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(12) # EUROPEAN PATENT APPLICATION

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(54) **Container for a fluid and a closure member.**

(57) A container (10) such as a bottle or tube for a fluid having a neck (12) closed by a closure member (13), the closure member being movable relative to the neck (12) so as to bring into communication a channel (17) on the inside of the neck (12) and a bore (23) through the closure member (13) whereby relative movement of the neck (12) and closure member (13) will alternatively seal the container or allow fluid inside the container to pass through the bore (23). The bore is connected to a brush or brush holder (14) forming part of the closure member (13) so that fluid from inside the container may be applied to the brush.

In one embodiment, the neck (12) of the container (10) and the brush holder portion (14) are coaxial with one another whereas in the second embodiment the brush holder portion is at an angle to the neck.

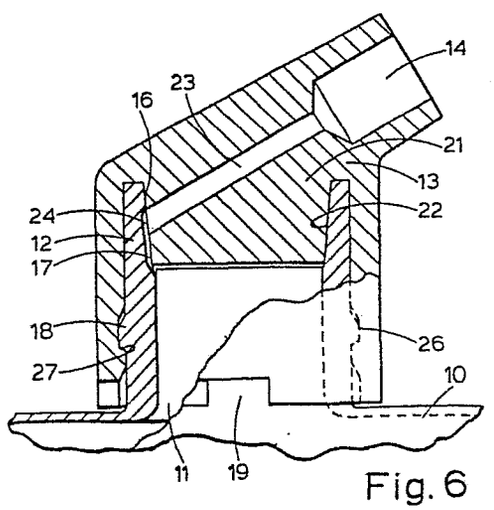

Fig. 6

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CONTAINER FOR A FLUID AND A CLOSURE MEMBER

The present invention relates to a container for a fluid and a closure member therefor including a brush or brush holder portion.

Such an arrangement may be utilised, for example, to apply a fluid from inside the container directly to the brush and in a particularly preferred embodiment the brush is used to clean false dentures.

Many such containers have been proposed. Many of the proposals are impractical from a commercial point of view since they contain parts which would be difficult and expensive to manufacture. For example it is expensive to provide holes through surfaces particularly without damage to surrounding surfaces and so for a practical design these should be reduced to the minimum possible.

Other containers which have been manufactured or proposed have included several parts inter-engaging and cooperating with one another and clearly it is best if the number of parts can be reduced to a minimum.

The present invention provides a container such as a bottle, closed tube or the like, for a fluid comprising a neck portion having an outwardly tapering inside surface portion and a channel being provided in said outwardly tapering inside surface portion, a closure member mounted in the neck including a brush or brush holder portion and a portion extending inside the neck including an outer surface formed to generally seal with the outwardly tapering inside surface portion and a fluid connection extending from said sealing outer surface to the brush or brush holder portion, the closure member and

neck portion being adapted for relative movement so that in one position one end of said fluid connection lies adjacent and communicates with the channel and the channel communicates with the interior of the container to control liquid flow from the interior of the container to the fluid connection and to the brush or brush holder and in another position liquid does not pass from the interior of the container. In this arrangement the number of parts has been reduced to the container and closure member and in place of commonly provided holes or bores there is provided a channel in an outwardly tapering surface which may be readily moulded when the container is manufactured of mouldable material.

It will be understood that the words "flow control" have a broad meaning in the present specification. Thus the words cover accurate control of the flow of a fluid in which the various parts would need to be accurately dimensioned or alternatively, the restriction of flow of the fluid from the interior of the container so as to prevent too much passing out of the container in normal use in which case normal manufacturing tolerances would suffice. In respect of the latter meaning, there will be described a dispenser which includes an arrangement for preventing too much liquid from being passed out of the container by the user and this may be particularly useful in dispensing liquids from bottles of toiletries such as perfumes, shampoos and denture cleaners.

The neck may be of generally cylindrical shape or may be of other cross section such as square if desired. The channel may be in the form of an elongate channel or may be dish shaped and may be of constant depth or otherwise. By controlling the depth of the channel the flow of fluid from the interior of the container may be restricted to any extent desired and may thereby be metered.

The fluid connection may be provided by a bore through the closure member and the closure member may have an outer portion surrounding the neck of the container and may be provided with means to retain it on the neck to prevent removal.

The relative movement between the neck and the closure member may be provided by a rotation.

Means may be provided for limiting the extent of this movement and in the case where the closure member has an outer portion surrounding the neck, this may be provided thereon.

In the case where the neck is of generally cylindrical shape and the brush or brush holder portion includes a longitudinally extending portion for mounting a brush, the axis of the longitudinally extending portion may be coaxial with the neck or may be at an angle thereto.

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

Figure 1 is a vertical axial section of part of a container according to a first embodiment of the invention including a neck portion and a closure member,

Figures 2 and 3 are sections on the line A-A of Figure 1 with the neck and closure member respectively in first and second relative positions,

Figure 4 is a horizontal section on the line B-B of Figure 1,

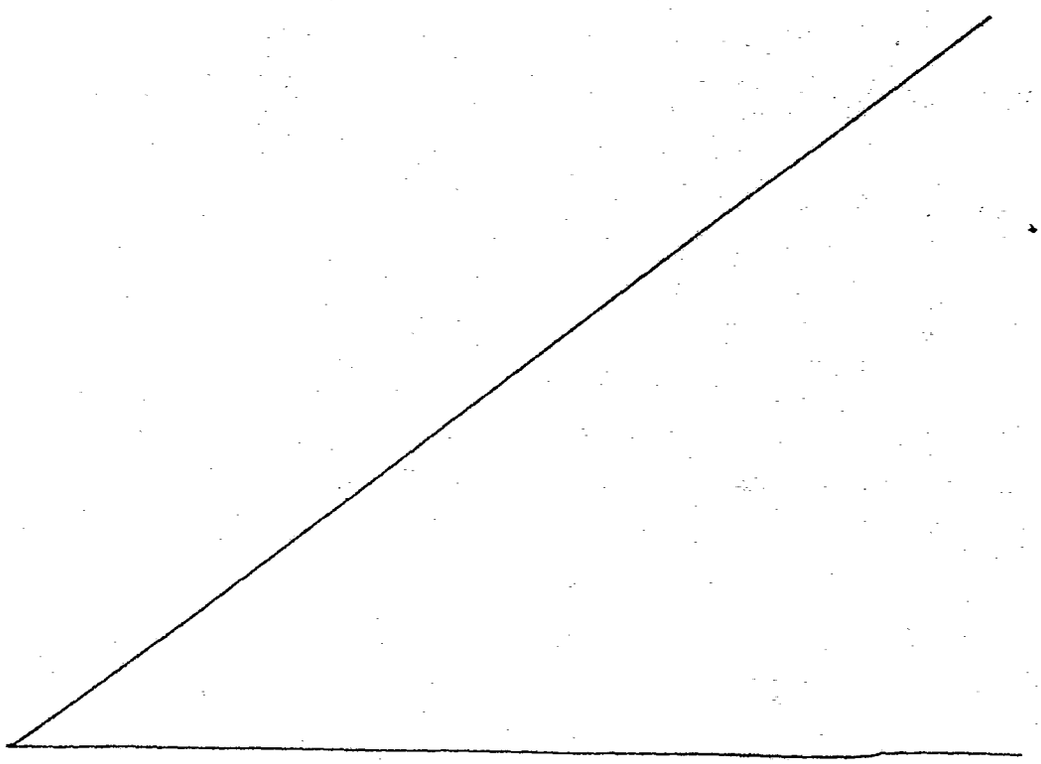
Figure 5 is a plan view of the container of Figure 1,

Figure 6 is a vertical axial section of part of a container according to a second embodiment of the invention including a neck portion and a closure member, and,

Figure 7 is a plan view of the container of Figure 6.

In Figure 1 there is illustrated a container 10 having an opening 11 surrounded by an upstanding neck 12. The container which is for fluid may be of any suitable material but may preferably be a bottle moulded of flexible plastics material, the neck 12 being closed by a closure member 13 at the top of which is mounted a brush holder portion 14. The type of brush and the manner of its stapling to the brush holder portion 14 is illustrated in our earlier British patent no. 1,502,942.

The neck 12 is of generally cylindrical form the upper portion of which includes an outwardly tapering inside surface portion 16 and formed in this surface portion by moulding is a depression in the form of a channel 17 having an axial length illustrated



in Figure 1 (note it does not extend to the top of the neck 12) and a cross section illustrated in Figure 2 or Figure 3 (Figure 3 is clearer). The channel 17 extends generally downwardly towards the interior of the container 10 to at least the bottom of the tapered inside surface portion 16. It will be understood that if the container 10 is of moulded material then the channel 17 by virtue of its small size and being formed in the outwardly tapering surface portion may be easily formed and the mould may be easily withdrawn without damaging the remainder of the outwardly tapering inside surface portion.

The outer surface of the neck 12 includes a circumferential rib 18 and, at the base of the outer surface of the neck, two stop members 19,20.

As is clear from Figure 1 the closure member 13 comprises an inner portion 21 for engagement within the neck 12. This inner portion 21 has an outer surface 22 which is of opposite taper to the surface 16 and is sealingly engaged therewith. However, a bore 23 extends from the surface 22 upwardly through the closure member 13 to the brush holder 14.

The lower end 24 of the bore 23 is situated axially at a point where it may lie adjacent the channel 17. This is illustrated in Figure 1. It is, however, spaced axially from the lower end of the inner portion 21 of the closure member 13.

The lower surface of the inner portion 21 is adapted so as to be spaced adjacent the lower end of the tapered portion 16 but above the lower end of the channel 17.

The closure member 13 also includes an outer skirt portion 26 which downwardly depends and surrounds the outer surface of the neck 12, the skirt portion 26 including a circumferential groove 27 adapted for engagement with the circumferential rib 18 on the outer surface of the neck to thereby retain the closure member 13 to prevent its removal. If the closure member 13 and the container 10 are made of a flexible plastics material then the closure member 10 may be pressed on to the neck 12 and the flexibility of the material will allow the skirt portion 26 to ride over the circumferential rib 18 until the groove 27 and rib 18 inter engage. It will be seen from Figure 1 that they are shaped to facilitate this but the shape of the groove 27 and rib 18 is such as to discourage or prevent the removal of the closure member 13.

The lower edge of the skirt 26 is castellated to provide two downwardly projecting stop members 28, 29 for engagement with the stop members 19, 20 as will be described with further reference to Figure 4.

The lower edge of the skirt portion 26 also includes an outwardly depending marker 31 and the adjacent upper surface of the container 10 carries the words OFF and ON spaced as shown in Figure 5.

The provision of the bore 23 necessitates the use of a core during moulding and this core requires a further bore 32 through the skirt portion 26 coaxial with the bore 23 but this takes no part in the operation of the apparatus of the invention.

In use the container 10 may be filled with a liquid such as a composition for cleaning dentures. It is desired to pass a controlled flow of fluid from the interior of container 10 to the base of the brush in the brush holder 14 through the bore 23. This is done by arranging the closure member 13 and neck 12 in the relative positions shown in Figure 1 which correspond to the relative positions shown in Figures 2 and 4. In this position the lower end of the bore 23 communicates with the channel 17. Fluid may pass from the interior of the container 10 (when turned upside down or squeezed) into the channel 17 where its flow is controlled as the channel 17 is of small cross section (ie 0.203 mm cross section) and is abutting a wall portion of the closure member 13, to the top of the channel 17 and then through the bore 23 to the base of the brush where it may pass to the tip of the brush. As shown in Figure 4, the stop members 19, 28 and 20, 29 respectively abut one another.

As is clear from Figure 4 the closure member 13 may be rotated through 90° relative to the neck 12 to the position shown in Figure 3 (and Figure 5) at which point the lower end of the bore 23 will not be in communication with the channel 17. Thus liquid may only pass into the channel 17 but cannot pass from there to the bore 23 and is prevented from passing further upwards than the channel 17 by the sealing engagement between the upper portion of the tapered surface 16 and corresponding surface of the inner portion 21 of the closure member 13. In this position, therefore, the container is sealingly closed and fluid cannot pass from the interior to the exterior.

As mentioned before, the provision of the tapered surface 16 allows for the channel 17 to be accurately moulded which allows for accurate flow control of the fluid passing through the channel and also allows for a fine surface to be moulded on the portion 16 and abutting portion 22 whereby they may sealingly engage with one another. The number of components which require to be moulded is two, that is the container 10 and the closure member 13, whereas, for example, in our copending British earlier patent application 26013/78 three separate parts are required.

Referring now to the second embodiment of the invention illustrated in Figures 6 and 7, in the drawings the same parts have been given the same reference numerals as in Figures 1 to 5. To save further description, it will be taken that all parts of the arrangement of Figures 6 and 7 are the same as the embodiment of Figures 1 to 5 except that the brush holder portion 14 is not coaxial with the neck 12 but is at an angle thereto. This is clearly illustrated in Figure 6. The arrangement is such that the bore 23 is then a straight bore passing directly from the brush holder portion 14 to the outer surface 22 and because of this construction, the closure member 13 may be moulded without the further bore 32 throught the skirt portion 26.

A further advantage is that in use, the brush which extends out of the brush holder portion 14 is at an angle which facilitates cleaning of false teeth with the brush. It will be seen from Figure 7 that the container which is general elliptical in horizontal section and the closure member 13 are arranged so that in the open position whereby the lower end of the bore 23 communicates with the channel 17, the angled brush holder portion 14 lies generally along the major axis of the elliptical cross section (when seen in plan view in Figure 7). When closed the brush holder portion lies generally at right angles thereto.

It will be understood that the second embodiment of the invention incorporates all of the advantages of the first embodiment of the invention and in particular that the neck portion of the container has an outwardly tapering inside surface portion with a channel being provided in the outwardly tapering inside surface portion.

The invention is not restricted to the details of the foregoing examples. For example, in both the embodiments, the neck 12 may form part of a tube rather than the bottle shaped container 10.

Means may also be provided for retaining the brush holder in the open and closed positions. This may be provided by a moulded stud on the neck or brush holder and a cooperating depression on the brush holder or neck respectively.

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CLAIMS

1. A container such as a bottle, closed tube or the like, for a fluid comprising a neck portion having an outwardly tapering inside surface portion and a channel being provided in said outwardly tapering inside surface portion, a closure member mounted in the neck including a brush or brush holder portion and a portion extending inside the neck including an outer surface formed to generally seal with the outwardly tapering inside surface portion and a fluid connection extending from said sealing outer surface to the brush or brush holder portion, the closure member and neck portion being adapted for relative movement so that in one position one end of said fluid connection lies adjacent and communicates with the channel and the channel communicates with the interior of the container to control liquid flow from the interior of the container to the fluid connection and to the brush or brush holder and in another position liquid does not pass from the interior of the container.

2. A container as claimed in claim 1 in which the neck is of generally cylindrical shape

3. A container as claimed in claim 1 or 2 in which the channel is in the form of an elongate channel.

4. A container as claimed in claim 3 in which the channel is of constant depth.

5. A container as claimed in any of claims 1 to 4 in which the fluid connection is provided by a bore through the closure member.

6. A container as claimed in any of claims 1 to 5 in which the closure member has an outer portion surrounding the neck of the container.

7. A container as claimed in claim 6 in which the closure member includes means to retain it on the neck to prevent removal.

8. A container as claimed in any of claims 1 to 7 in which the relative movement between the neck and the closure member is provided by a rotation.

9. A container as claimed in claim 8 in which means is provided for limiting the extent of the relative movement between the neck and the closure member.

10. A container as claimed in claims 6 and 9 in which the relative movement limiting means is mounted on the outer portion of the neck.

11. A container as claimed in any of claims 1 to 10 in which the neck is of generally cylindrical shape and the brush holder portion includes a longitudinally extending portion for mounting a brush, the axis of the longitudinally extending portion being coaxial with the neck.

12. A container as claimed in any of claims 1 to 10 in which the neck is of generally cylindrical shape and the brush holder portion includes a longitudinally extending portion for mounting a brush, the axis of the longitudinally extending portion being at an angle to the neck.

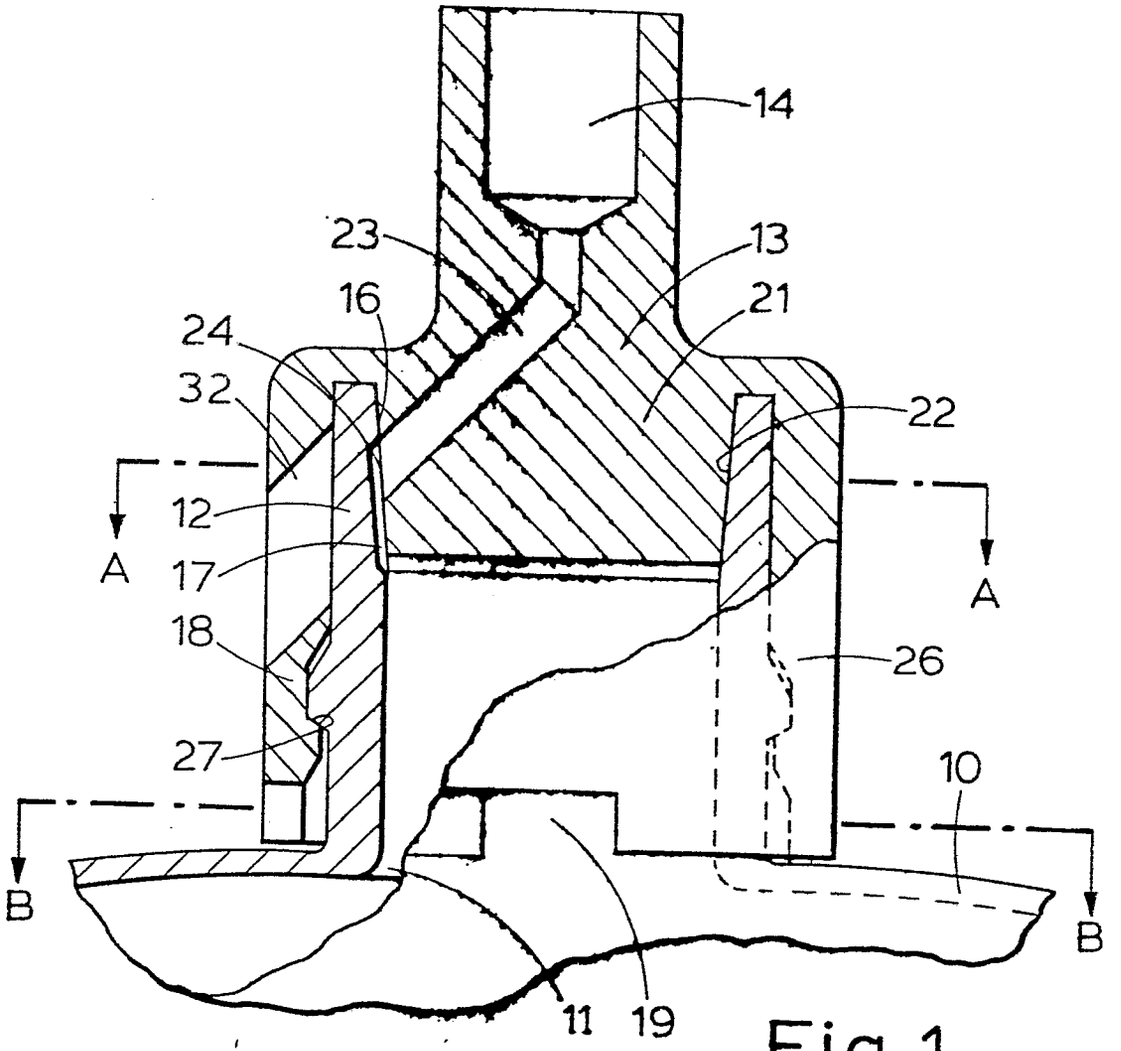

Fig. 1

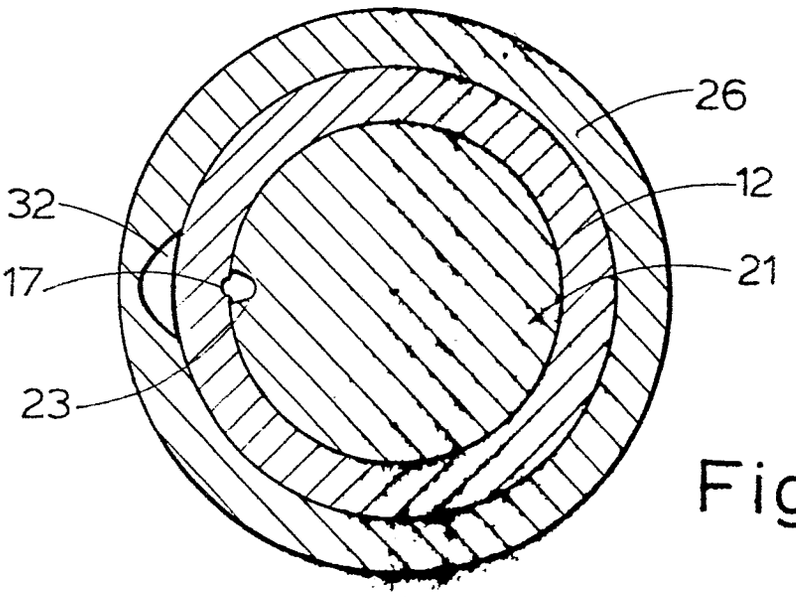

Fig. 2

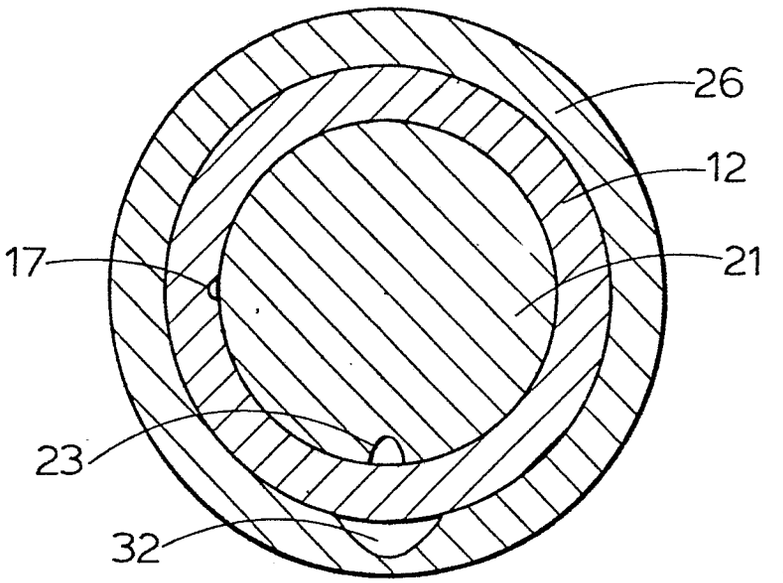

Fig. 3

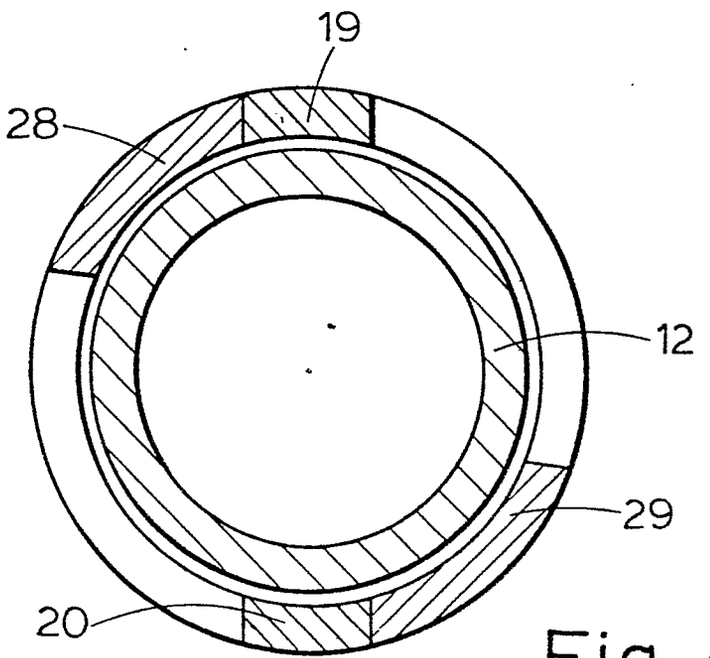

Fig. 4

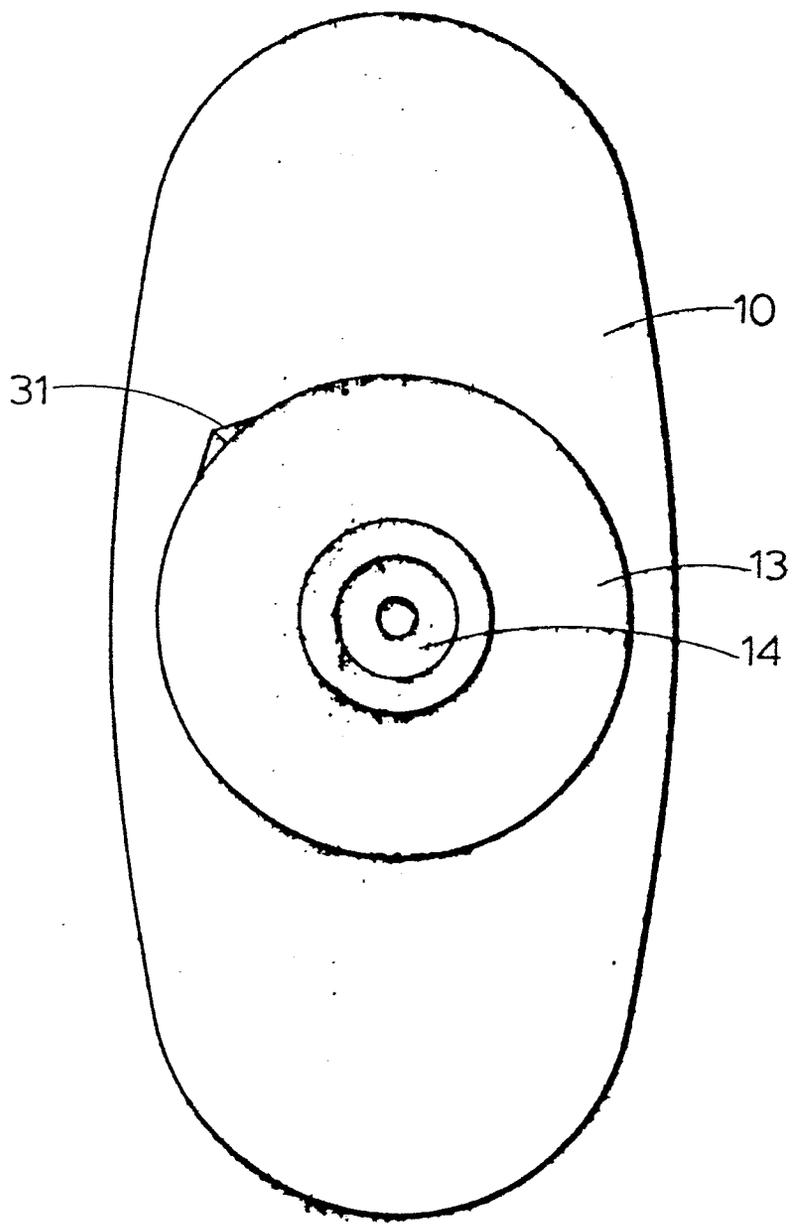

Fig. 5

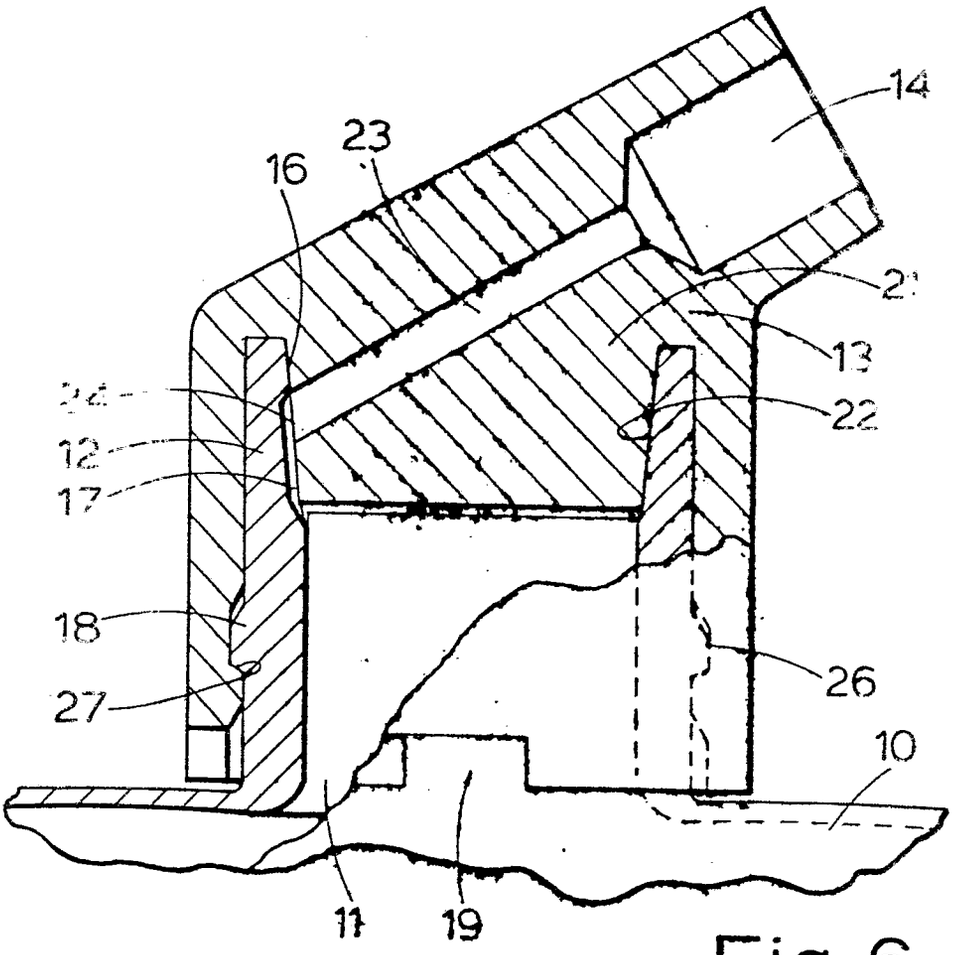

Fig. 6

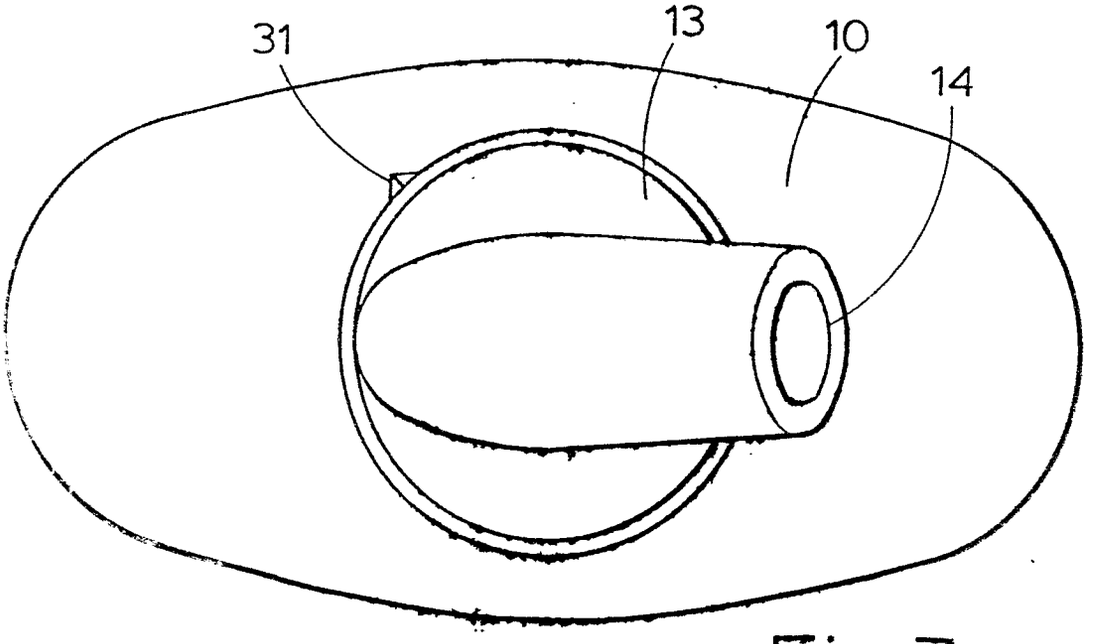

Fig. 7

European Patent Office

EUROPEAN SEARCH REPORT

0014283
Application number
EP 79301111.5

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl.³)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
	GB - A - 1 812 (AD 1895) (TISSIER) + Fig. 2-4,9 +	1-5,8, 9,12	B 65 D 47/20 B 65 D 51/32
	US - A - 3 118 578 (PRESSURE DISPENSERS INC.) + Totality +	1-10	
	FR - A - 409 431 (DESELLE) + Fig. 2 +	1-5,8,	
	FR - A - 1 433 967 (ADTIEBOLAGET PLATMANUFAKTUR) + Fig. 1-4 +	5-10	TECHNICAL FIELDS SEARCHED (Int.Cl.³)
	US - A - 3 439 843 (DIAMOND INTERNATIONAL CORP.) + Fig. 4-7 +	5-8, 12	A 45 D 34/00 A 46 B 11/00 B 65 D 39/00 B 65 D 47/00 B 65 D 51/00
D	GB - A - 1 502 942 (GAVIA) + Fig. 1-3 +	2,5,11	

CATEGORY OF CITED DOCUMENTS

X: particularly relevant
A: technological background
O: non-written disclosure
P: intermediate document
T: theory or principle underlying the invention
E: conflicting application
D: document cited in the application
L: citation for other reasons

&: member of the same patent family, corresponding document

X The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
VIENNA	08-04-1980	TROJAN

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