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(54) A dispenser

(57) A dispenser (10) is provided. The dispenser has a container body (20) for storing a plurality of items (70, 75, 80) to be dispensed. The dispenser also has a dispensing part (30) which has an orifice (41) and is movable from a non-dispensing position in which items cannot pass through the orifice to a dispensing position in which items (70, 75, 80) can pass from the container body (20) through the orifice (41). The dispenser further includes an actuating part (50) operable to move the dispensing part (30) to the dispensing position. The dispenser is arranged so that when items pass through the orifice they are released directly into the actuating part (50).

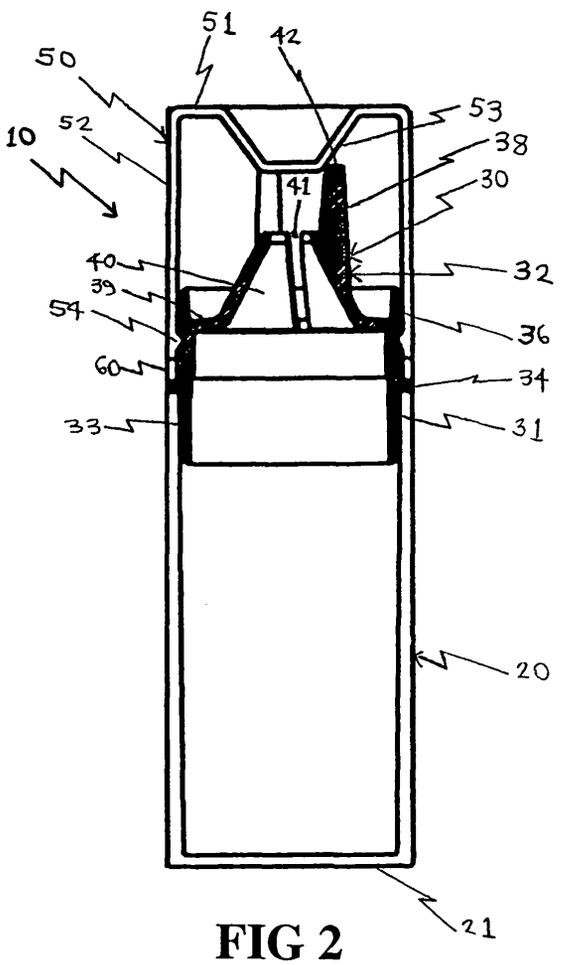

FIG 2

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Description

[0001] The present invention relates generally to a dispenser for holding a plurality of individual items and allowing them to be dispensed.

[0002] A common form of dispenser of this type is a tablet dispenser for medicaments, sweeteners or the like product. Tablet dispensers usually comprise a body for containing a plurality of items to be dispensed, and an actuating means operable by the user to cause an item to be dispensed from the body. The actuating means may be, for example, a push-button (EP 0 894 736), a rotatable part (US 6,142,337) or a squeezable shell (WO 00/68109).

[0003] In known tablet dispensing systems the tablets are dispensed directly out of the dispenser. For example, medicaments are dispensed directly into the hand of the user, and sweetening tablets are dispensed directly into a beverage.

[0004] There are a number of disadvantages to this type of system, for example: tablets may be misdirected and then lost as they are dispensed; if a user's hand is required to catch the tablets as they are dispensed this prohibits two-handed operation of the actuating means, which may be necessary for those without the strength or dexterity to operate the actuating means with a single hand; the items which will be dispensed may be water-soluble and therefore it would be preferable not to dispense them directly onto a user's hand; if items are dispensed directly into a beverage the number of tablets dispensed may be forgotten during the dispensing operation and therefore an accurate dose will not be possible.

[0005] The present invention seeks to address the above problems.

[0006] The present invention provides a dispenser comprising a container body which, in use, contains a plurality of items to be dispensed, a dispensing part having an orifice movable from a non-dispensing position in which items cannot pass through the orifice to a dispensing position in which an item can pass from the container body through the orifice, and an actuating part operable to move the dispensing part to the dispensing position, characterised that, the dispenser is arranged so that, in use, items passing through the orifice are released into the actuating part.

[0007] The present invention therefore uses the actuating part not only to actuate item-release means, but also to catch items as they are dispensed. Once the required number of items has been dispensed the items can be removed from the actuating part.

[0008] The actuating part may be removable completely from the remainder of the dispenser so that the items can be easily removed.

[0009] The dispenser may be adapted to dispense items individually into the actuating part. This allows the required number of items to be accurately dispensed into the actuating part prior to the items leaving the dispenser.

[0010] The dispensing orifice may be defined by one or more dispensing members movable in response to movement of the actuating part. The or each dispensing member may be adapted to move radially outwardly or inwardly to move the dispensing part to the dispensing position.

[0011] The number and form of the dispensing member/s can be matched to any particular application. The only essential requirement is that it/they define an orifice adapted to restrict/allow the passage of items when the dispensing part is in the non-dispensing/dispensing position.

[0012] The actuating part may include a projection which, together with the dispensing member/s, defines a restricted dispensing zone adjacent the orifice into which a single item can pass when the dispensing part is moved to the dispensing position. Inclusion of the projection therefore allows items to be dispensed individually into the actuating part.

[0013] The projection may also be adapted to cause the dispensing member/s to move as the actuating part is moved. The projection therefore serves a dual function.

[0014] The dispensing part may be biassed towards the non-dispensing position so that following the dispensing of one or more items, the dispensing part automatically returns to the non-dispensing position.

[0015] The dispenser may further comprise a tamperband. The tamperband may be situated such that it must be removed before the actuating part can be operated to move the dispensing part. The dispenser cannot be operated before the tamperband is removed.

[0016] Where a plurality of dispensing members are used and they move radially outwardly to move the dispensing part to the dispensing position, they may define a circular orifice. In the non-dispensing position the orifice defined by the dispensing members is smaller than an item. When the actuating part is operated the dispensing members move radially outwardly and increase the size of the circular orifice.

[0017] Where the dispensing members move radially inwardly the members may define an ovoid orifice in the non-dispensing position. When the actuating part is operated the dispensing members move radially inwardly and circularise the orifice. The items are shaped such that they cannot pass through an ovoid orifice but can pass through a circular orifice which may have the same circumference; for example the items could be disc-shape or spherical.

[0018] The present invention will now be more particularly described, by way of example, with reference to the accompanying drawings, in which:

Fig.1 is a perspective view of a body part and a dispensing part forming part of a dispenser according to a first embodiment of the present invention;

Fig.2 is a section of Fig.1 shown with an actuating

part attached to form a complete dispenser;
Figs. 3a to 3f show a series of magnified sections of part of the dispenser of Fig.2, which illustrate the working of the dispenser;
Fig.4 is a plan view of the actuating part shown removed from the remainder of the dispenser following the dispensing of items from the body part;
Fig.5 is a perspective view of a body part and dispensing part forming part of a dispenser according to a second embodiment of the present invention;
Fig.6 is a section of Fig.2 shown with an actuating part attached to form a complete dispenser; and
Figs.7a to 7f show a series of magnified sections of part of the dispenser of Fig.6, which illustrate the working of the dispenser.

[0019] Referring first to Figs. 1 and 2 there is shown a dispenser generally indicated (10) comprising a body part (20), a dispensing part (30) and an actuating part (50) [Fig.1 shows just the parts (20, 30) before the part (50) has been added].

[0020] The body part (20) is a cylindrical container for holding items to be dispensed. The body part (20) is closed at one end by a disc-shape end plate (21), and the dispensing part (30) is connected to the other end of the body part (20).

[0021] Referring now also to Figs. 3a to 3f, the actuating part (50) is a cap comprising a top plate (51) and a cylindrical skirt (52) which depends from the periphery of the plate (51).

[0022] The top plate (51) includes a central frustoconical depression which forms a frustoconical projection (53) in the interior of the actuating part (50). The projection (53) defines an annular channel (55) around its periphery.

[0023] At the open end of the skirt (52) is an annular bead (54) the purpose of which is described in more detail below.

[0024] The dispensing part (30) comprises a lower connecting portion (31) and an upper dispensing portion (32). The connecting portion (31) comprises a lower tubular skirt (33) sized to fit inside the body part (20). The outer wall of the connecting portion (31) has a flange (34) approximately half way along its length. The flange (34) acts as a depth stop to limit the amount the connecting portion (31) can be inserted into the body part (20).

[0025] Below the flange (34) the outer wall of the connecting portion (31) has an annular groove (35) sized and positioned so that when the connecting portion is fully inserted into the body part (20) it aligns with an annular bead (22) on the inner surface of the body part (best shown in Figs. 3a to 3f). The bead (22) thereby retains the dispensing part (30) in the body part (20).

[0026] Above the flange (34) the connecting portion (31) extends with an upper tubular skirt (36). The upper tubular skirt (36) includes an annular groove (37) which is trapezoidal in section. The groove (37) receives the bead (54) from the inside surface of the cap skirt (52) to clip the actuating part (50) onto the dispensing part (30) in such a way that the actuating part (50) can move axially with respect to the dispensing part (30), with the bead (54) sliding axially in the groove (37).

[0027] The dispensing portion (32) of the dispensing part (30) extends from the upper tubular skirt (36). The dispensing portion (32) comprises three identical dispensing members (38).

[0028] Each of the members (38) includes a link portion (39) which extends orthogonally from the upper tubular skirt (36) to connect the member (38) to the skirt (36) in such a way that the member (38) can resiliently flex in the radial direction. Each member (38) further comprises a curved plate (40) which is shaped so that together the members (38) form a frustoconical structure with a central circular orifice (41) at its end remote from the link portions (38). The orifice (41) is shaped and configured, i.e. adapted, to the items to be dispensed.

[0029] Each of the members (38) further includes a leg (42) which extends from the outer surface of the plate (40).

[0030] The lower edge of the skirt (52) of the actuating part (50) is attached to the flange (34) by an annular tamper evident band (60), the purpose of which is described below.

[0031] The operation of the dispenser will now be described in relation to Figs. 3a to 3f, which show the upper part of the dispenser in an inverted, as used, state compared to Figs.1 and 2

[0032] Fig.3a shows the dispenser in an unopened and unused configuration. The tamper band (60) is connected between the lower edge of the skirt (54) and the flange (34).
The actuating part (50) is thereby locked in a first axial position in which the bead (54) is at the upper end of the groove (37).

[0033] In the first axial position the dispensing member legs (42) are held away from the actuating part projection (53) and the members (38) are in a rest position in which the orifice (41) is too small for an item to pass through.

[0034] Fig.3b shows the dispenser with the tamper band (60) removed. There is now a gap (G) between the lower edge of the skirt (52) and the flange (34).

[0035] In Fig.3c the actuating part (50) has been moved to a second, lower axial position. This is possible because of the gap (G) and because the bead (54) can slide from the upper end of the groove (37) to the lower end. The movement of the actuating part (50) causes the legs (42) to contact the projection (53) and to move progressively down its widening exterior surface. As a result the dispensing members (38) pivot about the intersection between the link members (39) and the plates (40).

[0036] As the members (38) are splayed radially outwardly the circular orifice (41) increases in size until a

first item (70) can pass through. The first item (70) passes through the orifice (41) and onto the projection (53). The space between the orifice (41) and the projection (53) is sufficient only for a single item; accordingly only a single item can be released from the orifice (41) whilst it is at its increased size. When the actuating part (50) is released, the resilience of the dispensing members (38) forces the actuating part (50) back to the first axial position, shown in Fig.3d. The first item (70) can now fall into the channel (55) surrounding the projection (53). A second item (75) cannot pass through the now constricted orifice (41).

[0037] If the dispenser (10) is operated again the second item (75) can now pass into the space between the orifice (41) and the projection (53), as shown in Fig.3e. When the actuating part (50) is released again the second item (75) falls into the channel (55) and a third item (80) moves to the orifice (41), but cannot pass through.

[0038] When the required numbers of items has been dispensed into the channel (55) the actuating part (50) can be removed by pulling it axially so that the bead (54) passes out of the groove (37). The actuating part (50) now functions as a cup which contains the items ready for use, as shown in Fig.4.

[0039] A second type of dispenser (110) is shown in Figs. 5 to 7, in which like reference numerals refer to like parts in relation to Figs. 1 to 4. The dispenser (110) is of the same general construction as the dispenser. However, whilst in the first dispenser (10) the dispensing members (38) are adapted to move radially outwardly, in this second dispenser (110) the members (138) are adapted to move radially inwardly.

[0040] In this embodiment the dispensing part (130) comprises two dispensing members (138) each of which includes a link portion (139) extending from the top of the groove (137). The plates (140) together define a hemispherical structure with an elliptical orifice (141) at its centre.

[0041] The actuating part skirt (152) comprises a lower first skirt portion (156) and an upper second skirt portion (157) of reduced diameter. The portions (156, 157) are joined by an intermediate, inwardly inclined portion (158).

[0042] A central projection (153) depends from the top plate of the actuating part.

[0043] The operation of the dispenser (110) is similar to the dispenser (10) in that the tamper band (160) is first removed and the actuating part (150) is then depressed. In this dispenser (110), however, depressing the actuating part (150) causes the legs (142) to progressively contact further down the intermediate skirt portion (158), which forces the dispensing members (138) radially inwardly (Fig.7c). In this embodiment the plates (140) are formed so that they contact each other in the rest position (see Fig.5). Accordingly, when the dispensing members (138) are forced inwardly the plates (140) are forced against each other and the areas around the orifice (141) are bowed outwardly. This tends to circularise the oral orifice (141).

[0044] Accordingly, spherical items (170, 175, 180) can pass through the orifice (141) in the same sequence shown for the first dispenser (10).

[0045] The central projection (153) does not cause the members (138) to move, but does restrict dispensing of items in the same way as the projection (53) of the first embodiment.

Claims

1. A dispenser (10) comprising:

a container body (20) which, in use, contains a plurality of items (70, 75, 80) to be dispensed, a dispensing part(30) having an orifice (41) and being movable from a non-dispensing position in which items (70, 75, 80) cannot pass through the orifice (41) to a dispensing position in which items can pass from the container body (20) through the orifice (41), and
an actuating part (50) operable to move the dispensing part (30) to the dispensing position,

characterised in that,
the dispenser (10) is arranged so that, in use, items (70, 75, 80) passing through the orifice (41) are released into the actuating part (50).

2. A dispenser (10) according to claim 1, wherein the actuating part (50) is removable.

3. A dispenser (10) according to claim 1 or claim 2, wherein the dispenser (10) is adapted to dispense items (70, 75, 80) individually into the actuating part (50).

4. A dispenser (10) according to any of claims 1 to 3, wherein the dispensing orifice (41) is defined by one or more dispensing members (38) movable in response to movement of the actuating part (50).

5. A dispenser (10) according to claim 4, wherein the or each dispensing member (38) is adapted to move radially outwardly thereby moving the dispensing part (30) to the dispensing position.

6. A dispenser (10) according to claim 4, wherein the or each dispensing member (38) is adapted to move radially inwardly thereby moving the dispensing part (30) to the dispensing position.

7. A dispenser (10) according to any of claims 4 to 6 wherein the actuating part (50) includes a projection (53) which, together with the dispensing member/s (38), defines a restricted dispensing zone adjacent the orifice (41) into which only a single item (70) can

pass when the dispensing part (30) is moved to the dispensing position.

8. A dispenser (10) according to claim 7, wherein the projection (53) is adapted to cause the dispensing member/s (38) to move as the actuating part (50) is moved.

9. A dispenser (10) according to any preceding claim, wherein the dispensing part (30) is biassed towards the non-dispensing position.

10. A dispenser (10) according to any preceding claim, wherein the dispenser (10) further comprises a tamper band (60) which must be removed before the actuating part (50) can be operated to move the dispensing part (30).

11. A dispenser (110) according to any of claims 4 to 10, wherein in the non-dispensing position the dispensing member/s (138) define an ovoid orifice (141) and in the dispensing position the dispensing member/s (138) define a circular orifice (141).

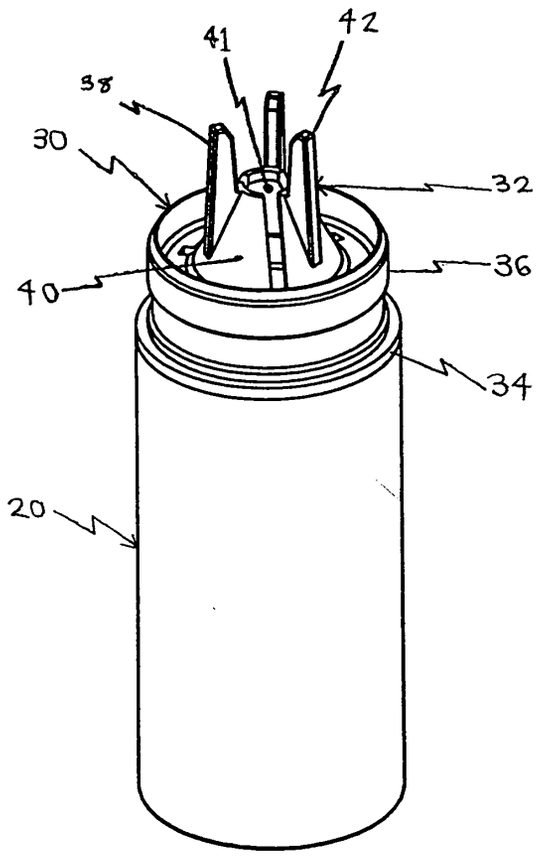
41
42
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FIG 1

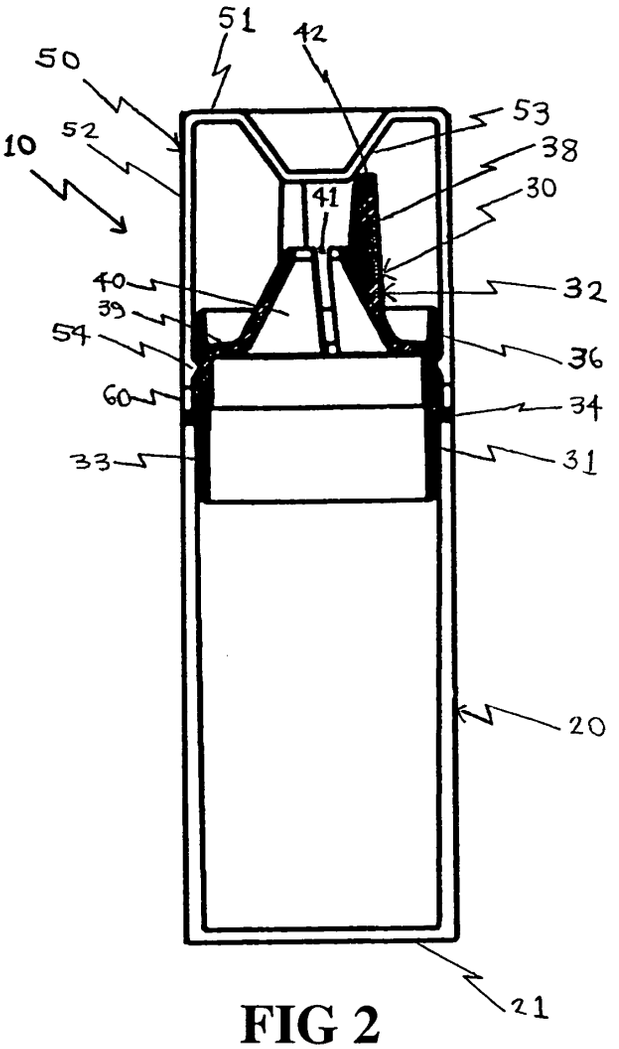
51
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FIG 2

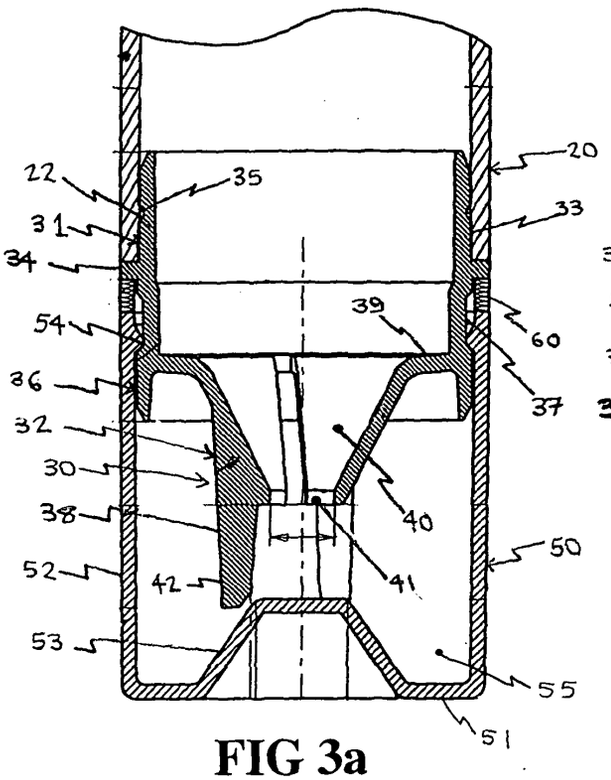

FIG 3a

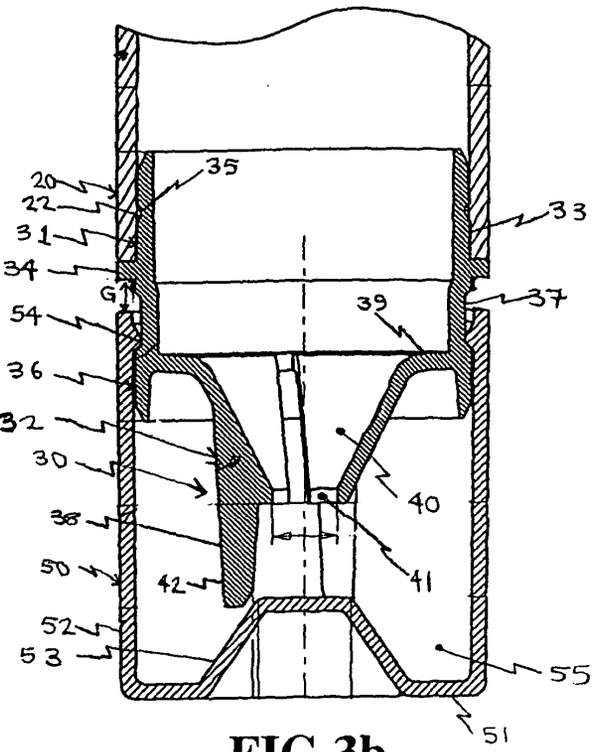

FIG 3b

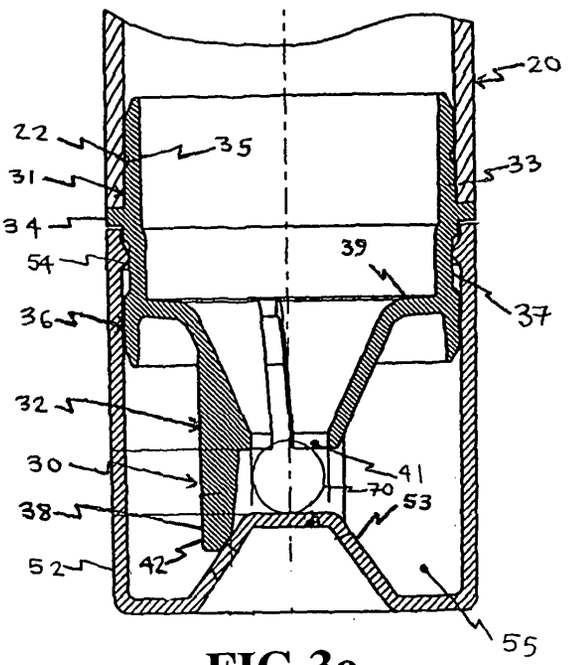

FIG 3c

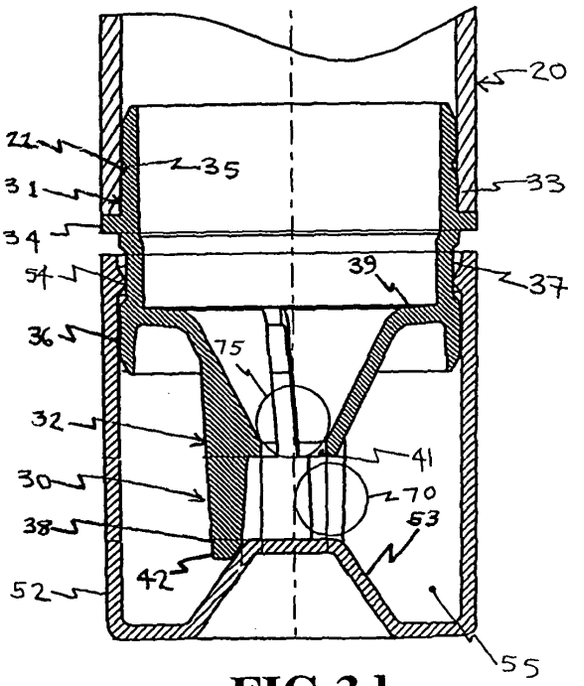

FIG 3d

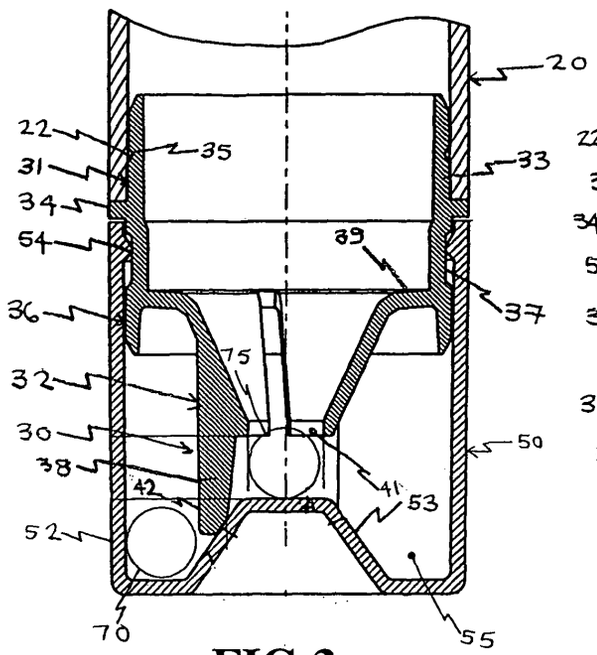

FIG 3e

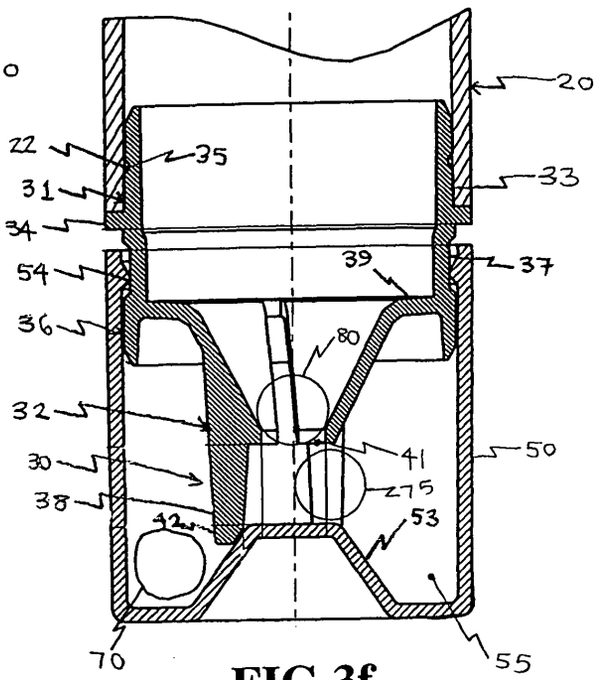

FIG 3f

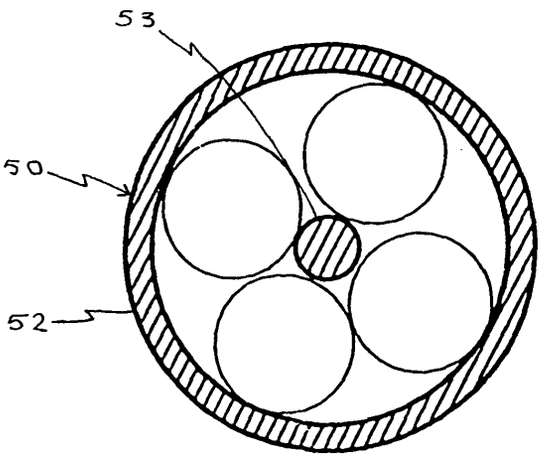

FIG 4

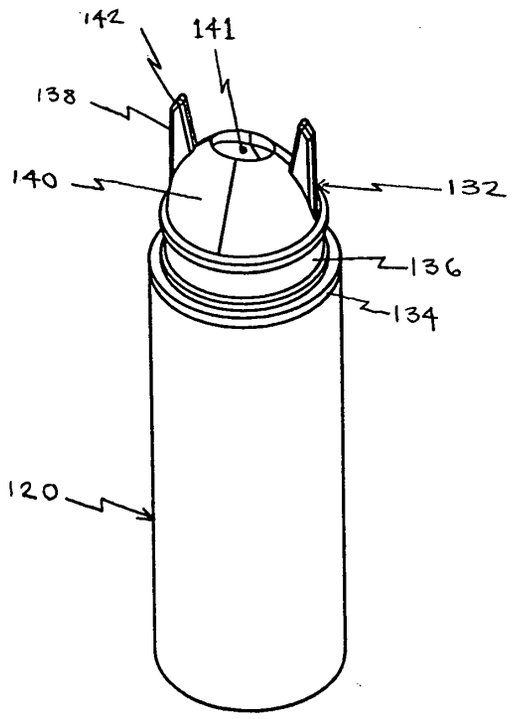

FIG 5

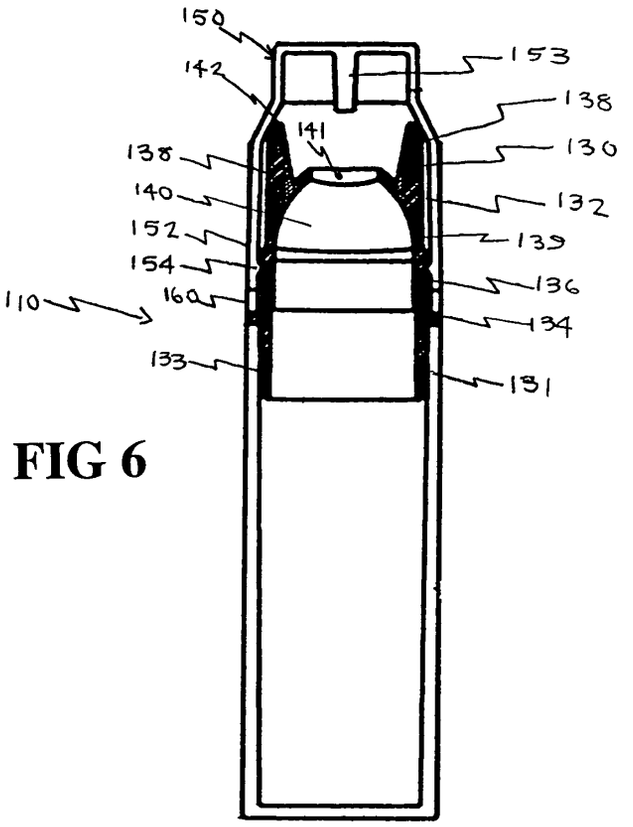

FIG 6

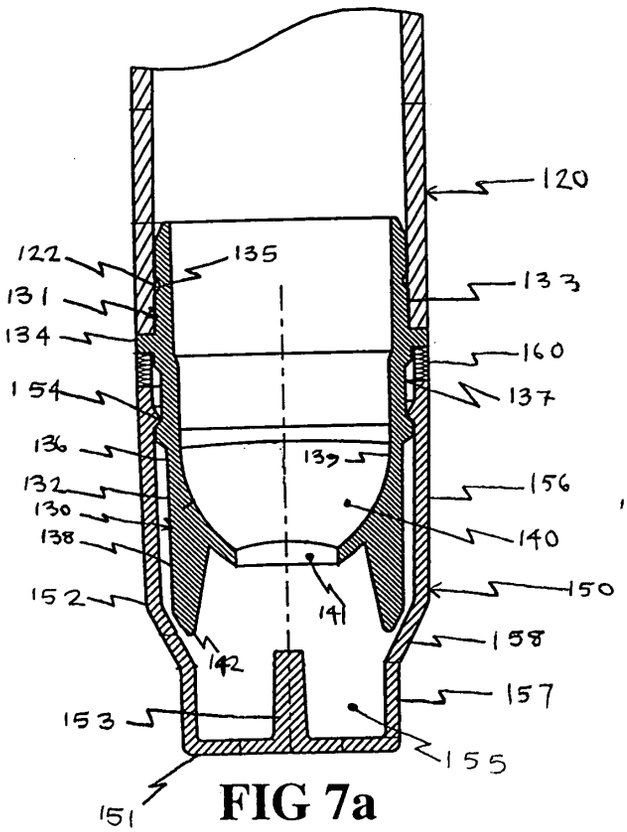

FIG 7a

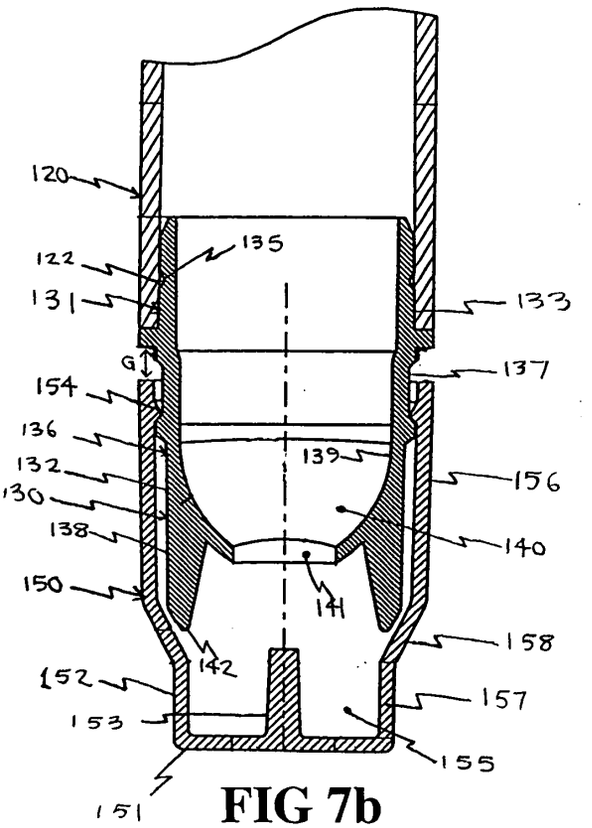

FIG 7b

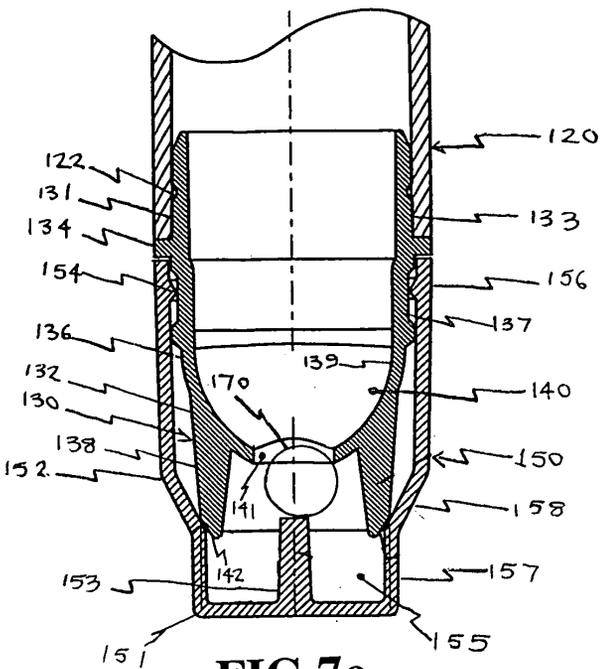

FIG 7c

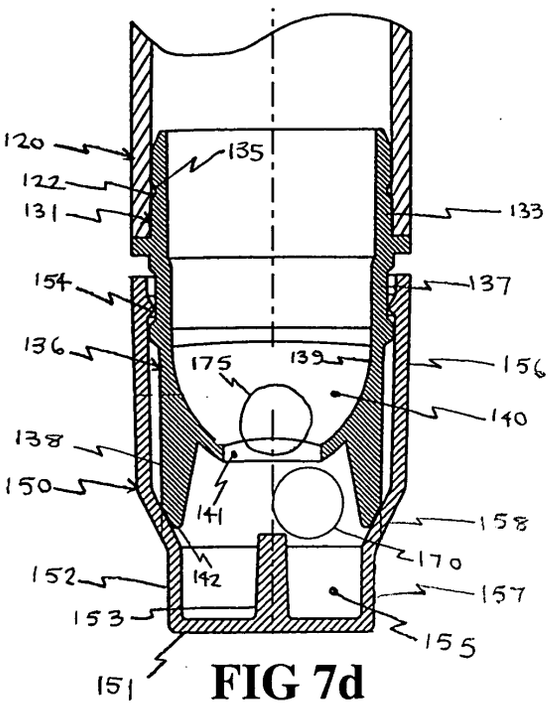

FIG 7d

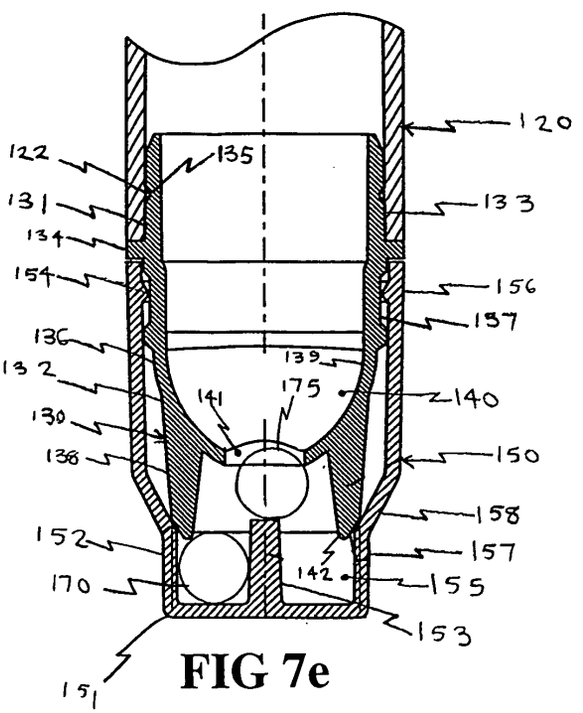

FIG 7e

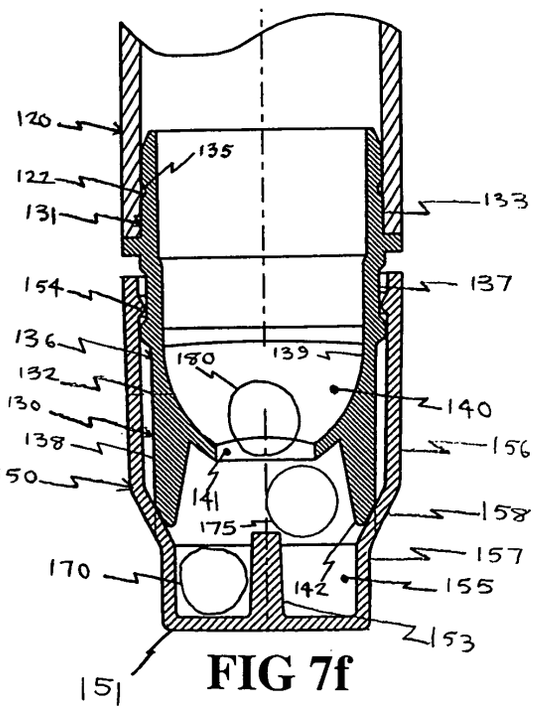

FIG 7f

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 03 01 7251

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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A	* page 6, line 12 - page 7, line 9; figures 6,7 *	7,8,10, 11	
X	FR 2 717 453 A (MATERIEL STE TECH EXPLOIT) 22 September 1995 (1995-09-22)	1-4,9,10	
A	See abstract * page 8, line 22 - page 9, line 32; figures 1-4 *	5-8,11	
X	FR 2 764 583 A (AIRSEC SA) 18 December 1998 (1998-12-18)	1-4,9	
A	See abstract * figures 5-12 *	5-8,10, 11	
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A	* page 11, line 24 - page 13, line 15; figures 1-9 *	5-8,10, 11	
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A	* column 2, line 60 - column 3, line 28; figures 1-3 *	5-8,10, 11	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	16 December 2003	Lendfers, P

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 03 01 7251

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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16-12-2003

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82