



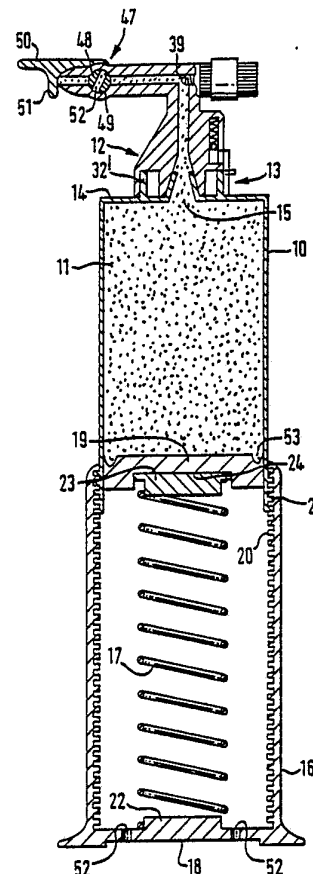
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<p>(21) International Application Number: PCT/GB84/00122 (22) International Filing Date: 9 April 1984 (09.04.84) (71) Applicant: KING, James, Bertram [GB/GB]; Kings Patent Agency Limited, 146a Queen Victoria Street, London EC4V 5AT (GB). (71)(72) Applicant and Inventor: KOH, Kwaun, Peng [MY/MY]; 39 Jalan C. 10, Taman Melawati, Setapak, Kuala Lumpur (MY). (74) Common Representative: KING, James, Bertram; Kings Patent Agency Limited, 146a Queen Victoria Street, London EC4V 5AT (GB). (81) Designated States: AT (European patent), AU, BE (European patent), BR, CH (European patent), DE (European patent), DK, FI, FR (European patent), GB (European patent), HU, JP, LU (European patent), NL (European patent), NO, RO, SE (European patent), SU.</p>		<p>Published <i>With international search report.</i></p>

(54) Title: PORTABLE DISPENSER FOR SEMI-SOLIDS

(57) Abstract

A portable dispenser for semi-solids such as toothpaste, margarine or jam comprises a container (10) for the semi-solid (11) provided at an outlet end (14) with a discharge assembly (12) controlled by a valve (48) and having movable in its other end a plunger (19) biased by a compression spring (17) to apply pressure to the semi-solid (11). The loading of the spring (17) can be adjusted by relatively rotating the container (10) and a base unit (16) so that the container (10) is telescopically received into the base unit (16). The discharge assembly (12) is releasably connected to the container (10) by a bayonet joint (13) and flow through its passage (38) is controlled by a screw (39). In a modification the semi-solid (11) is introduced into the container (10) pre-packed in a flexible cartridge. Two alternative discharge assemblies are also disclosed.



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TITLE"PORTABLE DISPENSER FOR SEMI-SOLIDS"DESCRIPTION

This invention relates to a portable dispenser for semi-solids such as toothpaste, margarine or jam and has for its principal object the provision of a convenient cheap/and simple dispenser which will enable the
5 semi-solid to be fully contained and enclosed except when required and will allow it to be dispensed accurately in measured quantities, avoiding waste and mess and also preventing deterioration/and contamination of the semi-solid through exposure to atmosphere.

10 According to the present invention there is provided a portable dispenser for semi-solids, such as toothpaste, comprising a container for the semi-solid having an outlet, a peripheral wall and a plunger movable within said wall axially of the container
15 toward the outlet to apply pressure to the semi-solid in the container, a valve-controlled discharge assembly releasably connectable to the container to make a fluid-tight connection with the outlet and a base unit having a peripheral wall dimensioned tele-
20 scopically to receive and surround the peripheral wall of the container, spring means being located in the base unit to act between the latter and the plunger and means being provided to hold the base unit and container in a chosen position of telescopic



adjustment whereby the loading of the spring may be adjusted by relative axial movement of the container and base unit.

5 Preferably the peripheral wall of the base unit has internal screw-threads which engage external screw-threads on the peripheral wall of the container and telescopic adjustment of the container and base unit is achieved by relatively rotating the same.

10 The spring means is preferably a helical compression spring which extends between location means therefor on the side of the plunger presented outward of the container and on a member spanning the interior of the base unit.

15 The portable dispenser may further comprise a cartridge of flexible material which, when filled with the semi-solid, is dimensioned to be received as a sliding fit within the container with an outlet of the cartridge in register with the outlet of the container, the cartridge being adapted to collapse
20 under the influence of the plunger as semi-solid is discharged. The outlet of the cartridge may be in a neck portion of reduced cross-section at one end thereof, said neck portion having an external screw-thread adapted to engage an internal screw thread of
25 the outlet of the container, and the other end of the cartridge may have a formation engageable by a tool to rotate the filled cartridge relative to the



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container when inserted therein so that the screw-thread on the neck will engage the screw-thread of the container outlet.

Formations may be positioned around the outlet
5 of the container to make a bayonet connection with L-shaped slots in the wall of the discharge assembly at one end of a valve-controlled passage therethrough. Accidental release of the bayonet joint may be prevented by a locking element urged by a spring to
10 occupy the outer one of the two limbs of one of the L-shaped slots, the locking element being movable against its spring bias to an inoperative position permitting movement of a formation on the container between the limbs of said slot but when in its
15 operative position serving to trap said formation in the inner limb of said slot.

The valve-controlled discharge assembly preferably comprises a passage having a bend across which a tapered end of a screw accessible from outside the
20 passage is movable to adjust the flow rate of semi-solid discharged through the passage. Unintended rotation of the flow rate adjustment screw may be prevented by a sleeve which is non-rotatably but axially displaceably located on the discharge
25 assembly coaxially with respect to the screw, the sleeve having internal splines to engage splines on a head of the screw when urged into engagement

therewith by a spring, the sleeve being manually movable against its spring bias out of engagement with the screw head to permit rotation of the latter.

The valve which controls discharge from the
5 discharge assembly may comprise a hollow valve member which is a sliding fit in a passage through the discharge assembly for semi-solid, the valve member being integral with a stem which extends out of the passage through a bore in the discharge
10 assembly, is spring-biased to a valve-closed position in which the valve member extends across a bend in the passage to close the same and is manually movable against its spring bias to a valve-opened position in which the valve member ceases to
15 obstruct the bend in the passage and permits semi-solid to flow through the valve member and round said bend. Alternatively the valve which controls discharge from the discharge assembly may comprise a cylindrical valve body rotatably located in the dis-
20 charge assembly across a passage therethrough for semi-solid, the valve body having a diametral through-hole which, when aligned with the passage, permits semi-solid to flow through the passage.

In either case said valve is preferably in an
25 intermediate position between inlet and outlet ends of the passage and said outlet end may be provided with a resilient nozzle having a normally closed

discharge slit which can be forced open by discharging semi-solid. The resilient nozzle may be detachable to be replaced by a similar nozzle having a discharge slit of different configuration. Alternatively the cylindrical
5 body may be integral with a closure for the outlet end of the passage, the arrangement being such that angular movement of the closure to uncover the outlet end of the passage brings the through-hole into alignment with the passage to open the valve.

10 In yet another modification the cylindrical body may be integral with a trigger device which is spring-loaded to a limit stop position in which the valve is closed and is manually movable against its spring bias to a position in which the valve is
15 opened.

Preferred embodiments of the present invention will now be described with reference to the accompanying diagrammatic drawings, in which:-

Figure 1 is a sectional elevation of a portable
20 dispenser in accordance with the invention,

Figures 2 and 3 show in perspective two of the components of the assembly of Figure 1,

Figure 4 shows on an enlarged scale a modified form of the container,

25 Figure 5A is an exploded view of a cartridge-and-cap assembly for use in connection with the container of Figure 4,

Figure 5B illustrates in perspective the bottom of the cartridge of Figure 5A,

Figures 6A, 6B and 6C are details on an enlarged scale of the flow rate control screw assembly of the dispenser of Figure 1, Figures 6A and 6B showing a locking sleeve respectively in the locked and un-
5 locked position and Figure 6C showing the components of the assembly in exploded view,

Figures 7A, 7B and 7C are similar views of the bayonet joint locking device of the dispenser of Figure 1,

10 Figures 8A and 8B are respectively a side sectional elevation and an exploded view of a modified discharge assembly, and

Figure 9 is a view similar to Figure 8A of another modified discharge assembly.

15 The portable dispenser illustrated in Figure 1 comprises a container 10 for a semi-solid 11 such as toothpaste, a discharge assembly 12 releasably connected by a bayonet joint 13 to an end 14 of the container 10 having an outlet 15 and a tubular base
20 unit 16 in which there is coaxially located a helical compression spring 17 which acts between a closure 18 at one end of the base unit 16 and a plunger 19 which spans the interior of the container 10 at its end remote from the outlet 15.

25 The peripheral wall of the base unit 16 has an internal screw thread 20 throughout its axial length

and this engages a screw thread 21 at the end of the container 10 remote from its outlet 15 and external of the peripheral wall of the container. Thus by relatively rotating the base unit 16 and container 10 their relative axial positions can be adjusted.

5 Telescopic movement of the container 10 into the base unit 16 increases the loading of the spring 17 and thus the pressure applied by the plunger 19 to the semi-solid 11. To allow relative rotation of the base

10 unit 16 and the plunger 19 without "winding up" the spring 17 one end of the latter is loosely located over a central, circular projection 22 on the inner side of the closure 18 and the other end of the spring 17 carries a plate 23 which locates in a central recess

15 24 of the plunger 19.

As shown in Figure 1 the container 10 has no insert or cartridge and the interior of the rigid container 10 is directly filled with the semi-solid 11. In the modified construction shown in Figures 4, 5A and

20 5B, however, (in which like parts have like reference numerals with the suffix 'A') the semi-solid 11 is prepacked in a cartridge 25 which has a flexible, collapsible peripheral wall dimensioned to be a sliding fit inside the peripheral wall of the container 10A.

25 The cartridge 25 has at one end a central, discharge neck 26 having an external screwthread which, prior to use, is engaged by the internal screw thread of a cap

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27. Before the cartridge 25 is inserted in the container 10A the cap 27 is removed and the screw-thread on the neck 26 can then be engaged with the screw thread 28 on the interior of the outlet 15A of the container, the semi-solid 11 filling the cartridge 25 giving it sufficient rigidity to enable it to be rotated relative to the container 10A. To facilitate this operation the closed end of the cartridge 25 is formed with an annular recess 30 in which there is located a knob 31 like a wing nut (see Figure 5B) by which it can be grasped and turned, rotating the cartridge 25 to screw its neck 26 into the outlet 15A of the container. When the plate 23 is inserted into position at the bottom of the cartridge 25 it causes the cartridge 25 progressively to collapse as semi-solid 11 is discharged. Alternatively the plunger 19A shown in Figure 4 may be positioned between the plate 23 and the bottom of the cartridge 25.

The bayonet joint 13 comprises angularly spaced flanges 32 projecting radially from an annular collar 32' upstanding from the closed end of the container 10 or 10A around its outlet 15 or 15A, the flanges 32 being engageable in respective L-shaped slots such as 33 at an inlet end of the discharge assembly 12. To prevent accidental detachment of the discharge assembly 12 from the container 10 or 10A



there is associated with at least one of the slots
33 a locking device 34 shown in more detail in
Figures 7A, 7B and 7C. The locking device comprises
a member 35 guided by grooves 37 in its sides for
5 movement between a locking position, as shown in
Figure 2 and Figure 7B and an unlocking position as
shown in Figure 7A. The member 35 is urged by a
spring 36 to the locking position in which it passes
across the outer limb of the associated L-shaped slot
10 33, and therefore traps in the inner limb thereof the
associated flange 32, and can be moved manually
against the action of the spring 36 to the unlocking
position in which it does not obstruct the associated
L-shaped slot 33. In use, when the discharge assembly
15 12 is pushed toward the container 10 or 10A the
associated flange 32 pushes the locking member 35 to
the position shown in Figure 7A. When now the dis-
charge assembly 12 and container 10 or 10A are
relatively rotated the flange 32 enters the inner limb
20 of the slot 33, enabling the spring 36 to return the
member 35 to its locked position as shown in Figure
7B. When it is desired to release the discharge
assembly 12 from the container 10 or 10A it is
necessary manually to move the member 35 from the
25 position of Figure 7B to that of Figure 7A so that,
on relative rotation of the discharge assembly and
container, the flange 32 can enter and then leave the

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outer limb of the slot 33. Alternatively the locking member 35 may be designed to lock into a groove (not shown) on the rim of the flange 32.

The slots 33 are distributed around an inlet
5 end of a passage 38 in the discharge assembly 12,
the passage having a bend controlled by the tapered,
free end of a flow rate control screw 39. The screw
thread on the shank of the screw 39 engages an
10 internal screw thread of a bore 40 in the discharge
assembly 12 entering the passage 38 at the bend
therein. Adjustment of the flow rate through the
passage 38 is effected by rotating the screw 39 by
means of its head 41. The periphery of the head 41
is knurled to be engaged by internal splines 42 of a
15 sleeve 43 which surrounds a cylindrical projection 44
of the body of the discharge assembly 12. This has
external splines 45 which engage the internal splines
of the sleeve 43 so that the latter is non-rotatable
but axially displaceable relative to the discharge
20 assembly 12. A spring 46 urges the sleeve 43 away
from the discharge assembly 12 so that it normally
surrounds the head 41 of the screw 39, locking it
against rotation as shown in Figure 6A. When it is
desired to rotate the screw 39 the sleeve 43 is pushed
25 against the action of the spring 46 in the direction
indicated by the arrow in Figure 6B until the head 41
is released, enabling it to be rotated.

The passage 38 is controlled by a valve 47.
This comprises a cylindrical valve body 48 which is

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rotatable in a seat 49 in the discharge assembly 12 transverse to the passage 38. The valve body 48 is integral with a closure member 50 having a lip 51 adapted to extend across and close in an airtight manner the outlet end of the passage 38. The valve body 48 has a diametral through-hole 52 which, when the lip 51 closes the passage 38, is isolated from the passage 38 so that the latter is closed by the valve body 48, as shown in Figure 1. When, however, the closure member 50 is raised, as shown in Figure 2, so that the lip 51 is moved clear of the outlet end of the passage 38 the valve body 48 is rotated to a position in which its through hole 52 is aligned with the passage 38 so that the valve is opened.

In use of the dispenser illustrated the nipple at the outlet 15 of a full container 10 is cut open just before being inserted in the inlet end of the passage 38 as the bayonet connection between the discharge assembly 12 and the container 10 is effected. The plunger 19 has a peripheral groove 53 on its inner side adapted to prevent leakage. To discharge the semi-solid 11 the closure 50 is lifted, opening the valve 48. The rate of flow of semi-solid along the passage 38 is controlled by the screw 39. As the pressure of the spring 17 on the plunger 19 slackens as material is discharged from the container 10, allowing the plunger 19 to travel toward the outlet



15, it can be increased again by relatively rotating the container 10 and base unit 16 so that the container 10 is telescopically received into the base unit 16. The closed end 18 of the latter has holes
5 52 to allow air to enter and moisture to escape.

As shown in Figure 4 an annular sealing ring 64 may be positioned on the container 10A between the outlet 15A and the bayonet flanges 32. This may be resilient or may co-operate with an annular recess
10 (not shown) in the discharge assembly 12.

Figures 8A, 8B and 9 illustrate two modified discharge assemblies. Parts which are common to the discharge assembly 12 have the same reference numerals. Each is at an inlet end 53 of its passage
15 38 adapted to receive the outlet 15 or 15A of a container 10 or 10A and make a bayonet connection therewith. The passage 38 of each is controlled by a screw 39 releasably locked by a splined sleeve 43. However, the rotary valve body 48 of the assembly 12A
20 shown in Figures 8A and 8B is integral with a trigger 54 which has a hole 55 through which passes a curved guide 56 upstanding from the body of the assembly 12A. The guide 56 is surrounded by a compression spring 57 which urges the trigger 54 to adopt its position shown
25 in Figure 8A, in which the through-hole 52 in the valve body 48 is not aligned with the passage 38 and consequently the valve is closed. The valve can be

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opened by depressing the trigger 54 against the action of the spring 57 but will automatically close again as soon as the trigger 54 is released.

To the outlet end of the passage 38 there is fitted a nozzle 58 of a resilient material such as rubber or a suitable plastics material. This has a slit 59 which is normally closed but which will open to allow semi-solid material under pressure to emerge from the nozzle when the valve 48 is opened. The nozzle 58 prevents the ingress of air when the valve 48 is closed.

A variety of interchangeable nozzles of different shapes (not shown) may be attached to the outlet end of the passage 38 to dispense the semi-solid in ribbons of different shapes, such as round (for example for tooth-paste) and broad and flattened (for example for margarine). Any such nozzle may have a removable cap covering it.

The modified discharge assembly 12B shown in Figure 9 also has a resilient nozzle 58 at the outlet end of its passage 38, but the rotary valve body 48 is replaced by a hollow axially movable valve body 60. This is located at a second bend in the passage 38 and is movable from the position shown, in which it closes the passage 38, leftwards as viewed, until it ceases to obstruct the passage 38 and semi-solid material can flow along the passage 38 through the hollow tubular



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valve body 60. Displacement of the valve body 60
is by means of an integral stem 61 which extends
therefrom out of the body of the assembly 12B through
a hole and is connected at its other end to a trigger
5 62 which is movable toward the body of the assembly
12B against the action of a spring 63 surrounding the
stem. The trigger 62 is squeezed toward the body of
the assembly 12B to open the valve 60 and when released
is returned by the spring 63 to the position shown,
10 thus reclosing the valve 60.



CLAIMS

1. A portable dispenser for semi-solids,
such as toothpaste, comprising a container for the
semi-solid having an outlet, a peripheral wall and
a plunger movable within said wall axially of the
5 container toward the outlet to apply pressure to the
semi-solid in the container, a valve-controlled
discharge assembly releasably connectable to the
container to make a fluid-tight connection with the
outlet and a base unit having a peripheral wall
10 dimensioned telescopically to receive and surround
the peripheral wall of the container, spring means
being located in the base unit to act between the
latter and the plunger and means being provided to
hold the base unit and container in a chosen posi-
15 tion of telescopic adjustment whereby the loading of
the spring may be adjusted by relative axial movement
of the container and base unit.

2. A portable dispenser as claimed in claim 1,
wherein the peripheral wall of the base unit has
20 internal screw threads which engage external screw
threads on the peripheral wall of the container and
wherein telescopic adjustment of the container and
base unit is achieved by relatively rotating the same.

3. A portable dispenser as claimed in either
25 preceding claim, wherein the spring means is a



helical compression spring which extends between location means therefor on the side of the plunger presented outward of the container and on a member spanning the interior of the base unit.

5 4. A portable dispenser as claimed in any one of the preceding claims and further comprising a cartridge of flexible material which, when filled with the semi-solid, is dimensioned to be received as a sliding fit within the container with an outlet
10 of the cartridge in register with the outlet of the container, the cartridge being adapted to collapse under the influence of the plunger as semi-solid is discharged.

15 5. A portable dispenser as claimed in claim 4, wherein the outlet of the cartridge is in a neck portion of reduced cross-section at one end thereof, said neck portion having an external screw thread adapted to engage an internal screw thread of the outlet of the container.

20 6. A portable dispenser as claimed in claim 5, wherein the other end of the cartridge has a formation whereby it may be rotated
relative to the container when inserted therein so that the screw thread on the neck will engage or dis-
25 engage the screw thread of the container outlet.



7. A portable dispenser as claimed in any one of the preceding claims, wherein formations are positioned around the outlet of the container to make a bayonet connection with L-shaped slots in the wall of the discharge assembly at one end of a valve-controlled passage therethrough.

8. A portable dispenser as claimed in claim 7, wherein accidental release of the bayonet joint is prevented by a locking element urged by a spring to occupy the outer one of the two limbs of one of the L-shaped slots, the locking element being movable against its spring bias to an inoperative position permitting movement of a formation on the container between the limbs of said slot but when in its operative position serving to trap said formation in the inner limb of said slot.

9. A portable dispenser as claimed in any one of the preceding claims, wherein the valve-controlled discharge assembly comprises a passage having a bend across which a tapered end of a screw accessible from outside the passage is movable to adjust the flow rate of semi-solid discharged through the passage.

10. A portable dispenser as claimed in claim 9, wherein unintended rotation of the flow rate



adjustment screw is prevented by a sleeve which is non-rotatably but axially displaceably located on the discharge assembly coaxially with respect to the screw, the sleeve having internal splines to engage splines on a head of the screw when urged
5 into engagement therewith by a spring, the sleeve being manually movable against its spring bias out of engagement with the screw head to permit rotation of the latter.

10 11. A portable dispenser as claimed in any one of the preceding claims, wherein the valve which controls discharge from the discharge assembly comprises a hollow valve member which is a sliding fit in a passage through the discharge assembly for semi-
15 solid, the valve member being integral with a stem which extends out of the passage through a bore in the discharge assembly, is spring biased to a valve-closed position in which the valve member extends across a bend in the passage to close the same and is
20 manually movable against its spring bias to a valve-opened position in which the valve member ceases to obstruct the bend in the passage and permits semi-solid to flow through the valve member and round said bend.

25 12. A portable dispenser as claimed in any one



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of claims 1 - 10, wherein the valve which controls discharge from the discharge assembly comprises a cylindrical valve body rotatably located in the discharge assembly across a passage therethrough for semi-solid, the valve body having a diametral through holw which, when aligned with the passage, permits semi-solid to flow through the passage.

13. A portable dispenser as claimed in claim 11, or claim 12, wherein said valve is in an intermediate position between inlet and outlet ends of the passage and wherein said outlet end is provided with a resilient nozzle having a normally closed discharge slit which can be forced open by discharging semi-solid.

14. A portable dispenser as claimed in claim 13, wherein the resilient nozzle is detachable to be replaced by a similar nozzle having a discharge slit of different configuration.

15. A portable dispenser as claimed in claim 12, wherein the cylindrical body is integral with a closure for the outlet end of the passage, the arrangement being such that angular movement of the closure to uncover the outlet end of the passage brings the through-hole into alignment with the passage to open the valve.

16. A portable dispenser as claimed in claim 12, wherein the cylindrical body is integral with a trigger device which is spring loaded to a limit stop position in which the valve is closed and is



manually movable against its spring bias to a position in which the valve is opened.

5 17. A portable dispenser substantially as described in the Description with reference to and as shown in Figures 1 - 3 and 6A - 7C, Figures 8A and 8B or Figure 9 of the accompanying drawings.



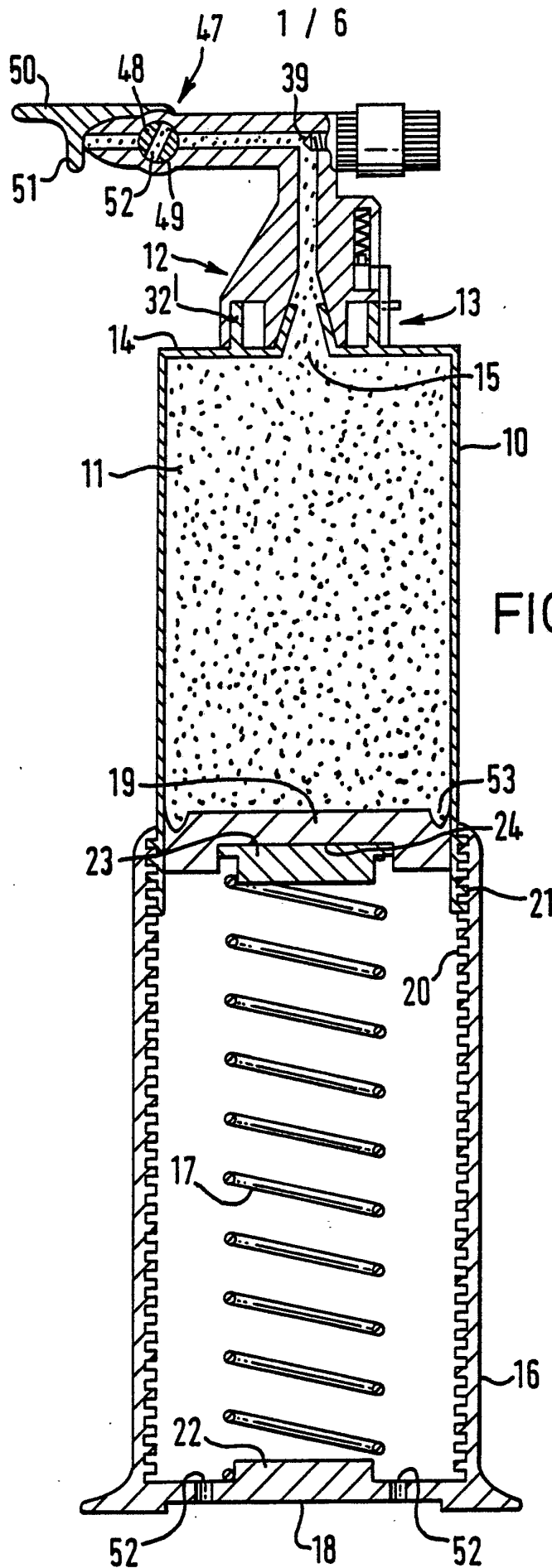


FIG. 1

SUBSTITUTE SHEET



FIG. 2

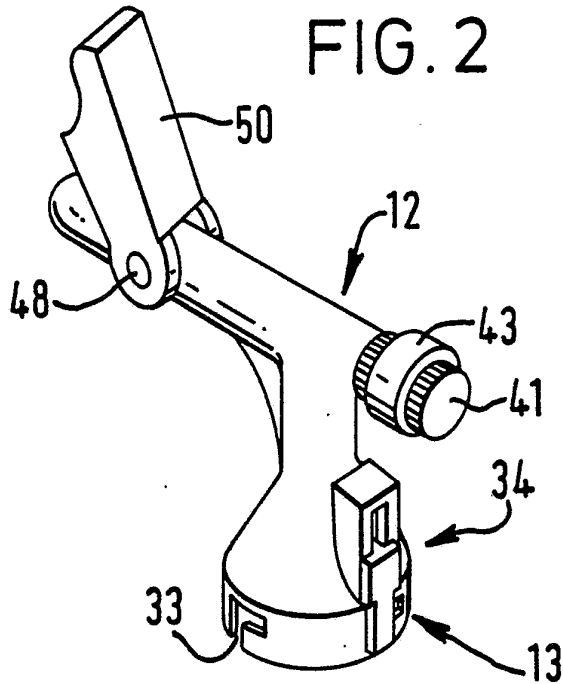
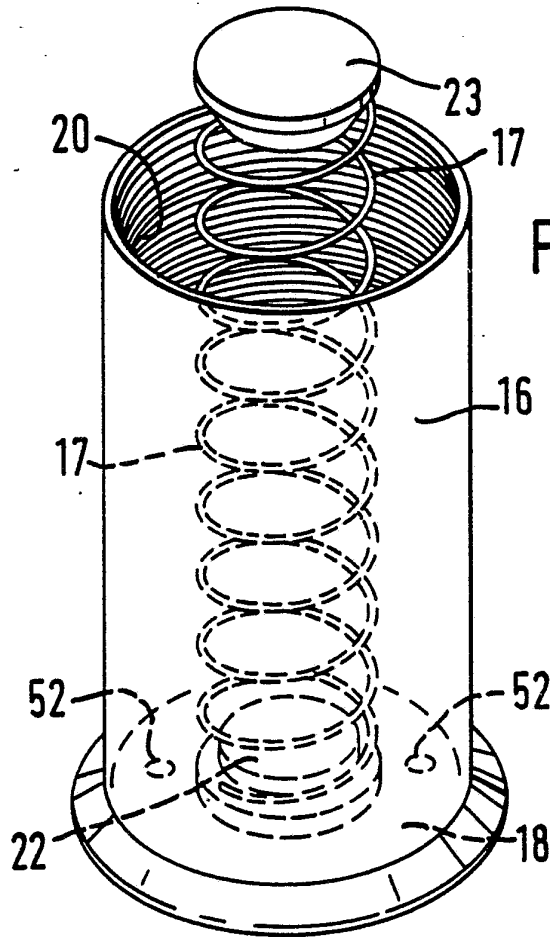


FIG. 3



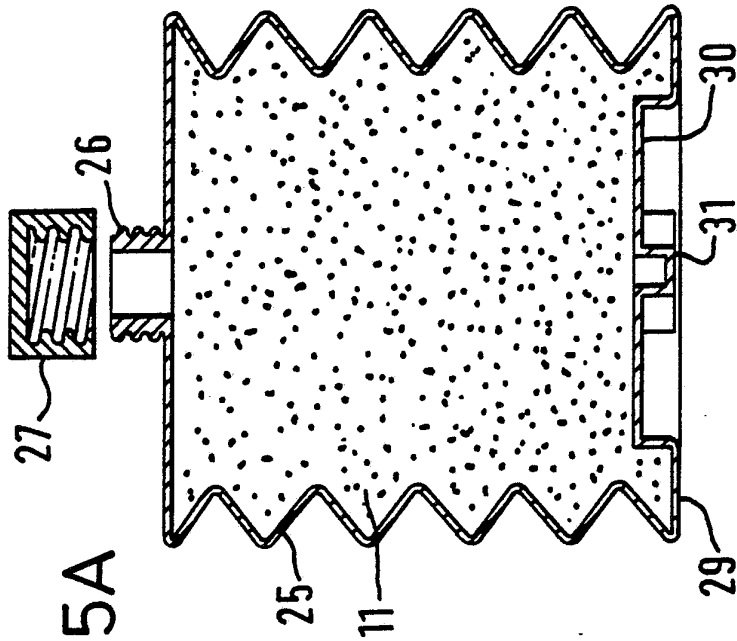


FIG. 5A

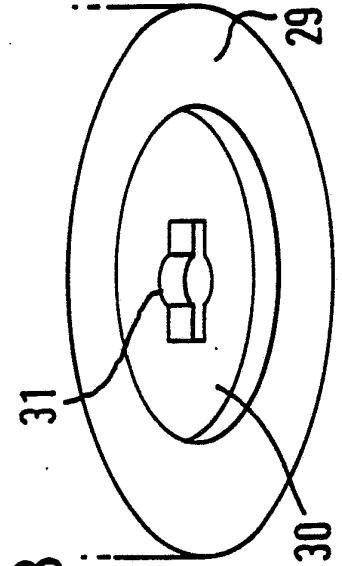


FIG. 5B

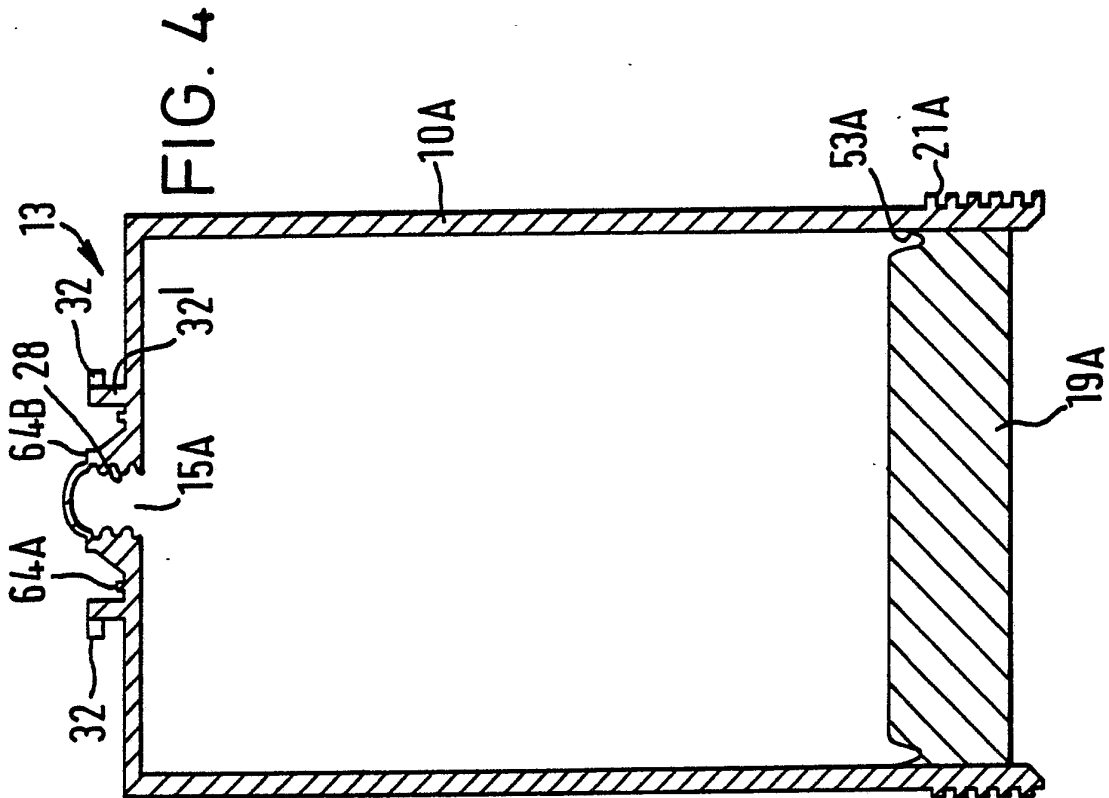


FIG. 4

FIG. 6A

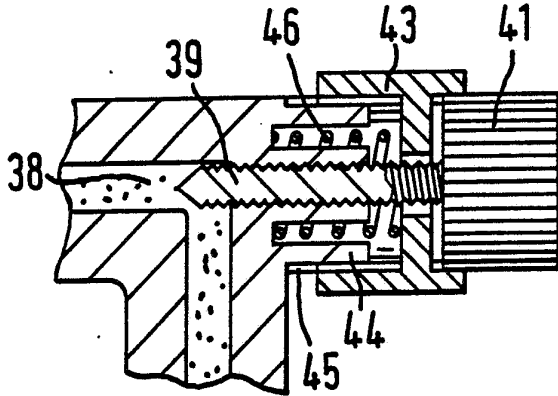


FIG. 6B

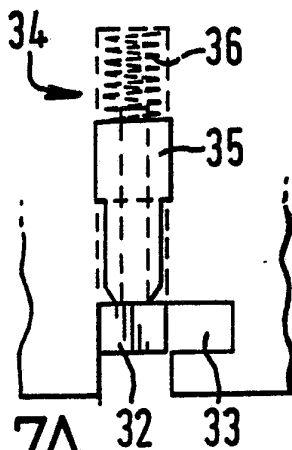
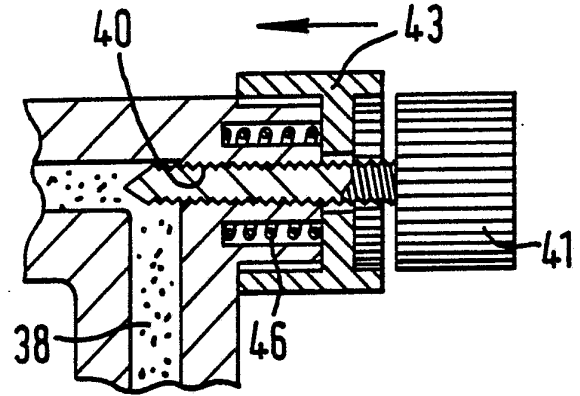


FIG. 7A

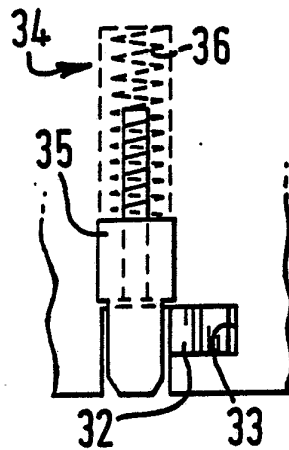


FIG. 7B

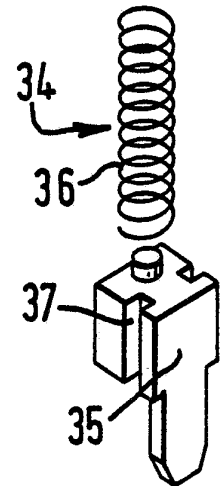


FIG. 7C

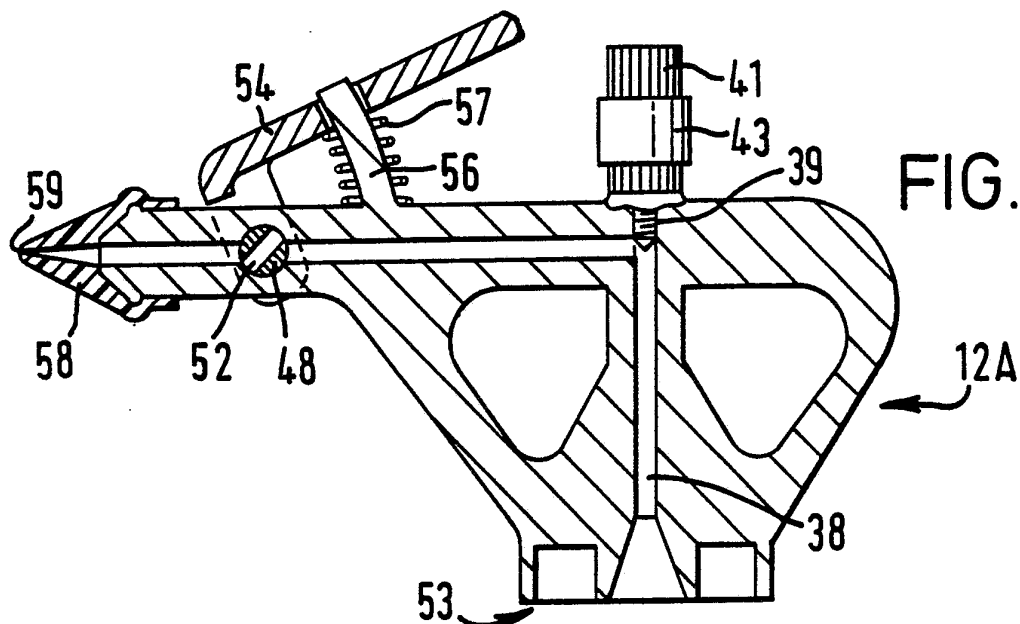


FIG. 8A

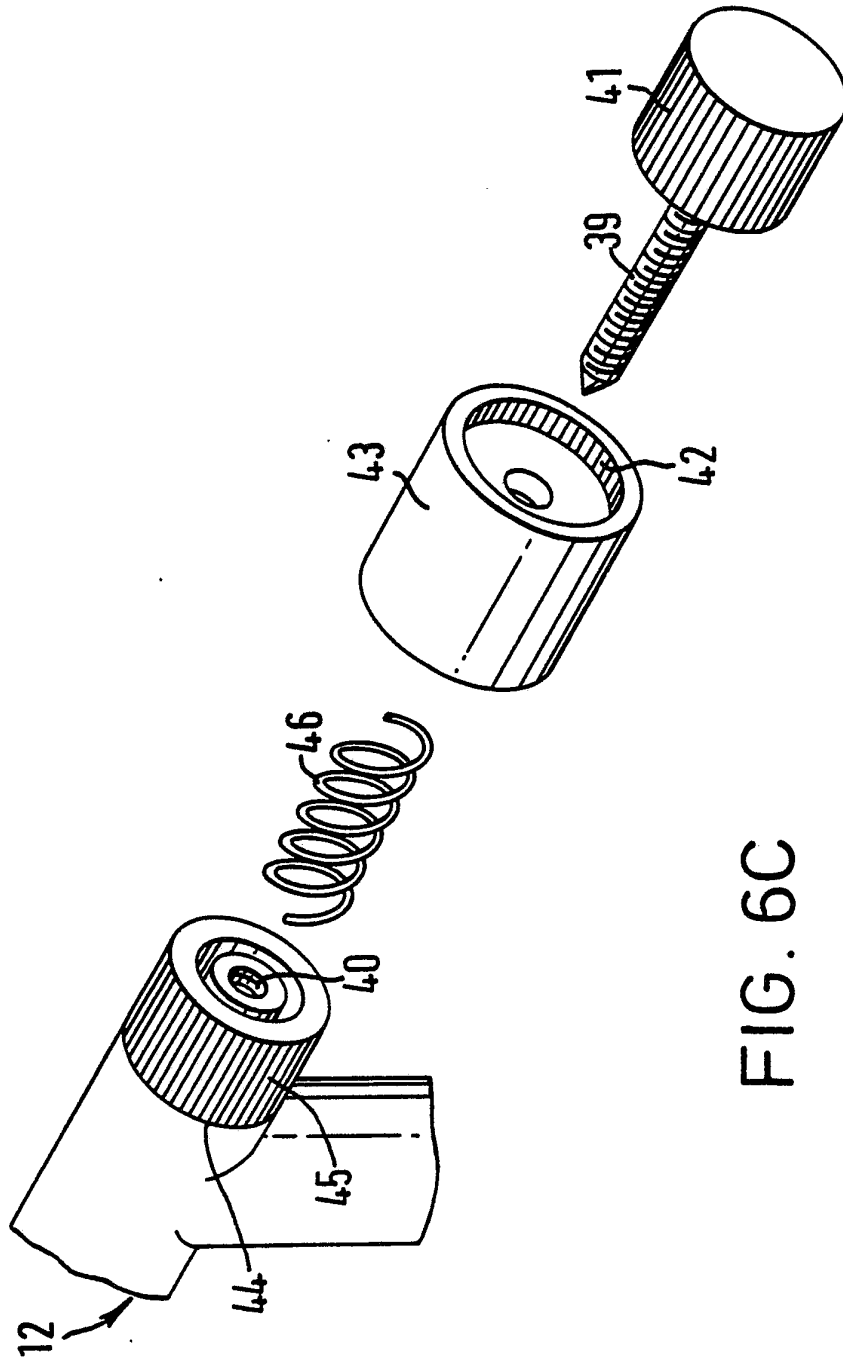


FIG. 6C

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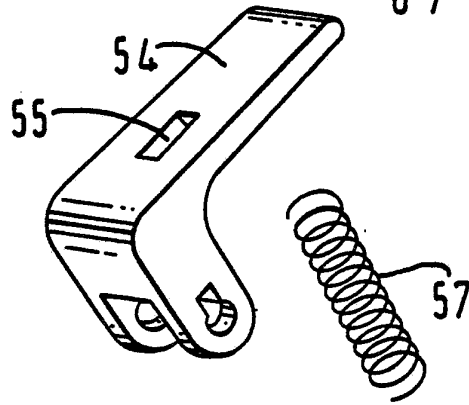


FIG. 8B.

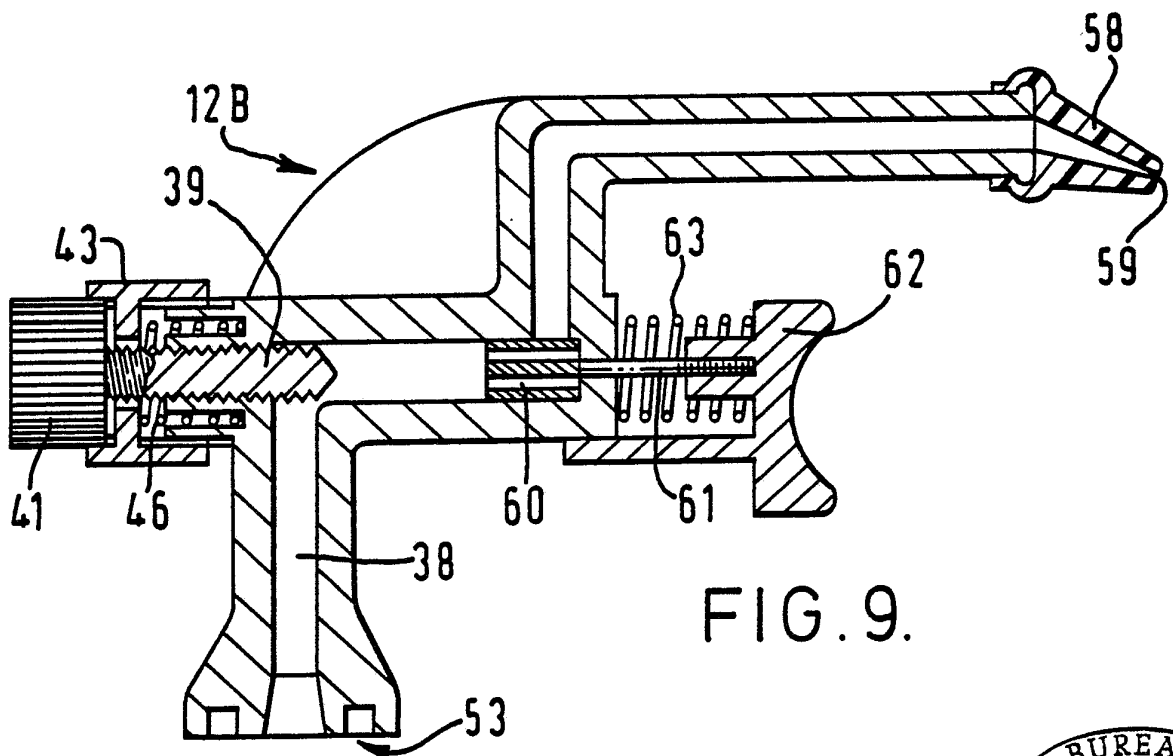
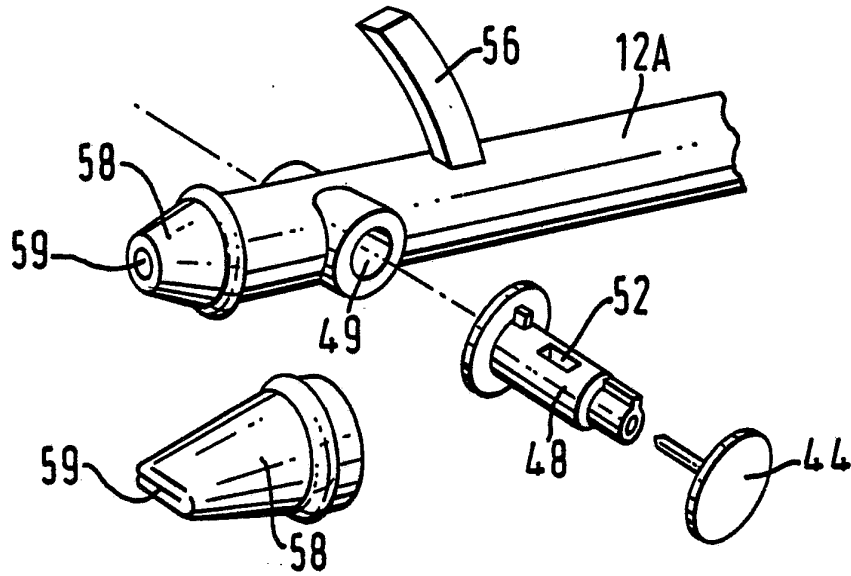
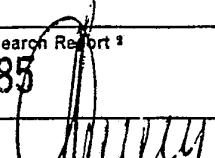


FIG. 9.

INTERNATIONAL SEARCH REPORT

International Application No PCT/GB 84/00122

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ³		
According to International Patent Classification (IPC) or to both National Classification and IPC		
IPC ⁴ : B 67 D 5/02; B 67 D 1/00; A 47 K 5/18		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁴		
Classification System	Classification Symbols	
IPC ⁴	B 67 D; B 65 D; A 47 K	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁵		
III. DOCUMENTS CONSIDERED TO BE RELEVANT ¹⁴		
Category [*]	Citation of Document, ¹⁶ with indication, where appropriate, of the relevant passages ¹⁷	Relevant to Claim No. ¹⁸
X	US, A, 4090646 (DUBIEL) 23 May 1978, see column 2, line 9 - column 4, line 8; column 5, lines 14-56; figures 1-3 -----	1-3
<p>[*] Special categories of cited documents: ¹⁵</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&" document member of the same patent family</p>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search ³	Date of Mailing of this International Search Report ³	
31st October 1984	22 JAN. 1985	
International Searching Authority ¹	Signature of Authorized Officer ²⁰	
EUROPEAN PATENT OFFICE	 G.L.M. Kuydenberg	

FURTHER INFORMATION CONTINUED FROM THE SECOND SHEET

V. OBSERVATIONS WHERE CERTAIN CLAIMS WERE FOUND UNSEARCHABLE ¹⁰

This international search report has not been established in respect of certain claims under Article 17(2) (a) for the following reasons:

1. Claim numbers _____, because they relate to subject matter ¹² not required to be searched by this Authority, namely:

2. Claim numbers _____, because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out ¹³, specifically:

VI. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING ¹¹

This International Searching Authority found multiple inventions in this international application as follows:

- claims 1-3 : Portable dispenser comprising a container, a valve controlled discharge assembly and a base unit
- claims 1,4-6 : A flexible cartridge to be received in the container
- claims 1,7-16 : Discharge assembly

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims of the international application.

2. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims of the international application for which fees were paid, specifically claims:

3. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claim numbers: 1-3.

4. As all searchable claims could be searched without effort justifying an additional fee, the International Searching Authority did not invite payment of any additional fee.

Remark on Protest

The additional search fees were accompanied by applicant's protest.

No protest accompanied the payment of additional search fees.

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON

INTERNATIONAL APPLICATION NO. PCT/GB 84/00122 (SA 7141)

This Annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 18/01/85

The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A- 4090646	23/05/78	None	

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