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**CHILDPROOF DOSING DEVICE**
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- (56) Prior Art Documents  
**US 4516967**  
**GB 2001597**  
**AU 34945/50**
- (57) Claim

1. A device for holding and dispensing precise dosages of a liquid, the device including:

a bottle for holding the liquid, said bottle having a bottom and a neck, and defining an axis extending therebetween;

a cap which cannot be removed from the bottle neck without breaking;

a hollow cylinder associated with the cap, the hollow cylinder extending axially towards the bottom of the bottle and having an open upper end and a lower end including an opening;

a removable dispenser adapted to fit within the cylinder and comprising a barrel and a reciprocating plunger, wherein the barrel includes an upper portion and a lower portion, the upper portion being configured selectively to provide an air- and liquid-tight seal between the barrel and the hollow cylinder, the barrel also including a lower end with an opening which, in use, is aligned with the opening of the cylinder to define a conduit therewith, and wherein the plunger includes a piston forming an air- and liquid-tight fit with the interior wall of the barrel whereby withdrawal of the plunger draws liquid from the bottle into the barrel of the dispenser only when said seal is established.



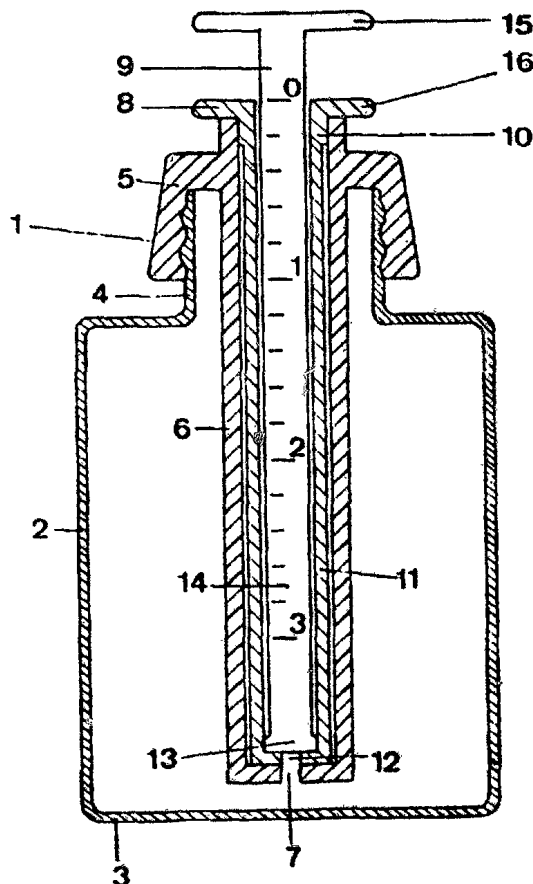
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<p>(51) International Patent Classification 6 :  <b>B65D 83/00, A61J 1/00</b></p>	<p>A1</p>	<p>(11) International Publication Number: <b>WO 95/01924</b>                  (43) International Publication Date: 19 January 1995 (19.01.95)</p>
<p>(21) International Application Number: PCT/EP94/02149                  (22) International Filing Date: 30 June 1994 (30.06.94)                  (30) Priority Data:                  93201995.3 8 July 1993 (08.07.93) EP                  (34) Countries for which the regional or international application was filed: DE et al.                  (71) Applicant (for all designated States except US): JANSSEN PHARMACEUTICA N.V. [BE/BE]; Turnhoutseweg 30, B-2340 Beerse (BE).                  (72) Inventors; and                  (75) Inventors/Applicants (for US only): PUTTEMAN, Peter [BE/BE]; Wettersestraat 2A, B-9260 Schellebelle (BE). WOUTERS, Alfons, Jeanne [BE/BE]; Stekelbaarsstraat 25, B-2340 Beerse (BE).                  (74) Agent: QUAGHEBEUR, Luc; Janssen Pharmaceutica N.V., Patent Dept., Turnhoutseweg 30, B-2340 Beerse (BE).</p>	<p>(81) Designated States: AU, BB, BG, BR, BY, CA, CN, CZ, FI, HU, JP, KE, KP, KR, KZ, LK, LV, MG, MN, MW, NO, NZ, PL, RO, RU, SD, SI, SK, TT, UA, US, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p>Published                  With international search report.</p> <p style="font-size: 2em; text-align: center;">684536</p>	

(54) Title: CHILDPROOF DOSING DEVICE

(57) Abstract

A childproof device (1) for holding and dispensing liquids, in particular medicines, that provides precise dosages of liquid, comprising a bottle (2), a cap (5) which is irremovable from the bottleneck (4), said cap being associated with a hollow cylinder (6) extending axially to near the bottle bottom (3) and a reciprocating dispenser comprising a barrel (8) and a plunger (9). The dispenser provides the only means of getting medicine out of the bottle since the cylinder associated with the cap prevents the contents of the bottle from being poured or shaken out. The device is easily assembled and can be stored, sold and used as supplied by the manufacturer.



## CHILDPROOF DOSING DEVICE

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The present invention relates to a childproof (child-resistant) device for holding  
5 and dispensing liquids, in particular medicines, which comprises a bottle, a cap which is  
irremovable from the bottle neck, said cap further being associated with a hollow  
cylinder extending axially to near the bottle bottom, and a reciprocating dispenser fitting  
within said cylinder and comprising a barrel and a plunger.

The administration of liquid medicines from a bottle normally requires that the  
10 administered amount is measured so as to agree with the prescribed amount. Well  
known measures are teaspoonfuls, tablespoonfuls, drops and milliliters, all of which are  
simply poured or taken out from the medicine bottle. Usually however, nothing prevents  
that the whole bottle is poured out and drunk, e.g. by children. Obviously, this problem  
is not limited to medicines, but also occurs with household and industrial liquids in  
15 bottles and similar containers.

A number of devices have been developed which allow a measured dose of  
medicine to be taken out of a bottle. Most of these are particularly designed so as to  
yield very accurate doses which can be selected and adjusted by the user. Less attention  
is usually paid to safety and the devices can often be pried open easily. Where due  
20 safety measures are provided, the resulting device is often complicated, expensive and  
difficult to operate. A simple and easy to handle device allowing one to take out only  
one single dose of medicine from a bottle at a time, is therefore felt to be an outstanding  
need. Abuse of major, dangerous quantities of medicine (or for that matter, of household  
or industrial liquids) is discouraged by requiring the user to repeat a number of  
25 uninteresting moves over and over again before such a dangerous amount can be  
extracted from the bottle.

It is an object of the present invention to overcome, or substantially ameliorate, at  
least one or more of the disadvantages of the prior art.

Accordingly, in a first aspect the present invention provides a device for holding  
30 and dispensing precise dosages of a liquid, the device including:



a bottle for holding the liquid, said bottle extending between a bottle bottom and a bottle neck, and defining an axis extending therebetween:

a cap which cannot be removed from the bottle neck without breaking;

a hollow cylinder associated with the cap, the hollow cylinder extending axially  
5 towards the bottle bottom and having an open upper end and a lower end including an opening;

a reciprocating dispenser fitting within the cylinder and comprising a barrel and a plunger, wherein the barrel includes an upper portion and a lower portion, the upper portion being configured to provide an air- and liquid-tight fit between the barrel and an  
10 interior wall of the hollow cylinder, the barrel also including a lower end with an opening which, in use, is aligned with the opening of the cylinder to define a conduit therewith, and wherein the plunger includes a piston forming an air- and liquid-tight fit with the interior wall of the barrel.

In a second aspect, the present invention provides a cap-dispenser combination  
15 including:

a cap which cannot be removed from a bottle neck without breaking, said cap being associated with a hollow cylinder which, in use, extends axially towards a bottom of a bottle and has an open upper end and a lower end with a central opening;

a reciprocating dispenser fitting within the cylinder and comprising a barrel which  
20 includes an upper portion for assuring an air- and liquid-tight fit between the upper portion and the interior wall of the cylinder, and having a lower end with a central opening that is aligned with the central opening in the cylinder to define a conduit therewith; and

a plunger including a piston forming an air- and liquid-tight fit with the interior  
25 wall of the barrel.

The invention will now be described, by way of example only, with reference to the accompanying drawings in which:

Figure 1 is a sectional view of a first device according to the invention;

Figure 2 is a sectional view of a cap with attached beaker and tear-off band; and

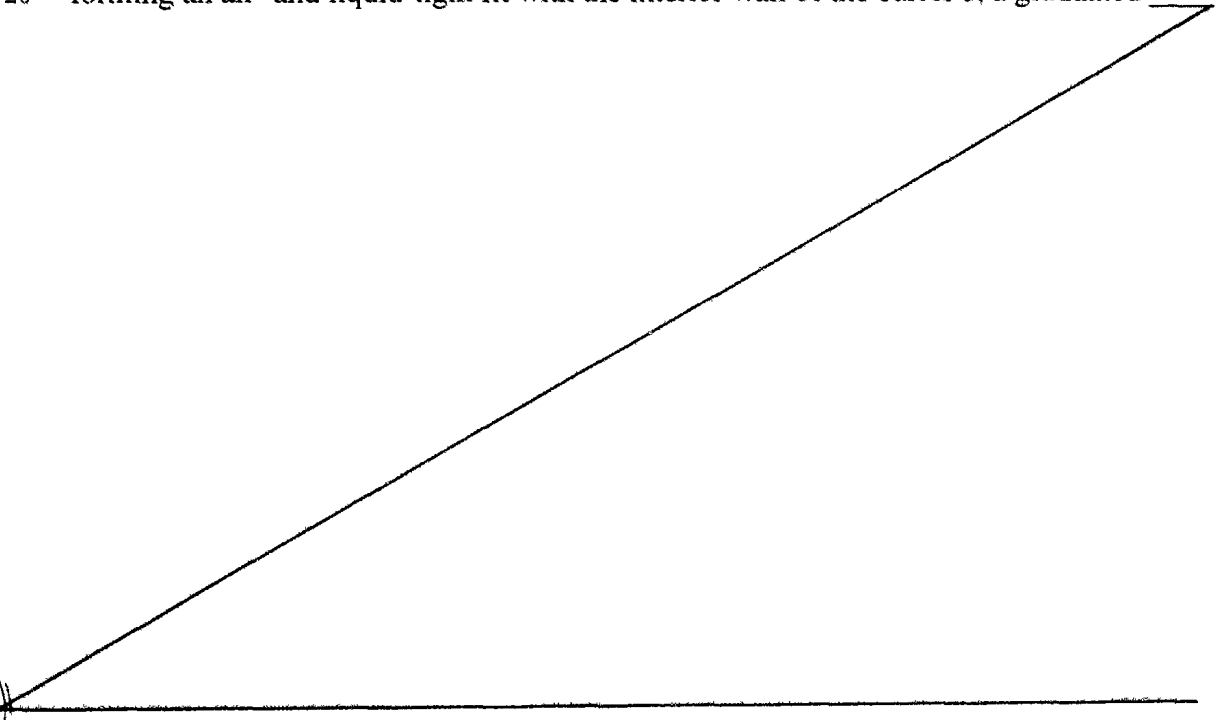
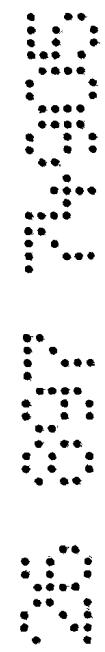
30 Figure 3 is a sectional view of the top of a device wherein cap and cylinder are separate.



Referring to the drawings, a device 1 for holding and dispensing liquid medicines provides precise dosages of the medicine and comprises a bottle 2 for holding the liquid medicine, said bottle extending between a bottle bottom 3 and a bottle neck 4. The bottle is conveniently made out of glass or an acceptable rigid plastic such as  
5 polyethylene or polypropylene, and typically may have a capacity of 0.11.

The cap 5 is irremovably fastened to the bottle neck 4 so that it cannot be pried off. A preferred system involves mating, snap-fitting rib and groove formations at the outside of the bottle neck and the inside of the cap. This system has the advantage that it can be assembled easily and automatically and cannot reasonably be disassembled  
10 without breaking. Further, said cap 5 is associated with a hollow cylinder 6 extending axially to near the bottle bottom 3 and having an open upper end and a closed lower end with a central opening 7.

The device of the invention further comprises a reciprocating dispenser fitting within the cylinder 6 and comprising a barrel 8 and a plunger 9. The dispenser is  
15 effective in drawing up and dispensing single, measured doses of the liquid medicine. The barrel 8 includes an upper portion 10 having a larger diameter than the lower portion 11 for assuring an air- and liquid-tight fit between the upper portion 10 and the interior wall of the cylinder 6, and having a closed lower end with a central opening 12 that is aligned with the central opening 7 in the cylinder. The plunger 9 includes a piston 13  
20 forming an air- and liquid-tight fit with the interior wall of the barrel 8, a graduated



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piston rod (14) and a knob (15).

5 The upper part of the barrel (8) is further provided with an annular flange (16) which juts outwards over the rim of the cylinder (6). The barrel has a height and inside diameter such that its chamber volume equals desired liquid medicine doses, typically ranging up to 5 ml.

10 The graduated piston rod is calibrated, preferably in units of volume, the zero line (empty dispenser) being aligned with the top of the annular flange (16) when the plunger is inserted completely in the barrel. A user of the present device should simply pull up the knob (15) of the plunger until the desired amount of medicine is indicated by the fact that the appropriate calibration on the piston rod is aligned with the top of the annular flange (16).

15 It should be noted that the liquid medicine can only be drawn up in the barrel (8) when said barrel is completely inserted in the cylinder (6). Only then does the upper portion (10) provide the necessary air-tight seal between barrel and cylinder and is the chamber volume defined by the inside of the barrel in fluid communication with the bottle (2) through the aligned openings (7) and (12) forming a conduit.

20

The length of the upper portion (10) having a larger diameter than the lower portion (11) preferably is small so that upon withdrawing the barrel (8) from the cylinder (6) the least possible liquid medicine is drawn up in the cylinder. Yet, its length should be sufficient to provide an air-tight seal when fully inserted in the cylinder.

25

30 Upon withdrawal of the dispenser from the cylinder, no amount of movements allows liquid medicine to be taken out or spilled. For example, upturning of the device causes the central opening (7) at the closed lower end of the cylinder to project in the air above the fluid level in the upturned bottle preventing the contents of the bottle to be poured or shaken out. Thus, a fully inserted dispenser provides the only means of getting medicine out of the bottle.

Advantageously, the device according to the present invention can further comprise a beaker (17) removably snap-fitting over an external flange (18) on the cap (5) (see Fig. 35 2). The beaker (17) is intended to be charged with the desired liquid medicine dose drawn up with the dispenser, and - if and when needed - with other liquids such as water or a beverage in order to dilute the medicine. The capacity of the beaker typically is about four to six times the maximum chamber volume of the dispenser. The provision of

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a beaker with the instant device should dissuade the user from for example discharging the medicine directly into the mouth and possibly contaminating the dispenser and eventually the contents of the device. At the same time the beaker provides a further protective seal for the device during storage.

5

In order to render the device tamperproof, the beaker (17) is advantageously connected to the cup (5) by a tear-off seal, strip or band (19). Thus the dispenser can be kept neatly covered up and cannot be contaminated, nor for that matter can the medicine in the device. The tear-off band should be removed only immediately prior to use and provides  
10 an easily discernable proof of non-tampering with the device. Removal of the tear-off band and the beaker enables the dispenser to be withdrawn from the cylinder.

The child-resistant character of the device according to the present invention can be further enhanced by substituting the beaker (17) by an art-known child-resistant outer  
15 screw cap removably fitting to the cap (5). Of particular utility in this regard are those child-resistant screw caps that can only be removed by exerting a depressing and rotating force. In the absence of said depressing force the outer cap is freely rotatable with respect to the cap (5). Evidently, such child-resistant outer screw caps are not fit to be used as beakers. The child-resistant outer screw cap and the snap-fitting cap (5) are  
20 advantageously connected to one another with a tear-off band (19) as described before.

Further it should be noted that the cap (5) and cylinder (6) need not necessarily form an integral part, but may consist of two separate parts and a washer (20) (see Fig. 3). In order to fasten the cylinder in the cap, the cylinder is provided with an external flange  
25 (21) extending radially. The washer (20) fits the external flange (21), juts over the rim of the bottleneck (4) and provides an air-tight seal between the cap and cylinder.

The device according to the instant invention is easily assembled, including with automatic machinery, by pressing a cap (5) fitted with a reciprocating dispenser as  
30 described on a bottle filled with a suitable amount of liquid. The device can be stored, sold and used as supplied by the manufacturer. Besides its being childproof, simple and hygienic, the device according to the present invention has the further advantage that the cap (5), the cylinder (6) and the reciprocating dispenser can be manufactured in a range of different dosages each with different diameters and/or lengths. The cap (5) and  
35 reciprocating dispenser as described before, either assembled or not, with or without beaker (17) or child-resistant outer screw cap, are meant to comprise a further aspect of the present invention.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:-

1. A device for holding and dispensing precise dosages of a liquid, the device including:

5 a bottle for holding the liquid, said bottle having a bottom and a neck, and defining an axis extending therebetween;

a cap which cannot be removed from the bottle neck without breaking;

a hollow cylinder associated with the cap, the hollow cylinder extending axially towards the bottom of the bottle and having an open upper end and a lower end including an opening;

10 a removable dispenser adapted to fit within the cylinder and comprising a barrel and a reciprocating plunger, wherein the barrel includes an upper portion and a lower portion, the upper portion being configured selectively to provide an air- and liquid-tight seal between the barrel and the hollow cylinder, the barrel also including a lower end with an opening which, in use, is aligned with the opening of the cylinder to define a  
15 conduit therewith, and wherein the plunger includes a piston forming an air- and liquid-tight fit with the interior wall of the barrel whereby withdrawal of the plunger draws liquid from the bottle into the barrel of the dispenser only when said seal is established.

2. A device according to claim 1, wherein the openings are disposed generally in line with the axis.

20 3. A device according to claim 1 or claim 2, wherein the plunger includes a graduated piston rod and an upper knob.

4. A device according to any one of the preceding claims, wherein the cap snap-fits onto the bottle neck by means of rib and groove formations.

25 5. A device according to any one of the preceding claims, wherein the cap comprises an outwardly extending flange, and said device further comprises a beaker removably snap-fitting with said external flange.

6. A device according to claim 5, wherein the beaker is connected to the cap by a tear-off band.

30 7. A device according to any one of the preceding claims, wherein a child-resistant outer screw cap is removably fitted to the cap.





8. A device according to claim 7, wherein the child-resistant outer screw cap is connected to the cap by a tear-off band.

9. A device according to any one of the preceding claims, wherein the cap and the cylinder associated therewith are formed separately, said cylinder comprising a radially extending external flange, said device further comprising a washer disposed adjacent the external flange, to provide an air- and liquid-tight fit between the cap and the cylinder.

10. A cap-dispenser combination including:

a cap which cannot be removed from a bottle neck without breaking, said cap being associated with a hollow cylinder which, in use, extends axially towards a bottom of a bottle and has an open upper end and a lower end with a central opening;

a reciprocating dispenser fitting within the cylinder and comprising a barrel which includes an upper portion for assuring an air- and liquid-tight fit between the upper portion and the interior wall of the cylinder, and having a lower end with a central opening that is aligned with the central opening in the cylinder to define a conduit therewith; and

a plunger including a piston forming an air- and liquid-tight fit with the interior wall of the barrel.

11. A cap-dispenser combination according to claim 10, wherein the plunger further includes a graduated piston rod and an upper knob.

12. A device for holding and dispensing dosages of a liquid, substantially as herein described with reference to any one of the embodiments of the invention shown in the accompanying drawings.

13. A cap-dispenser combination, substantially as herein described with reference to any one of the embodiments of the invention shown in the accompanying drawings.

DATED this 25th Day of August, 1997  
JANSSEN PHARMACEUTICA N.V.

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FIG. 1

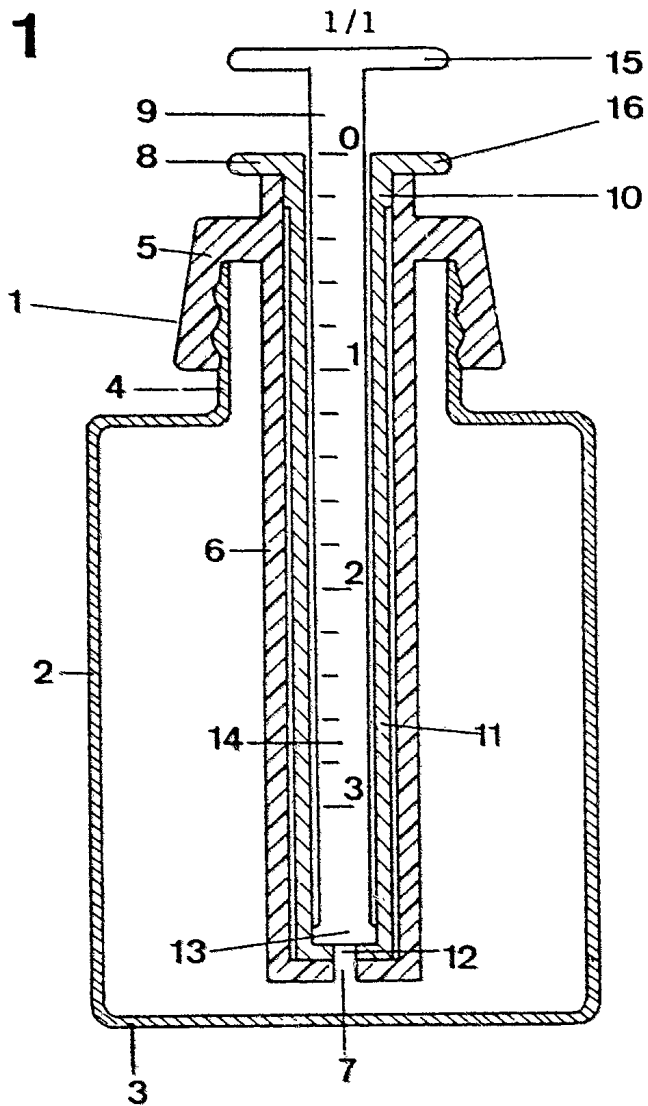


FIG. 2

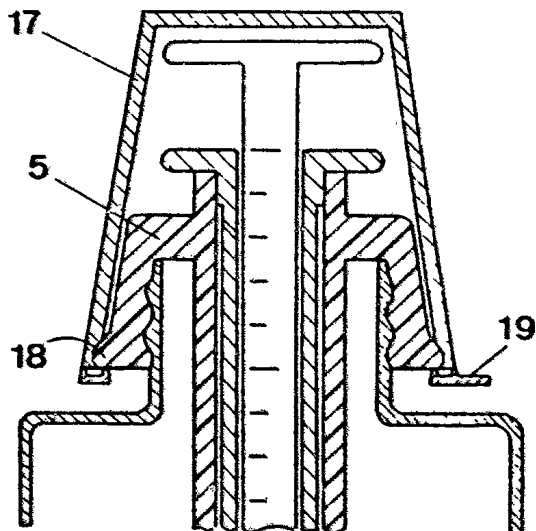
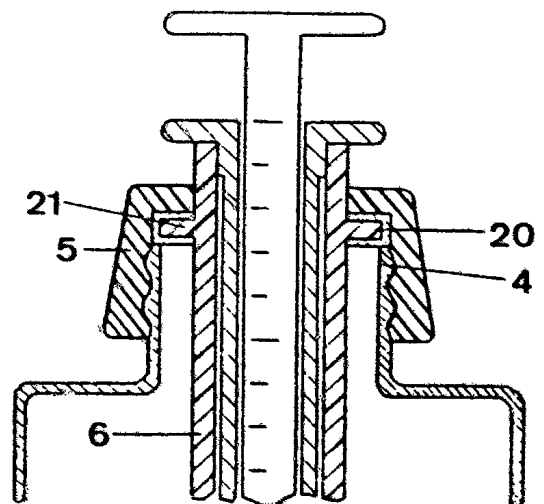


FIG. 3



INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP 94/02149

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 B65D83/00 A61J1/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 6 A61J B65D G01F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB,A,2 001 597 (THE KENDALL COMPANY) 7 February 1979 see page 3, left column, line 3 - line 35; figures 8,9	1,8
A	DE,C,882 755 (WEYMAR) 28 May 1953 see the whole document	1
A	EP,A,0 542 295 (NISSHO CORPORATION) 19 May 1993 see column 1, paragraph 1 see column 3, line 16 - line 22 see column 4, line 44 - column 5, line 1; figure 6	1
A	US,A,4 516 967 (KOPFER) 14 May 1985 see figures 5,6	1

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

\* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
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Date of the actual completion of the international search

14 October 1994

Date of making of the international search report

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## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP 94/02149

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO,A,90 07318 (MEDICORP HOLDING) 12 July 1990 see page 20, last paragraph - page 21, paragraph 1; figure 25 -----	1,3,4

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.  
PCT/EP 94/02149

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB-A-2001597	07-02-79	US-A- 4175597	27-11-79
		AU-B- 518420	01-10-81
		AU-A- 3720478	20-12-79
		BE-A- 869414	16-11-78
		CA-A- 1122492	27-04-82
		DE-A- 2833476	15-02-79
		FR-A, B 2399253	02-03-79
		JP-A- 54027292	01-03-79
		NL-A- 7807810	05-02-79
		SE-A- 7807845	02-02-79
<hr style="border-top: 1px dashed black;"/>			
DE-C-882755		NONE	
<hr style="border-top: 1px dashed black;"/>			
EP-A-0542295	19-05-93	JP-A- 5137773	01-06-93
		CA-A- 2081759	16-05-93
		US-A- 5348550	20-09-94
<hr style="border-top: 1px dashed black;"/>			
US-A-4516967	14-05-85	NONE	
<hr style="border-top: 1px dashed black;"/>			
WO-A-9007318	12-07-90	CA-A- 2006584	27-06-90
		DE-D- 68908700	30-09-93
		DE-T- 68908700	07-04-94
		EP-A, B 0406374	09-01-91
		ES-T- 2045897	16-01-94
		JP-T- 3504568	09-10-91
		CA-A- 2006582	27-06-90
		WO-A- 9007319	12-07-90
		DE-D- 68909402	28-10-93
		DE-T- 68909402	31-03-94
		EP-A, B 0403626	27-12-90
		ES-T- 2044548	01-01-94
		JP-T- 3504569	09-10-91