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

(11) Publication number : **0 629 562 A1**

# (12) EUROPEAN PATENT APPLICATION

(21) Application number : **94304226.7**

(51) Int. Cl.[5] : **B65D 83/04**

(22) Date of filing : **13.06.94**

(30) Priority : **17.06.93 GB 9312493**

(43) Date of publication of application :
**21.12.94 Bulletin 94/51**

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

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## (54) Dispensing device.

(57) A dispensing device (10), for example for pills, tablets or capsules containing medicament, comprises a store part (11) and an operating part (12). When these are brought into engagement a rib (22) on part (12) enters a narrow recess (34) in part (11) and slidably moves operating member (33) to allow an object (40) to pass through outlet aperture (31) from store (11) and fall into receiving zone (20) in part (12). The member (33) blocks further dispensing until the parts have been separated and re-engaged. The movement of member (33) disturbs the objects to assist in orienting them for entry into an assembly channel (37) leading to aperture (31). An embodiment with a rotary operating member is described,

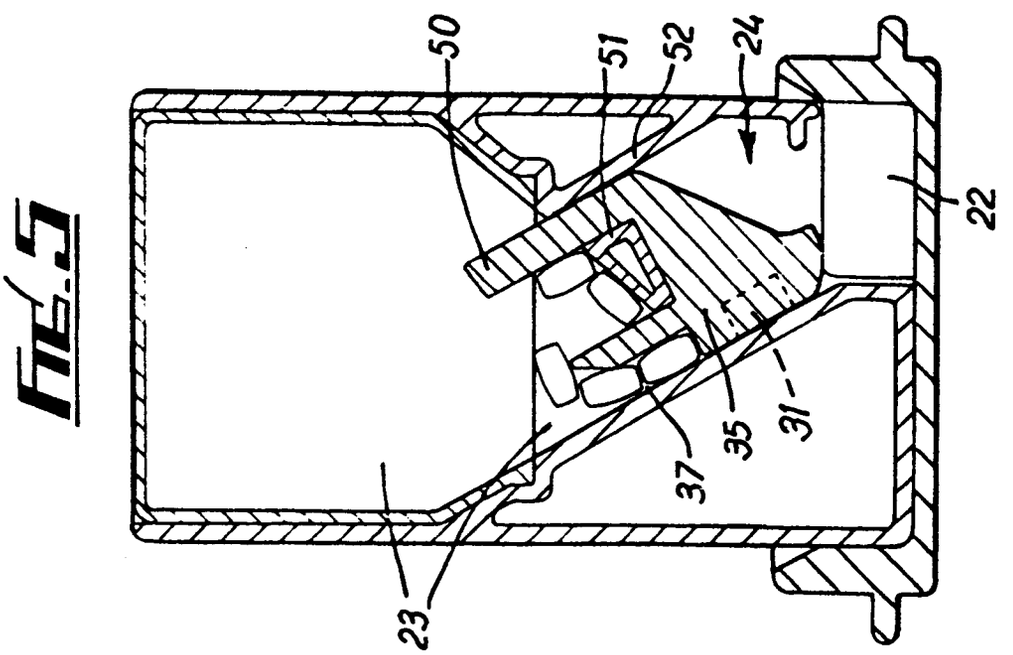


Fig.5

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This invention relates to dispensing devices for objects, for example for pills, tablets or capsules containing medicament.

According to this invention a device for dispensing objects comprises a store part for receiving objects to be dispensed, and a separate operating part, the store and operating parts being movable into and out of co-operative engagement to dispense an object from the store part.

The object may be dispensed when the parts move into cooperative engagement.

The operating part may be adapted to receive an object as the object is dispensed.

The operating part may comprise an upwardly open receptacle which faces upwards when the object is dispensed.

The store part may be adapted to confine the objects in a single plane.

The store part may comprise a dispensing aperture, the operating part including a movable member blocking exit from the aperture when the store and operating parts are disengaged and movable on engagement of the parts to unblock the aperture.

The movable member may be adapted, on engagement of the parts, to block entry into the aperture of a further object.

The store part may comprise a channel for receiving objects in aligned orientation and communicating with the aperture.

The channel may be in part defined by the movable member.

The movable member may be adapted, on engagement of the parts, to disturb objects in the store part.

The movable member may comprise two portions adapted to disturb the objects at different locations.

There may be means for biasing the movable member to a position blocking exit from the aperture.

The operating part may include an operating element engageable with the movable member on co-operative engagement of the parts, the operating element entering into a recess in the store part.

The recess may be sized and shaped to correspond closely to the shape of the operating element.

The invention may be performed in various ways and two specific embodiments with possible modifications will now be described by way of example with reference to the accompanying drawings, in which:

| | |
|---|---|
| Fig. 1 | is a perspective view of a dispensing device with sections of the device shown separated; |
| Fig. 2 | is a part section of the device in separated condition and viewed from one side; |
| Fig. 3 | is a view similar to Fig. 2 with the sections in cooperative engagement; |
| Figs. 4, 5 | are similar to Figs. 2, 3 but viewed from the other side; |
| Figs. 6, 7 | are transverse sections showing the separated and co-operating positions; |
| Fig. 8 | shows in section a further device with sections in engagement; and |
| Fig. 9 | shows part of Fig. 8 in separated condition. |

A dispenser 10 for small objects, for example capsules, tablets or pills containing medicament, comprises a store part 11 and a receiver and operating part 12. In order to dispense an object, the store part 11 and receiver and operating part 12 are brought into co-operative engagement and an object is transferred or dispensed from the store to the receiver. Preferably a user can only remove the dispensed object from the receiver after the store and receiver parts have been disengaged.

As shown, the receiver part 12 has a flat base 13 for resting on a flat surface and a wall 14 upstanding from the upper surface 15 of the base 13 and generally providing four sides 16, 17, 18, 19, defining a receiving zone 20 generally rectangular as seen in plan. Sides 17, 19 may as shown be partly cut away at 20a in a central part which may also include recesses 21 in the base. The wall 14 has a peripheral flange 13a. A vertical rib 22 upstands in the zone 20.

The store part 11 includes external ribs 11a (not shown in Figs. 2 to 5) and comprises an upper housing region 23 and a lower dispensing region 24. The store 11 may be a self contained unit intended to be disposed of when all the objects initially contained therein have been dispensed but preferably the store part 11 is arranged to removably receive a container 25 for the objects having for example a peel-off element 26 closing an outlet 27. With the store 11 inverted from the position shown in Fig. 1 and the element 26 removed, the store 11 can be slid over the container 25 and the assembly returned to the position shown in Fig. 2 when the objects pass into the lower part of housing region 23. When empty, the container 25 can thus be removed and replaced by another full similar container.

The dispensing region includes an internal wall 30 having an aperture 31 therein through which an object is dispensed. When the store part 11 is disengaged from the receiver part 12 (Figs. 1, 2, 4, 6) the aperture 31 is closed (Fig. 6) on one side by section 32 of a movable member or dispensing element 33 which is mounted for sliding movement in the dispensing region. When the parts 11, 12 are engaged, the flat rib 22 enters into a correspondingly shaped recess 34 (Fig. 1) in the part 11 and engages a lower part 35 of the member 33 (Figs. 4, 7) to move the member 33 upwards so that section 32 is moved away from the aperture 31 and an object 40 is allowed to pass through the aperture 31 and fall into the zone 20 in the receiver 12 (Fig. 7). When the

member 33 is moved upwards, another section 36 thereof slides in an assembly channel 37 formed between walls 38, 39 to block entry to the aperture 31 (Fig. 7) and thus prevent any further objects being dispensed until the parts 11, 12 have been disengaged. When these parts are disengaged the member 33 may descend under gravity to the Fig. 6 position, allowing a further object 40a to move down the assembly channel 37 into the aperture 31 ready to be dispensed when the member 33 is next moved upwards. The descending movement of the member 33 may be assisted by gentle shaking of the part 12 but spring means may be provided biasing the member 33 downwards. As shown, the member 33, which may be of plastics, includes an elongate bendible portion 42 having at its outer end an enlargement 41 received in an internal recess in the part 11. Upward movement of member 33 flexes or bends portion 42 (see 43 Fig. 3) to produce a downward force on member 33 which assists in moving member 33 to the Fig. 6 position on disengagement of parts 11, 12. If desired a separate spring could be provided arranged to bias member 33 downwards.

The sliding movement of the member 33 is guided by suitable internal walls 44, 45.

The assembly channel 37 is defined also by wall 45 and by portion 46 of member 33.

The objects 40 are all of the same size and shape. It will be seen from Fig. 6 that the interior 47 of the container 25 is such as to confine the objects to a single plane and the channel 37 forms a continuation of the interior of the container 25 so that the objects remain in that plane. The walls 45 and portion 46 cause the objects in the channel 37 to be orientated in a common direction end to end.

Only a few objects 40 are shown in Figs. 6, 7. It will be noted that when member 33 moves upwards the portion 46 disturbs the objects 40 in the lower part of the store and this assists in enabling the objects to enter the assembly channel 37. In the embodiment shown, the member 33 includes a further upwardly extending elongate portion 50 guided by walls 51, 52 which also disturbs the undispensed objects, and does so in a region further from the channel 37 than the portion 47, to further assist in enabling the channel 37 to be full with appropriately orientated objects 40 to be dispensed.

The narrow recess 34 is of such a size and shape that the member 33 cannot be engaged by a user's or a child's or baby's finger; this is a safety feature to prevent undesirable dispensing of an object.

The user separates the parts 11, 12 leaving the dispensed object in the receiver 12. The user can then remove the object from the receiver 12, or, in case of infirmity and if the object is a pill for example, the user can use the receiver or receptacle 12 to transfer the pill to the user's mouth.

It will be noted that the engagement and disengagement of parts 11, 12 can be done using only one hand and this also is of advantage in case of infirmity.

The shape and size of the store, assembly channel and aperture 31 will, in different devices, be appropriate to the different size and shape of objects to be dispensed in those devices.

The part 12 acts both as a key or operating element to effect the dispensing of an object, and as a receptacle to receive the object when dispensed.

In a modification the aperture 31 and co-operating portions of member 33 are sized to dispense two objects in a single dispensing motion of member 33.

In a further modification the operating part 12 may be such as not to receive a dispensed object.

Figs. 8 and 9 show another embodiment in which a store part 60 has an outlet channel 61 shaped to orientate an object in a desired direction, and a dispensing member 62 is rotatably mounted in the part 60 and includes a diametral aperture 63 shaped to receive two objects 60a, 60b when in line with channel 61 (Fig. 9). The member 62 includes an extension 64. When the store part 60 is brought into co-operative engagement with a receiver part 65, an upstanding portion 66 of the part 65 engages the extension 64 to rotate the member 62, thus blocking the outlet from the channel 61, and allowing the objects 60a, 60b to fall into a receiving zone 67 of the part 65.

The member 62 is returned by gravity to the Fig. 9 position on release from the part 65 allowing two more objects 60 to enter the aperture 63.

In the case shown the receiver part 65 can be mounted on a receptacle 70 for liquid 71 and the dispensed objects can for example if the objects are pills either be placed in the liquid, where they may be dissolved and the liquid subsequently drunk, or the pill can be transferred to a user's mouth, possibly using the part 65, and the liquid 71 being used in swallowing the pill.

In this case also the store part 60 is separate from the receiver part. The part 60 may include depending portions 80 to embrace the part 65 and assist in locating the part 60 on the part 65 in the assembled condition.

## Claims

1. A device for dispensing objects comprising a store part for receiving objects to be dispensed, which part comprises a dispensing aperture; and a separate operating part, the store and operating parts being mov-

able into and out of co-operative engagement to dispense an object from the store part, the operating part including a movable member blocking exit from the aperture when the store and operating parts are disengaged and movable on engagement of the parts to unblock the aperture.

2. A device as claimed in Claim 1, in which the operating part is an upwardly open receptacle which faces upwards when the object is dispensed, and is adapted to receive an object as the object is dispensed.

3. A device as claimed in Claim 1, in which the store part is adapted to confine the objects in a single plane.

4. A device as claimed in Claim 1, in which the movable member is adapted, on engagement of the parts, to block entry into the aperture of a further object.

5. A device as claimed in Claim 1, in which the store part comprises a channel in part defined by the movable member for receiving objects in aligned orientation and communicating with the aperture.

6. A device as claimed in Claim 1, in which the movable member is adapted, on engagement of the parts, to disturb objects in the store part, optionally at different locations.

7. A device as claimed in any of Claim 1, including means for biasing the movable member to a position blocking exit from the aperture.

8. A device as claimed in Claim 1, in which the operating part includes an operating element engageable with the movable member on co-operative engagement of the parts, the operating element entering into a recess in the store part.

9. A device as claimed in Claim 8, in which the recess is sized and shaped to correspond closely to the shape of the operating element.

10. A device for dispensing objects substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

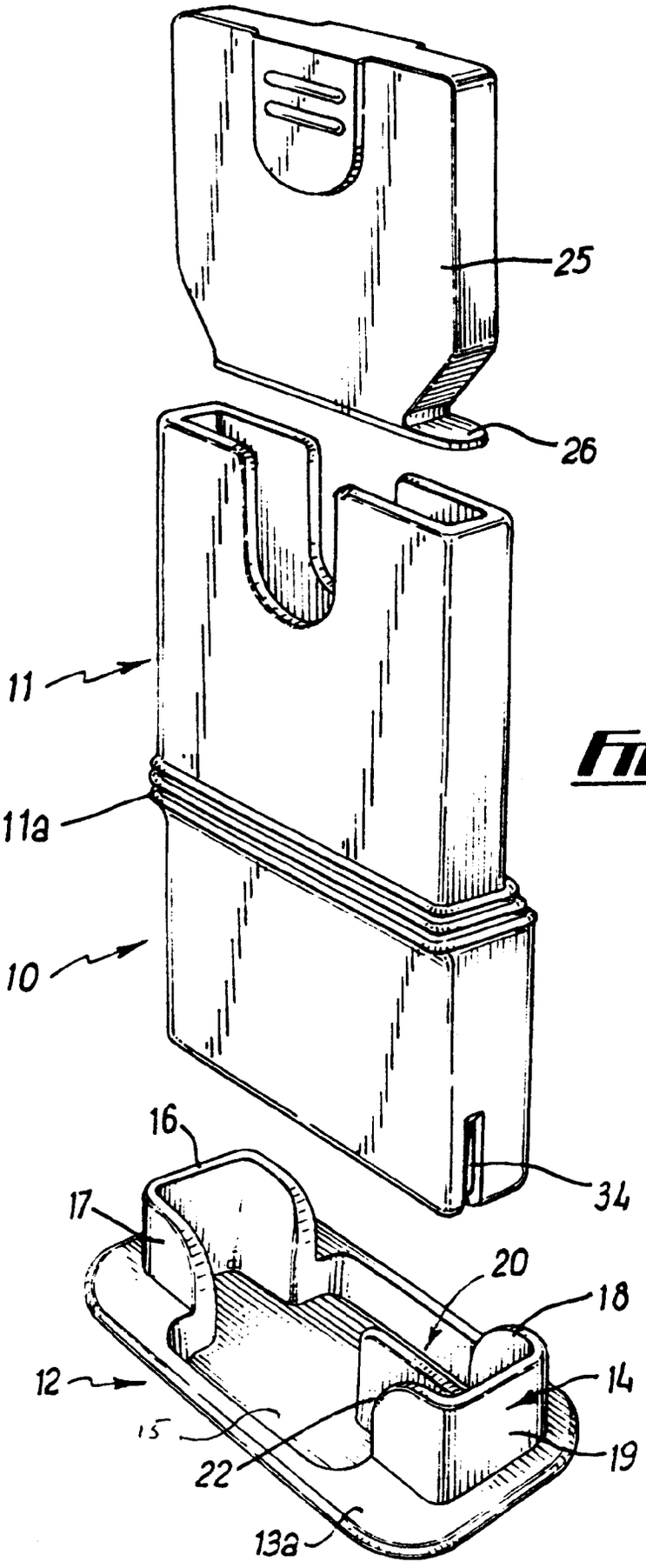



FIG. 1

Fig.3

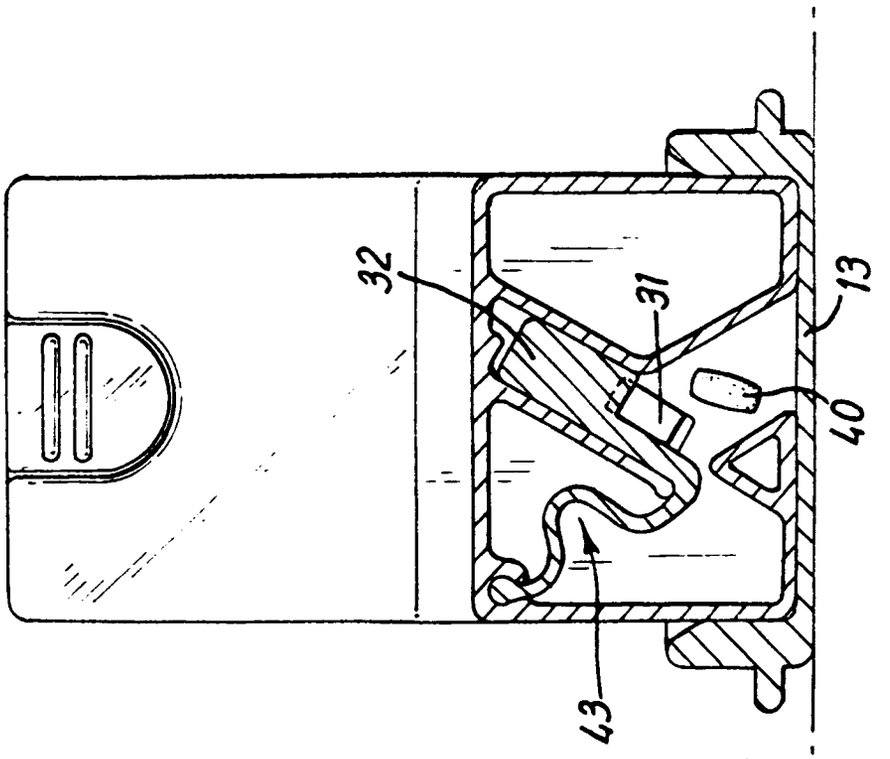



Fig.2

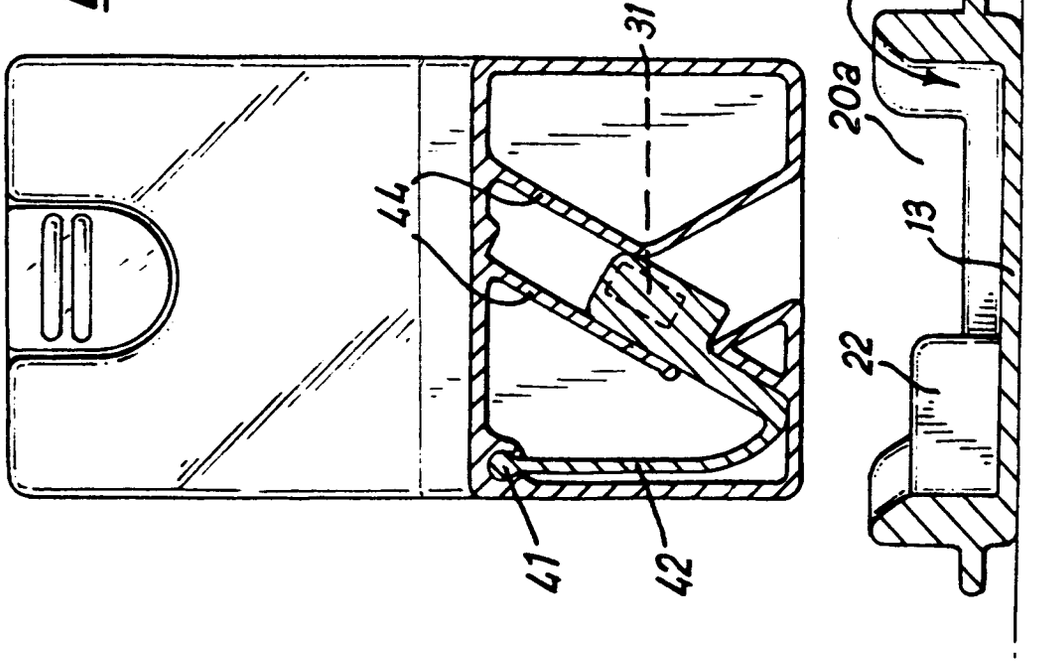


FIG. 3

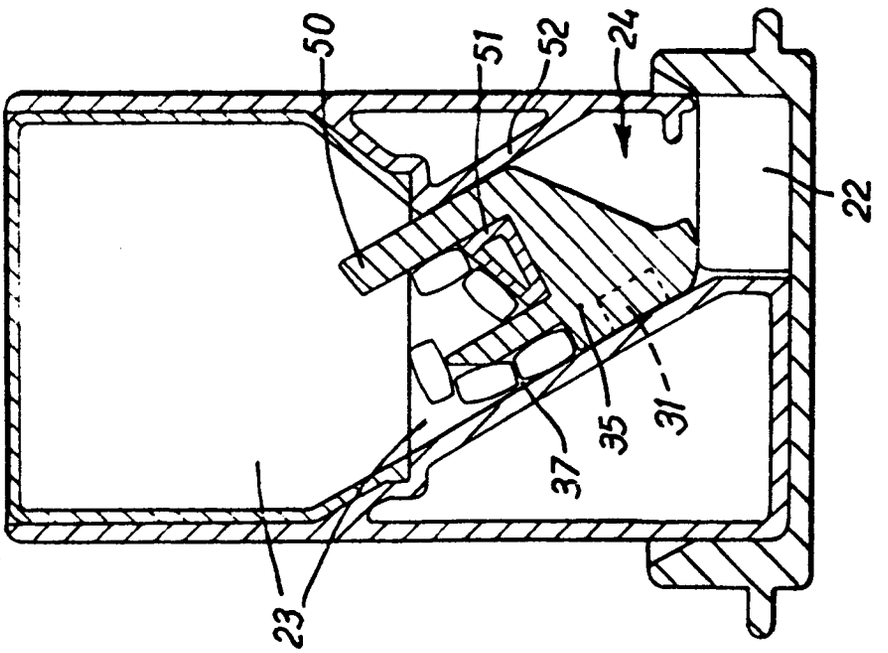
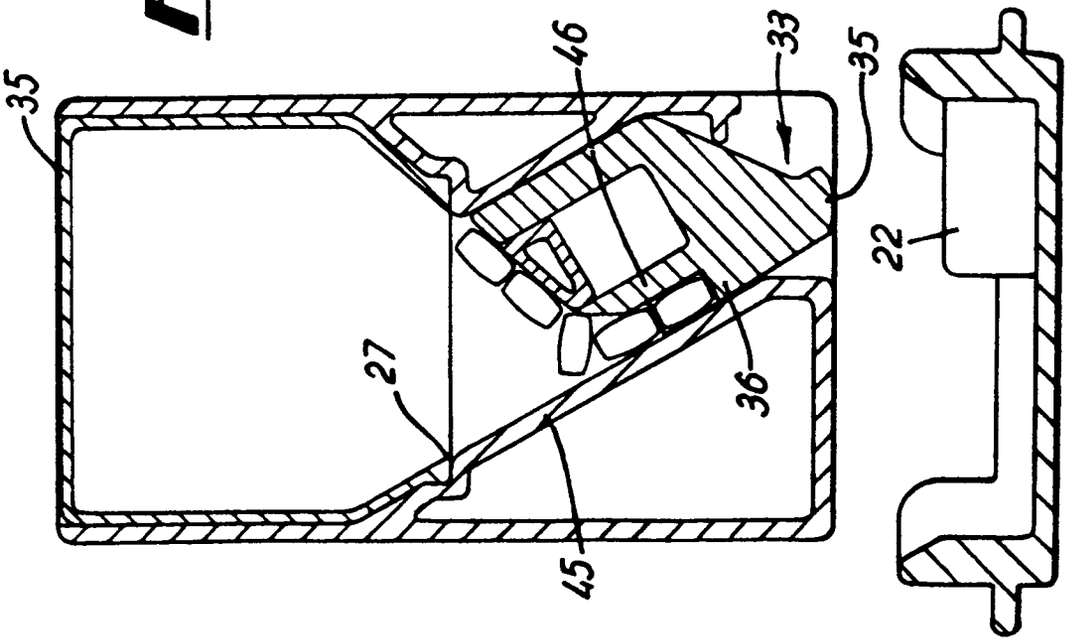



FIG. 4



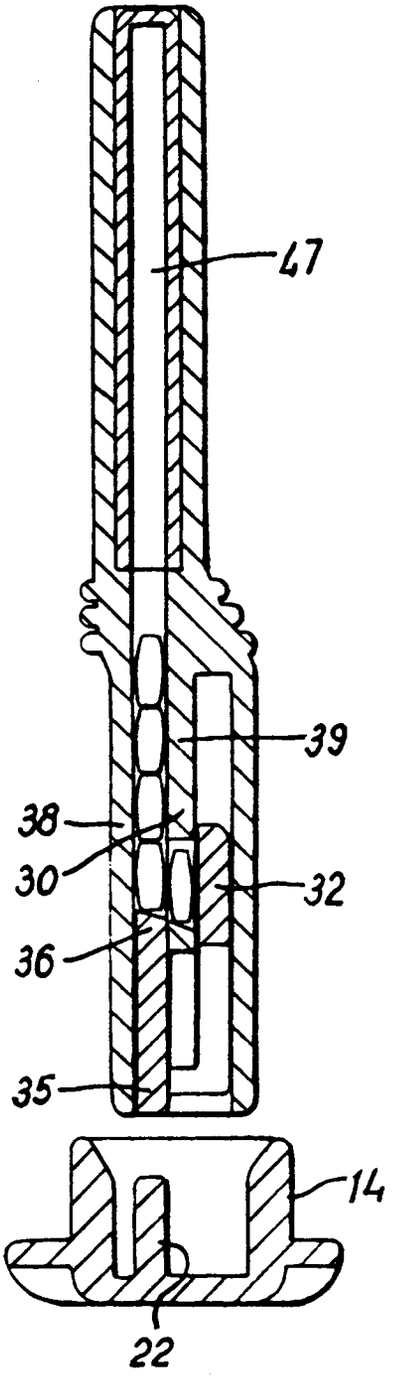



FIG. 6

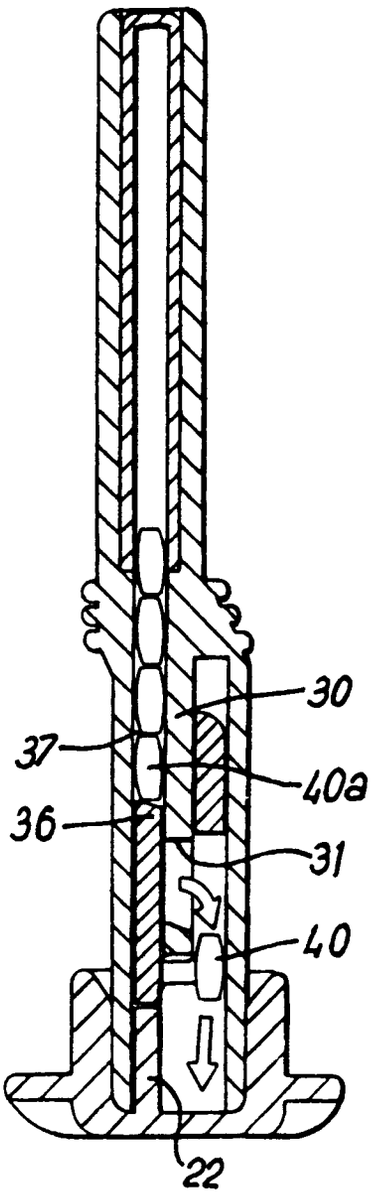



FIG. 7

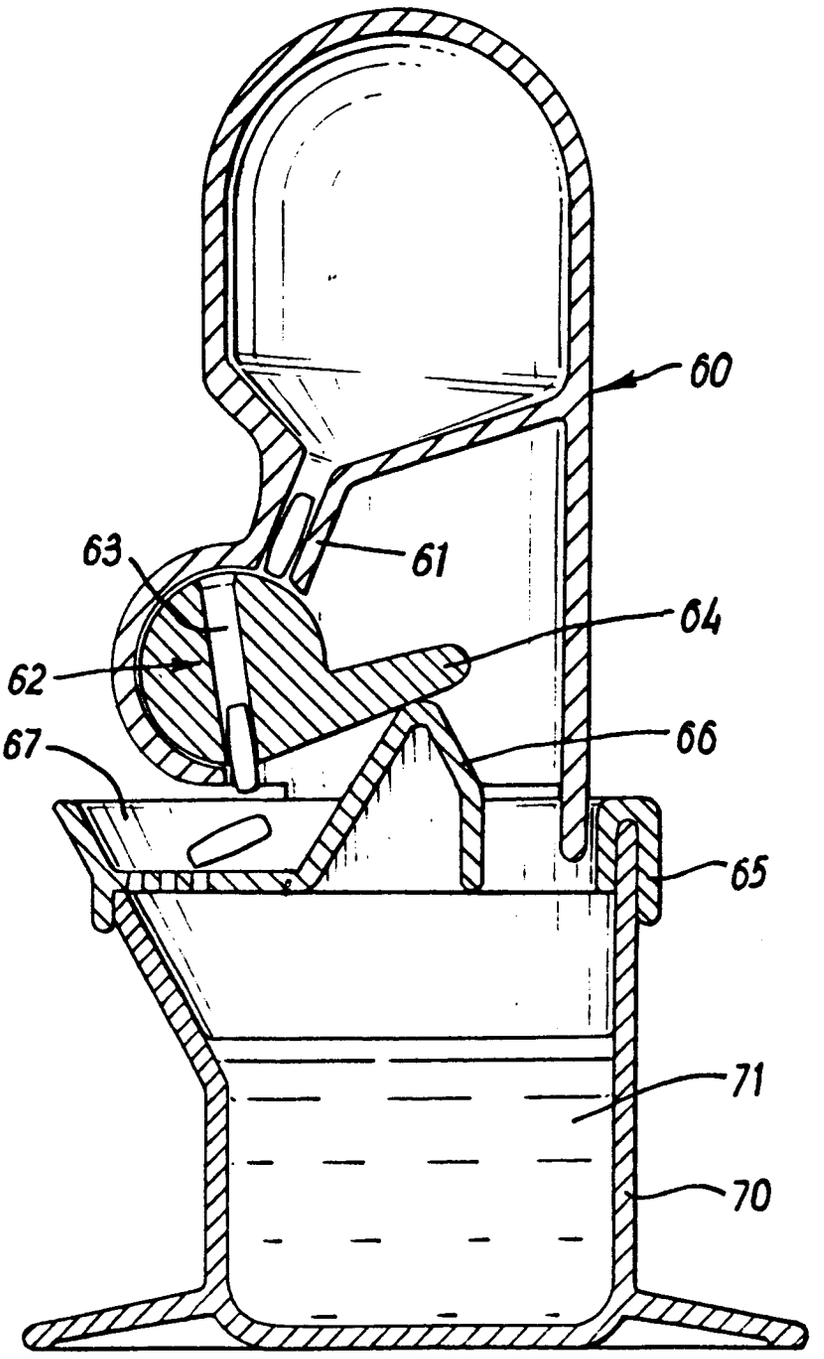
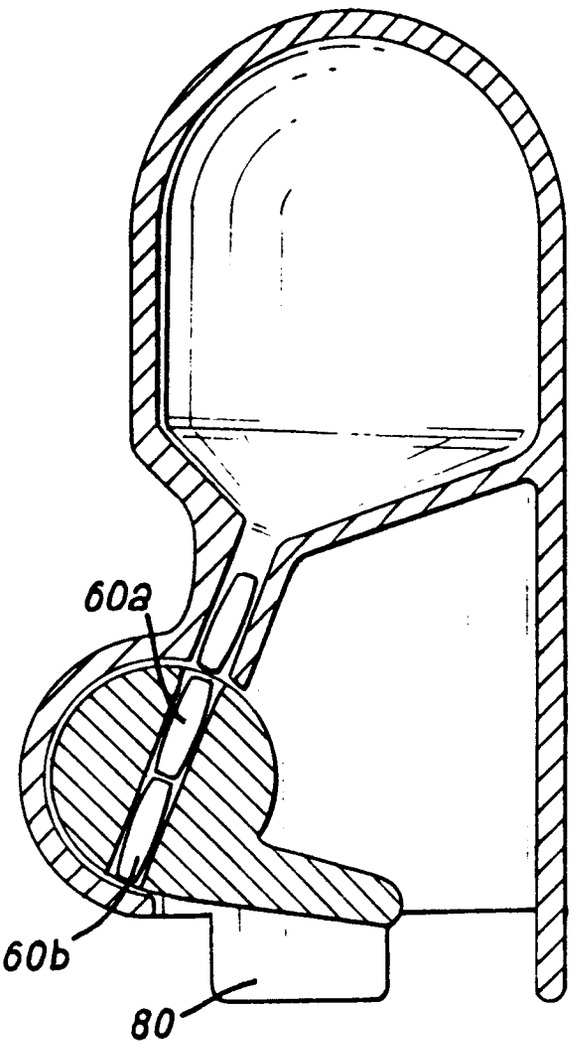



FIG. 8

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# EUROPEAN SEARCH REPORT

Application Number
EP 94 30 4226

## 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.5) |
|---|---|---|---|
| X | FR-A-2 636 931 (LABORATOIRES DE PHARMACOLOGIE HOMEOPATHIQUE DOLISOS ET LABORATOIRES JEAN TETAU)<br>* the whole document * | 1,2,4,6, 8,9 | B65D83/04 |
| X | FR-A-2 494 229 (GAY L. F. M.)<br>* the whole document * | 1,2,4-6 | |
| X | FR-A-2 496 607 (GAY L.F.M.)<br>* the whole document * | 1,2,4-6 | |
| X | US-A-3 332 576 (R. S. HAMILTON)<br>* column 3, line 73 - column 4, line 74; figure 2 * | 1,4,6 | |
| X | EP-A-0 284 557 (ALFATECHNIC AG)<br>* the whole document * | 1,4,5 | |
| X | FR-A-1 092 770 (A. GAZZONI & C.)<br>* the whole document * | 1,3,4,7 | TECHNICAL FIELDS SEARCHED (Int.Cl.5) |
| X | US-A-2 433 472 (H. J. MC LAUGHLIN)<br>* the whole document * | 1,4,5 | B65D |

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| BERLIN | 1 September 1994 | Deprun, M |

CATEGORY OF CITED DOCUMENTS

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