

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
19 February 2004 (19.02.2004)

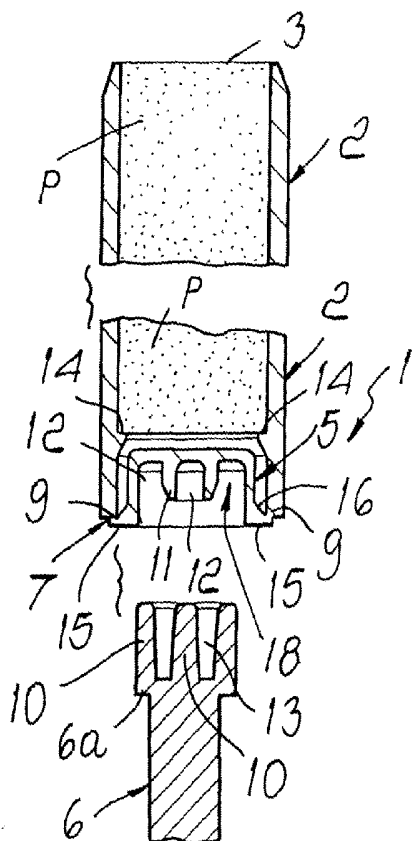
PCT

(10) International Publication Number
WO 2004/014476 A1

- (51) International Patent Classification⁷: **A61M 31/00**, B65D 83/00
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- (21) International Application Number: PCT/EP2003/007878
- (22) International Filing Date: 18 July 2003 (18.07.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: MO2002A000221 6 August 2002 (06.08.2002) IT
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- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: CANNULA FOR DISPENSING VISCOUS PRODUCTS, PARTICULARLY MEDICINAL PASTES, OINTMENTS AND CREAMS



(57) Abstract: A cannula for dispensing fluid products, particularly medicinal pastes, ointments and creams or the like, comprising an internally hollow cylindrical body (2) that contains a fluid product (P), provided at one end with an outlet (3) for product dispensing, which is associated with a detachable closure (4) and with a closure bottom (5) at the opposite end, a temporary coupling (7) for the bottom (5) to the body (2), and a push rod (6) that is detachably to associate with the bottom (5), the temporary coupling (7) being suitable to release the bottom (5) under thrust of the rod (6) entering the body (2) and the uncoupled bottom (5') being suitable to act as a plunger that can slide within the body (2) to dispense the product (P) from the outlet (3).



Published:

— *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

CANNULA FOR DISPENSING VISCOUS PRODUCTS, PARTICULARLY MEDICINAL PASTES,
OINTMENTS AND CREAMS

Technical Field

The present invention relates to a cannula for dispensing fluid products,
5 particularly medicinal pastes, ointments and creams or the like.

Background Art

Cannulas for dispensing medicinal fluid products are known which are
used in particular for vaginal and anal applications and are generally sold in
packages together with tubes or bottles that contain one of these products.

10 Known cannulas are constituted by a cylinder that is adapted to contain
the product and inside which a plunger can slide, said plunger being rigidly
coupled to the end of a push rod.

The cylinder has an open end that can be coupled to the outlet of the tube,
in order to introduce in said cylinder the amount of product to be applied and
15 through which the introduced product is dispensed.

The opposite end of the cylinder is closed by a bottom provided with a
hole in which the push rod is inserted slidingly, acting as an element for
stopping the plunger in order to prevent its extraction.

The product introduced in the cannula is dispensed by acting on the push
20 rod in the direction in which the plunger slides toward the open end of the
cylinder.

These known cannulas have drawbacks, including the fact that they are
structurally and constructively very complicated and that since they are of
the single-use type for hygienic reasons and require a push rod for each
25 cylinder, they entail a considerable waste of materials.

To obviate these drawbacks, cannulas are known which are constituted by
a cylinder, in which the opposite ends are open and inside which a plunger is
inserted slidingly, and by a push rod, which is separate from the plunger and
can be coupled detachably thereto.

30 At the opposite ends of the cylinder there are abutment undercuts or

shoulders, which are adapted to stop the sliding of the plunger, preventing it from sliding out under the action of the push rod.

These last cannulas can be sold in packages that contain a single push rod, a plurality of empty single-use cylinders to be used for the various applications, and one or more tubes of product.

In this case, one of the two ends of the cylinders can be coupled to the outlet of the tube in order to introduce the product in the cylinders, while the opposite end acts as a passage for the push rod.

As an alternative, these cannulas can be sold in packages that contain a single push rod and a plurality of cylinders that are already filled with the product to be applied and are provided, at their two opposite ends, with closure plugs that are removed at the time of use.

These last known cannulas have allowed to contain the consumption of materials: the same push rod can in fact be used with a plurality of cylinders.

However, even these last known cannulas are not free from drawbacks, including the fact that they are constructively very complicated and have very high costs and long production times.

The cylinders and plungers are in fact usually formed by molding polymeric materials in two parts that are mutually separate and are then assembled; this entails designing and manufacturing two different molds and laborious assembly operations, which have a negative effect on the production times and costs of the cannulas.

If the cylinders are sold already filled with the product to be applied, it is also necessary to use, for each cylinder, two plugs to be applied to its opposite open ends, with a consequent costly waste of materials.

Disclosure of the Invention

The aim of the present invention is to eliminate the drawbacks noted above of known cannulas, by providing a cannula for dispensing fluid products, particularly medicinal pastes, ointments and creams or the like, that is structurally and constructively simpler, does not require additional

assembly operations, allows to further contain production times and costs and to limit the waste of materials.

Within this aim, an object of the present invention is to provide a structure that is simple, relatively easy to provide in practice, safe in use, effective in operation, and has a relatively low cost.

This aim and this and other objects that will become better apparent hereinafter are achieved by the present cannula for dispensing fluid products, particularly medicinal pastes, ointments and creams or the like, which comprises an internally hollow cylindrical body that contains a fluid product and is provided at one end with an outlet for dispensing said product, which is associated with detachable closure means, and has a closure bottom at the opposite end, characterized in that it comprises means for the full and temporary coupling of said bottom to said body and a push rod that is detachably associable with said bottom, said full and temporary coupling means being suitable to release said bottom under the thrust of said rod entering said body and the uncoupled bottom being suitable to act as a plunger that can slide within said body in order to dispense the product from said outlet.

Brief description of the Drawings

Further characteristics and advantages of the present invention will become better apparent from the following detailed description of a preferred but not exclusive embodiment of a cannula for dispensing fluid products, particularly medicinal pastes, ointments and creams or the like, illustrated by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is a front view of the cylindrical body of the cannula according to the invention;

Figure 2 is a front view of the push rod of the cannula according to the invention;

Figure 3 is a longitudinal sectional view of the body of Figure 1;

Figure 4 is a longitudinal sectional view of the push rod of Figure 2;

Figure 5 is an enlarged-scale longitudinal sectional view of an end of the body of Figure 1;

Figure 6 is an enlarged-scale longitudinal sectional view of the cannula according to the invention during the association of the push rod with the bottom of the body;

Figure 7 is an enlarged-scale longitudinal sectional view of the cannula according to the invention during the dispensing of the product.

Ways of carrying out the Invention

10 With reference to the figures, the 'reference numeral 1 generally designates a cannula for dispensing fluid products P, particularly medicinal pastes, ointments and creams or the like for vaginal or anal applications.

The cannula 1 comprises a cylindrical body 2, which is internally hollow and contains a product P and is provided, at its opposite ends, respectively with an outlet 3 for dispensing the product P, which is associated with 15 removable closure means such as, for example, a film 4 that can be removed by tearing, and with a closure bottom 5.

The cannula 1 further comprises a push rod 6 that is detachably associable with the bottom 5.

20 The bottom 5 is rigidly coupled to the body 2 by way of full and temporary coupling means 7, which are suitable to release it under the thrust of the rod 6 entering the body 2; at the end of the body 2, closed previously by the bottom 5, there remains an opening 8 for the passage of the rod 6.

The bottom 5' uncoupled from the body 2 acts as a plunger that can slide 25 within the body 2 under the thrust of the rod 6 in order to dispense the product P from the outlet 3 once the film 4 has been removed.

The body 2 and the bottom 5 are formed monolithically together.

The means 7 for full and temporary coupling are constituted by a ring 9 for joining the perimeter of the bottom 5 to the side walls of the body 2, 30 along which there are portions that can tear under the thrust of the rod 6,

such as for example prefracture lines, prescoring lines, or the like.

Moreover, the means 7 for full and temporary coupling can comprise a plurality of breakable bridges, whose opposite ends are schematically shown in the figure associated respectively with the bottom 5 and with the walls of the body 2.

Mutually complementary coupling means are formed between an end 6a of the rod 6 and the face of the bottom 5 that is directed toward the outside of the body 2 and are constituted by respective protruding or male elements 10 and 11, which can be inserted in complementary recesses or female elements 12 and 13.

Advantageously, the end 6a of the rod 6 is constituted by a contoured head that is larger than the stem of said rod and can be inserted in a complementary containment cup 18 that protrudes from the face of the bottom 5 that is directed toward the outside of the body 2.

Proximate to the opening 8 there are means for stopping the sliding of the uncoupled bottom 5', which are suitable to prevent its extraction from the body 2 and are constituted by a tooth 14 that is formed so as to protrude centripetally on at least one perimetric arc of the internal walls of said body.

The tooth 14 can flex elastically toward the inside of the body 2 in order to allow the insertion of the uncoupled bottom 5' in said body under the insertion thrust of the rod 6.

Likewise, the bottom 5 comprises a surface for abutment against the tooth 14 that is constituted by an annular portion 15 of its face that is directed toward the outside of the body 2.

The bottom 5 further comprises lateral fins 16 for forming a seal with the internal walls of the body 2 whose diameter is on average greater than, or equal to, the inside diameter of said body so as to generate friction with it.

In the illustrated embodiment, the bottom 5 is constituted by a substantially cylindrical element, which comprises a longitudinal portion whose outside diameter gradually increases toward the outward face of the

body 2; the lateral surface of said longitudinal portion is suitable to form the fins 16 and the base surface of said longitudinal portion is suitable to form the abutment surface 15.

Conveniently, there are removable sealing means, such as a band 17 that
5 is perimetrically associated with the rim of the body 2 at the bottom 5.

The film 4 is made to adhere to the perimetric edge of the outlet 3 by gluing or thermal bonding.

The operation of the device according to the invention is as follows: the cannula 1 is sold ready for use in packages that contain one or more bodies
10 2, which are already filled with the product P and whose opposite ends are respectively closed by the film 4 and by the bottom 5, and a single rod 6 that can be used with the various bodies 2.

Upon use, the film 4 is removed, thus opening the outlet 3, the sealing band 17, if any, is eliminated, and the end 6a of the rod 6 is coupled to the
15 bottom 5.

Then, by acting on the rod 6, thrust is applied to the bottom 5 in the direction for insertion into the body 2 until the means 7 for full and temporary coupling break and the bottom 5' thus disconnected is pushed so that it moves past the tooth 14 in order to enter the portion of the body 2 that
20 contains the product P.

The tooth 14, after flexing toward the inside of the body 2 to allow the insertion of the uncoupled bottom 5', assumes its extended configuration again in order to act as a stop element for the uncoupled bottom 5' and prevent its extraction from the body 2.

25 The opening 8, freed by the bottom 5, acts as a passage for the rod 6, while the uncoupled bottom 5' acts as a pusher plunger that can slide, under the action of the rod 6, within the body 2 in order to dispense the product P from the outlet 3.

The fins 16 slide in contact and hermetically against the internal walls of
30 the body 2, avoiding losses of the product P through the opening 5.

It should be noted that the outlet 3 is used, during the packaging of the cannula 1, to fill the body 2 with the product P; after this, the film 4, advantageously made of aluminum, is heat-sealed or glued to the perimetric rim of the outlet 3.

5 In practice it has been found that the described invention achieves the intended aim and object.

The cannula according to the invention is in fact constructively and structurally simpler than known ones and allows to further limit waste of materials and to contain production times and costs.

10 The cylindrical body of the cannula according to the invention is in fact formed monolithically with the closure bottom, which performs the dual function of plug and pusher plunger; this allows to eliminate one of the two molds for forming the cylindrical body and the plunger of known cannulas, the additional operations for their assembly, and one of the two plugs for
15 closing the cylindrical bodies already packaged with the product.

The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

All the details may further be replaced with other technically equivalent ones.

20 In practice, the materials used, as well as the shapes and the dimensions, may be any according to requirements without thereby abandoning the scope of the protection of the appended claims.

The disclosures in Italian Patent Application No. MO2002A000221 from which this application claims priority are incorporated herein by reference.

CLAIMS

1. A cannula for dispensing fluid products, particularly medicinal pastes, ointments and creams or the like, comprising an internally hollow cylindrical body (2) that contains a fluid product (P) and is provided at one end with an outlet (3) for dispensing said product, which is associated with detachable closure means (4), and has a closure bottom (5) at the opposite end, characterized in that it comprises means (7) for the full and temporary coupling of said bottom (5) to said body (2) and a push rod (6) that is detachably associable with said bottom (5), said full and temporary coupling means (7) being adapted to release said bottom (5) under the thrust of said rod (6) entering said body (2) and the uncoupled bottom (5') being adapted to act as a plunger that can slide within said body (2) in order to dispense the product (P) from said outlet (3).

2. The cannula according to claim 1, characterized in that said body (2) and said bottom (5) are formed monolithically together.

3. The cannula according to one or more of the preceding claims, characterized in that said means (7) for full and temporary coupling comprise a ring (9) for connecting said bottom (5) to the walls of said body (2) and along which portions that can break under said thrust of the rod (6) are provided.

4. The cannula according to one or more of the preceding claims, characterized in that said breakable portions comprise prefracture lines, prescoring lines, or the like.

5. The cannula according to one or more of the preceding claims, characterized in that said means (7) for full and temporary coupling comprise a plurality of breakable bridges, whose opposite ends are respectively associated with said bottom (5) and with the walls of said body (2).

6. The cannula according to one or more of the preceding claims, characterized in that it comprises coupling means (10, 11, 12, 13) which are

formed, so as to be shaped complementary to each other, at one end of said rod (6) and on the face of said bottom (5) that is directed toward the outside of said body (2).

7. The cannula according to one or more of the preceding claims, characterized in that said coupling means comprise at least one protruding element (10, 11) that is formed on said end of the rod (6), on said face of the bottom or on both, and at least one complementarily shaped hollow (12, 13) that is formed respectively in said face of the bottom (5) and in said end of the rod (6).

8. The cannula according to one or more of the preceding claims, characterized in that said coupling means comprise a contoured head (6a) that is formed at said end of the rod (6) and a complementary cup (8) for containing the head (6a) that protrudes from said face of the bottom (5) or vice versa.

9. The cannula according to one or more of the preceding claims, characterized in that it comprises means (14) for retaining the sliding of the uncoupled bottom (5'), which are formed on the internal walls of said body (2) and are suitable to prevent the extraction of the uncoupled bottom (5') from the body (2).

10. The cannula according to one or more of the preceding claims, characterized in that said retention means (14) are formed proximate to said opposite end of the body (2).

11. The cannula according to one or more of the preceding claims, characterized in that said retention means comprise a tooth (14) that is formed so as to protrude centripetally on at least one arc of said internal walls (2).

12. The cannula according to one or more of the preceding claims, characterized in that said bottom (5) comprises a surface (15) for abutment with said retention means (14).

13. The cannula according to one or more of the preceding claims,

characterized in that said abutment surface is constituted by an annular portion (15) of said face of the bottom (5) that is directed toward the outside of the body (2).

14. The cannula according to one or more of the preceding claims,
5 characterized in that said bottom (5) comprises lateral fins (16) for forming a seal against the internal walls of said body (2), the diameter of said fins (16) being greater than, or equal to, the inside diameter of the body (2).

15. The cannula according to one or more of the preceding claims,
10 characterized in that said bottom (5) is constituted by a substantially cylindrical element that comprises a longitudinal portion whose outside diameter gradually increases toward said face that is directed toward the outside of the body (2), the lateral surface of said longitudinal portion being suitable to form said fins (16) and the base surface of said longitudinal portion being suitable to form said abutment surface (15).

15 16. The cannula according to one or more of the preceding claims, characterized in that it comprises detachable sealing means (17) that are associated with said opposite end of the body (2).

17. The cannula according to one or more of the preceding claims,
20 characterized in that said sealing means comprise a band (17) that is perimetrically associated with the rim of said opposite end of the body (2).

18. The cannula according to one or more of the preceding claims,
characterized in that said detachable closure means are constituted by a film (4) that can be removed by tearing and is made to adhere to the perimetric rim of said outlet (3).

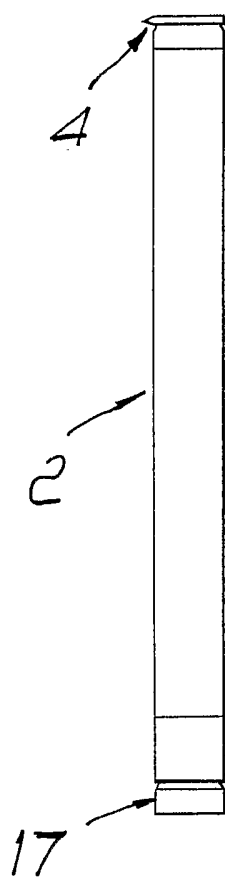


Fig. 1

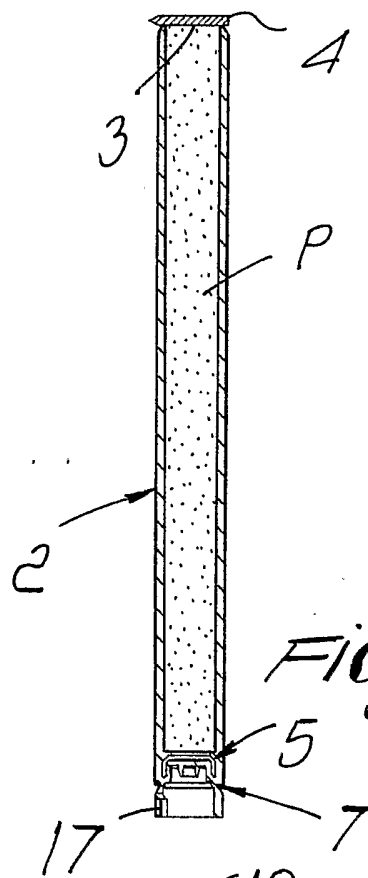


Fig. 3

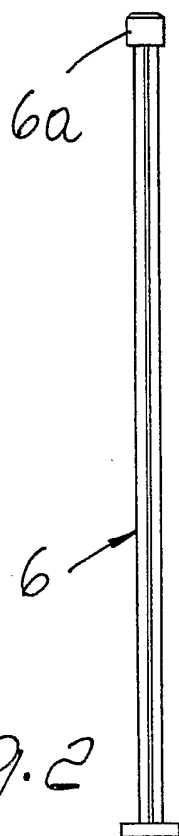


Fig. 2

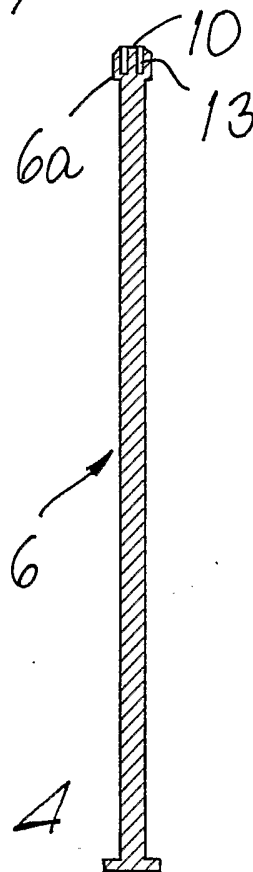
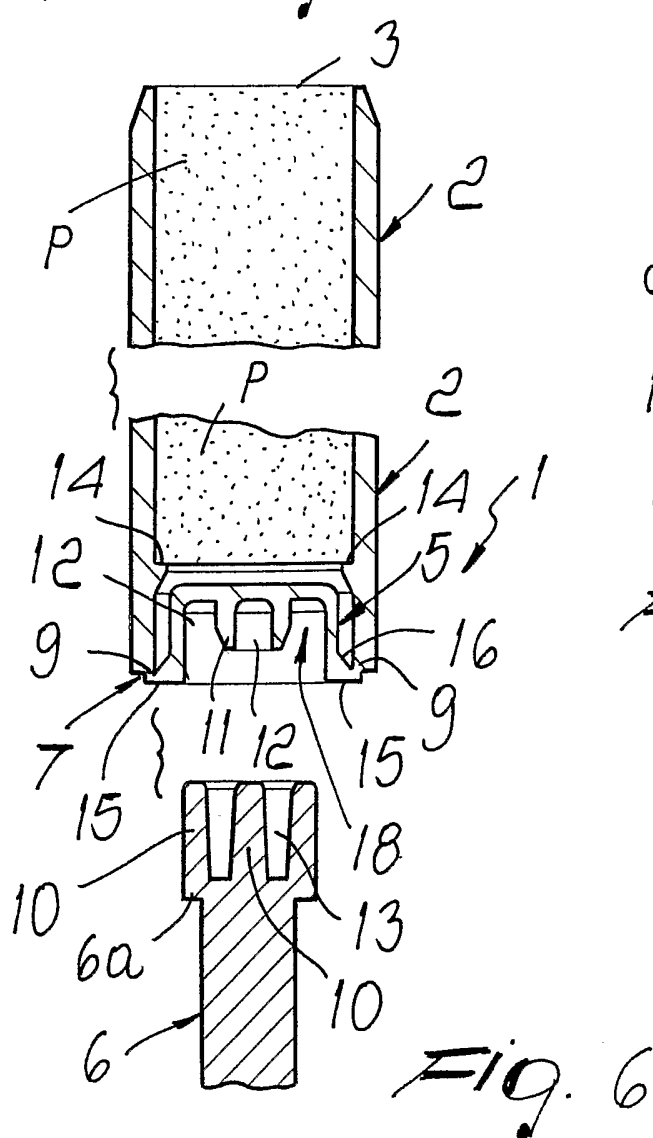
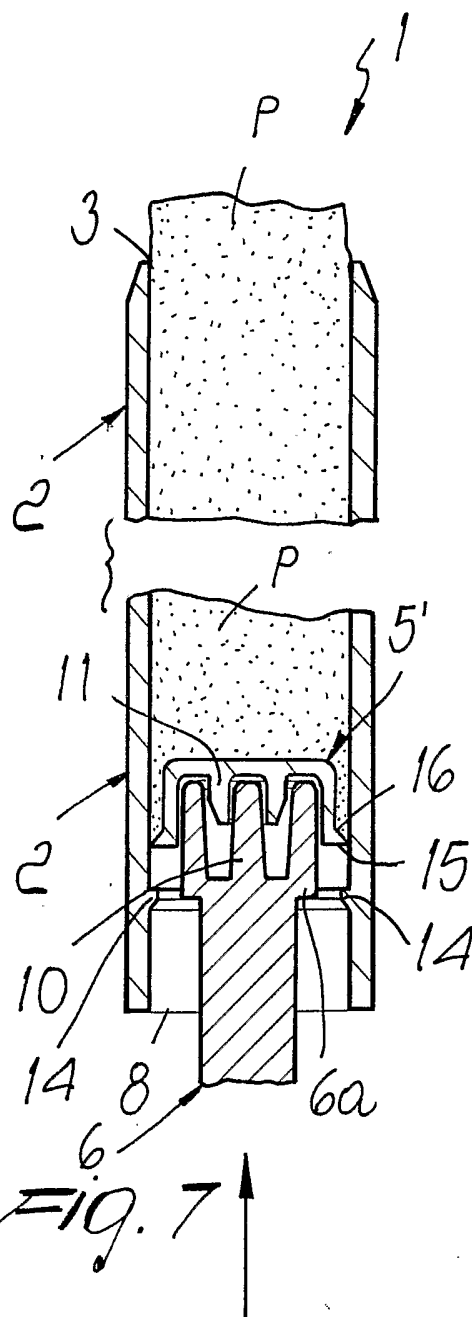
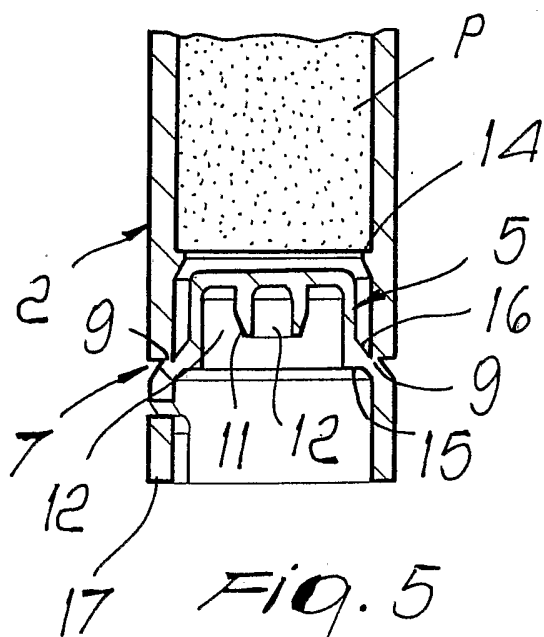


Fig. 4



INTERNATIONAL SEARCH REPORT

 Internati ication No
 PCT/EP 03/07878

 A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 A61M31/00 B65D83/00

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 7 A61M B65D

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)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Y	column 12, line 56 -column 14, line 50; figure 16	2
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☒ 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

18 November 2003

Date of mailing of the international search report

02/12/2003

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INTERNATIONAL SEARCH REPORT

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