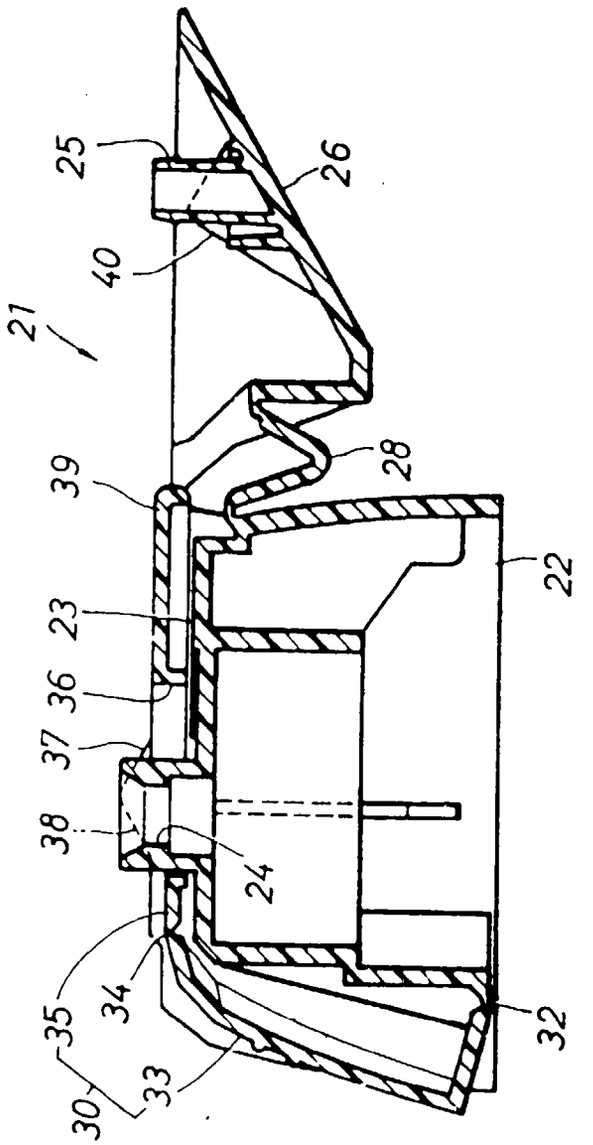


Fig. 6



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EUROPEAN SEARCH REPORT

Application Number
EP 97 20 2574

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	EP 0 547 978 A (L'OREAL) * column 4, line 9 - column 6, line 44; figures 9,10 * ---	1-6	B65D47/08
A,D	JP 00 166 355 U (YOSHINO) * figures * -----	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	4 November 1997	Bridault, A

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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