(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 364 719 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
26.11.2003 Bulletin 2003/48

(51) Int Cl.[7]: **B05B 11/00**

(21) Application number: **02253623.9**

(22) Date of filing: **23.05.2002**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR
Designated Extension States:
AL LT LV MK RO SI

(71) Applicants:
- **Living Fountain Plastic Industrial Co., Ltd.**
  S. Dist., Taichung City (TW)
- **Chan, Ching-Chung**
  Pei-Tun District, Taichung (TW)
- **Tseng, Kun-Lung**
  Jen-Te Village, Taichung Hsienn (TW)
- **Chen, Chin-Hsiang**
  North District, Taichung (TW)
- **Chan, Ching-Hsuan**
  Pei-Tun District, Taichung (TW)

(72) Inventors:
- **Chan, Ching-Chung**
  Pei-Tun District, Taichung (TW)
- **Tseng, Kung-Lung, No.18 Alley 24, Lane 193**
  Taichung Hsien (TW)
- **Chen, Chin-Hsiang**
  North District, Taichung (TW)
- **Chan, Ching-Hsuan**
  Pei-Tun District, Taichung (TW)

(74) Representative: **Harrison, David Christopher et al**
MEWBURN ELLIS
York House
23 Kingsway
London WC2B 6HP (GB)

(54) Dispenser

(57) There is provided an emulsion dispenser comprising a housing (30) containing a plunger (31), a resilient member (45) having a cavity and an actuator having a dispensing tube (34). The actuator is connected to the top end of said plunger and is for moving the plunger within said housing (30) to compress the resilient member thereby expelling any emulsion contained within said resilient member cavity through the dispensing tube via the plunger (31). The resilient member is formed of a recyclable plastics material.

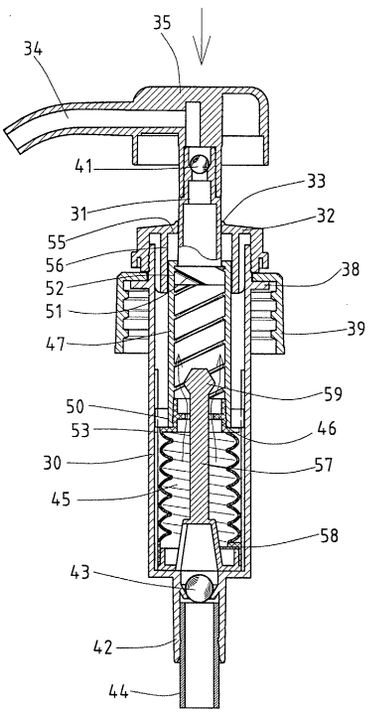

FIG.7

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Description

[0001] The present invention relates generally to a dispenser, and more particularly to a dispenser for dispensing an emulsion or similar substances hereinafter, for brevity, referred to as emulsions.

[0002] As shown in Figs. 1 and 2, an emulsion dispenser of the prior art comprises a housing 10 in which a plunger 11 is disposed such that the top end of the plunger 11 extends through a hole 13 in a cap 12, the top end of the plunger 11 being fastened to an actuator 15. The cap 12 and the actuator 15 are engageable with each other by means of two threaded portions 16 and 17. The housing 10 is provided with a shoulder 18. Located between the shoulder 18 and the cap 12 is a container cap 19 of the emulsion container (not shown in the drawings). The plunger 11 is provided with a piston device 21. The housing 10 has a tail tube 22 which is provided with a valve 23 and a dip tube 24 which is in contact with the emulsion held in the emulsion container.

[0003] When the actuator 15 is pressed as shown in Figure 1, the emulsion is dispensed in handy units or portions via an exit 14 of the actuator 15. The plunger 11 is provided at its lower end with a recovery spring 25 serving to provide the plunger 11 with a recovery spring force enabling the plunger 11 to return to its original position in the housing 10 when the pressure on the actuator 15 is removed (as shown in Figure 2). With the exception of the recovery spring 25 which is made of metal, other component parts of the prior art emulsion dispenser are made of a plastic material. The metal spring 25 causes problems in the process of recycling the discarded dispensers of the prior art. In other words, the metal spring 25 and other component parts of the prior art dispenser cannot be separated in a cost-effective manner in the recycling of the prior art dispensers.

[0004] Furthermore, the known dispensers are prone to leakage when they are tilted from a vertical position.

[0005] One aim of the present invention is to provide an emulsion dispenser which facilitates the recycling of a discarded dispenser.

[0006] Another aim of the present invention is to provide an emulsion dispenser that reduces leakage.

[0007] Accordingly, in a first aspect, the present invention provides a dispenser comprising a housing containing a plunger, a resilient member having a cavity, and an actuator having a dispensing tube, said actuator being connected to the top end of said plunger for moving the plunger within said housing to compress said resilient member to reduce the volume of said resilient member cavity such that, in use, any emulsion contained within said resilient member cavity is expelled through said actuator dispensing tube via said plunger, characterised in that said resilient member is formed of a recyclable plastics material.

[0008] In this way, recycling of discarded dispensers is greatly facilitated.

[0009] Preferably said resilient member is a concertinable hollow tube.

[0010] In a second aspect, the present invention provides a dispenser comprising a housing containing a plunger, a resilient member having a cavity, and an actuator having a dispensing tube, said actuator being connected to the top end of said plunger for moving the plunger with said housing to compress the resilient member to reduce the volume of said resilient member cavity such that, in use, any emulsion contained within said resilient member cavity is expelled through said actuator dispensing tube via said piston, characterised in that said dispenser further comprises a rod stem having an enlarged end, the rod stem extending through the resilient member cavity with the enlarged end protruding from the resilient member and wherein said dispenser further includes a flange at the head of the resilient member such that when the resilient member is in its uncompressed state, said flange abuts the enlarged head thereby sealing the cavity of the resilient member.

[0011] In especially preferred embodiment, the first and second aspects are combined.

[0012] Preferred embodiments will now be described with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013]

Fig. 1 shows a longitudinal sectional view of a prior art dispenser;

Fig. 2 shows a longitudinal sectional view of the prior art dispenser ready to dispense;

Fig. 3 shows an exploded view of a preferred embodiment of the present invention;

Fig. 4 shows a perspective view of the preferred embodiment of the present invention;

Fig. 5 shows a longitudinal sectional view of the preferred embodiment of the present invention;

Fig. 6 shows a longitudinal sectional view of the preferred embodiment of the present invention ready to dispense;

Fig. 7 shows a longitudinal sectional view of the preferred embodiment of the present invention in use;

Fig. 8 shows a longitudinal sectional schematic view of a second preferred embodiment of the present invention;

Fig. 9 shows a perspective view of a plastic spring of preferred embodiments of the present invention;

Fig. 10 shows a schematic view of the leakproof effect of preferred embodiments of the present invention;

Fig. 11 shows a schematic view of the leakproof effect of preferred embodiments of the present invention ready to dispense;

Fig. 12 shows an exploded view of a third preferred embodiment of the present invention;

Fig. 13 shows a longitudinal sectional view of the third preferred embodiment of the present inven-

tion;

Fig. 14 shows a longitudinal sectional view of the third preferred embodiment of the present invention ready to dispense; and

Fig. 15 shows a longitudinal sectional view of the third preferred embodiment of the present invention in use.

DETAILED DESCRIPTION OF THE INVENTION

[0014] As shown in Figs. 3 to 11, an emulsion dispenser embodied in the present invention comprises a housing 30, an engagement cap 39, a plunger 31, a first valve 41, a second valve 43, and a resilient member 45, made of plastic.

[0015] The dispenser is provided with a collar 32 having a through hole 33. The housing 30 is provided at its top end with a threaded section 38. The housing 30 is provided at its bottom end with a tail tube 42 and a dip tube 44 in contact with emulsion held in a container.

[0016] The engagement cap 39 is disposed between the collar 32 and the threaded section 38 of the housing 30 and is for engaging the housing 30 with the top end of the emulsion container (not shown in the drawings).

[0017] The plunger 31 is disposed in the housing 30 such that a top end of the plunger 31 protrudes from the collar 32 via the through hole 33 so as to fasten with an actuator 35 which is provided with a dispensing tube 34.

[0018] The first valve 41 and second valve 43 are disposed respectively in the upper segment of the plunger 31 and the tail tube 42 of the housing 30. In the embodiment shown in Figures 3-7, each valve comprises a ball that rests in a valve seat.

[0019] The resilient member 45 is disposed in the housing 30 such that one end of the resilient member 45 abuts the bottom end of the plunger 31 and the other end of the resilient member 45 abuts the inner bottom wall of the housing 30. The resilient member 45 may be of a plastic spiral tube, as shown Fig. 9. The resilient member is preferably a hollow tube having a central cavity that is concertinable to a reduced height, thus decreasing the volume of the cavity.

[0020] The plunger 31 is provided at the bottom end with an outer threaded portion 51 and is fitted into a sleeve 47 such that the outer threaded portion 51 cooperates with an inner threaded portion 52 of the sleeve 47 as shown in Figure 5. This cooperation maintains the dispenser in a non-dispensing state until the actuator and plunger 31 are rotated to disengage the threaded portions to some extent as seen in Figure 6.

[0021] Located between the outer wall of the sleeve 47 and the guide tube 56 of the collar 32 is a stop portion 53 to prevent the sleeve 47 from turning when the plunger 31 is rotated within the housing to disengage the threaded portions.

[0022] The collar 32 is provided with a guide tube 56 extending therefrom and has a flange 55. The guide tube 56 is used to guide the sleeve 47 when in motion.

[0023] The bottom end of the housing 30 is provided with a rod seat 58 having a rod stem 57 and an enlarged end 59 extending from the rod stem 57 such that the enlarged end 59 extends through an aperture in a flange 46 at the head of the resilient member 45. The flange 46 and the enlarged end 59 form a leakproof seal to prevent the escape of the emulsion when the resilient member is in its uncompressed state even if the emulsion container is inadvertently knocked over. This can be seen in Figs. 10 and 11. The enlarged end 59 of the rod stem 57 abuts the flange 46 of the resilient member, to prevent the passage of emulsion from the resilient member cavity into the plunger 31.

[0024] Fig. 8 shows a second preferred embodiment where the first and second valves include a funnel-shaped valve seat.

[0025] A third embodiment of the emulsion dispenser is shown in Figs. 12 to 15. The third embodiment is the same as the first embodiment except that the plunger 31 and sleeve 47 do not have threaded portions.

[0026] Instead, the collar 32 is provided with a thread 37 that cooperates with a thread 36 on the actuator 35 to secure the dispenser in a non-dispensing position as shown in Fig. 13. To allow dispensing, the threads are disconnected and the actuator is raised from the collar by the resilience of the resilient member as shown in Fig. 14. The plunger 31 has a retaining projection 48 which cooperates with a retaining slot 49 on the sleeve to engage the two parts ready for dispensing.

[0027] For all embodiments, the dispenser dispenses in the following manner. The actuator 35 is depressed and the plunger 31 and sleeve 47 move within the housing causing compression of the resilient member 45. As the actuator is released, the resilience of the resilient member causes the plunger, sleeve and actuator to return to their original position and, as they do so, emulsion is drawn upwards through the dip tube 44, through the second valve which will be forced open by the flow of emulsion, and into the cavity of the resilient member. The first valve will remain closed during this step.

[0028] Once the resilient member cavity is filled with emulsion, a second depression of the actuator causes the plunger 31 and sleeve 47 to compress the resilient member 45 and decrease the volume of the cavity. The second valve remains closed whilst the first valve is opened. The emulsion in the resilient member is forced upwards through the plunger 31, through the first valve 41 which will be forced open by the flow of emulsion and out of the dispensing tube 34 of the actuator 35.

[0029] Whilst reference is made to use of the dispenser for emulsion, the invention is not limited to such use. The dispenser may also be used for any other viscous liquid e.g. soap or food products.

Claims

1. A dispenser comprising;

a housing (30) containing a plunger (31);
a resilient member (45) having a cavity; and
an actuator (35) having a dispensing tube (34), said actuator being connected to the top end of said plunger (31) for moving the plunger within said housing (30) to compress said resilient member (45) to reduce the volume of said resilient member cavity such that, in use, any emulsion contained within said resilient member cavity is expelled through said actuator dispensing tube (34) via said plunger (31),

characterised in that said resilient member is formed of a recyclable plastics material.

2. A dispenser according to claim 1 further comprising a rod stem (57) having an enlarged end (59), the rod stem extending through the resilient member cavity with the enlarged end (59) protruding from the resilient member and wherein said dispenser further includes a flange at the head of the resilient member such that when the resilient member is in its uncompressed state, said flange abuts the enlarged head thereby sealing the cavity of the resilient member.

3. A dispenser according to claim 1 or claim 2 wherein said resilient member is a concertinable hollow tube.

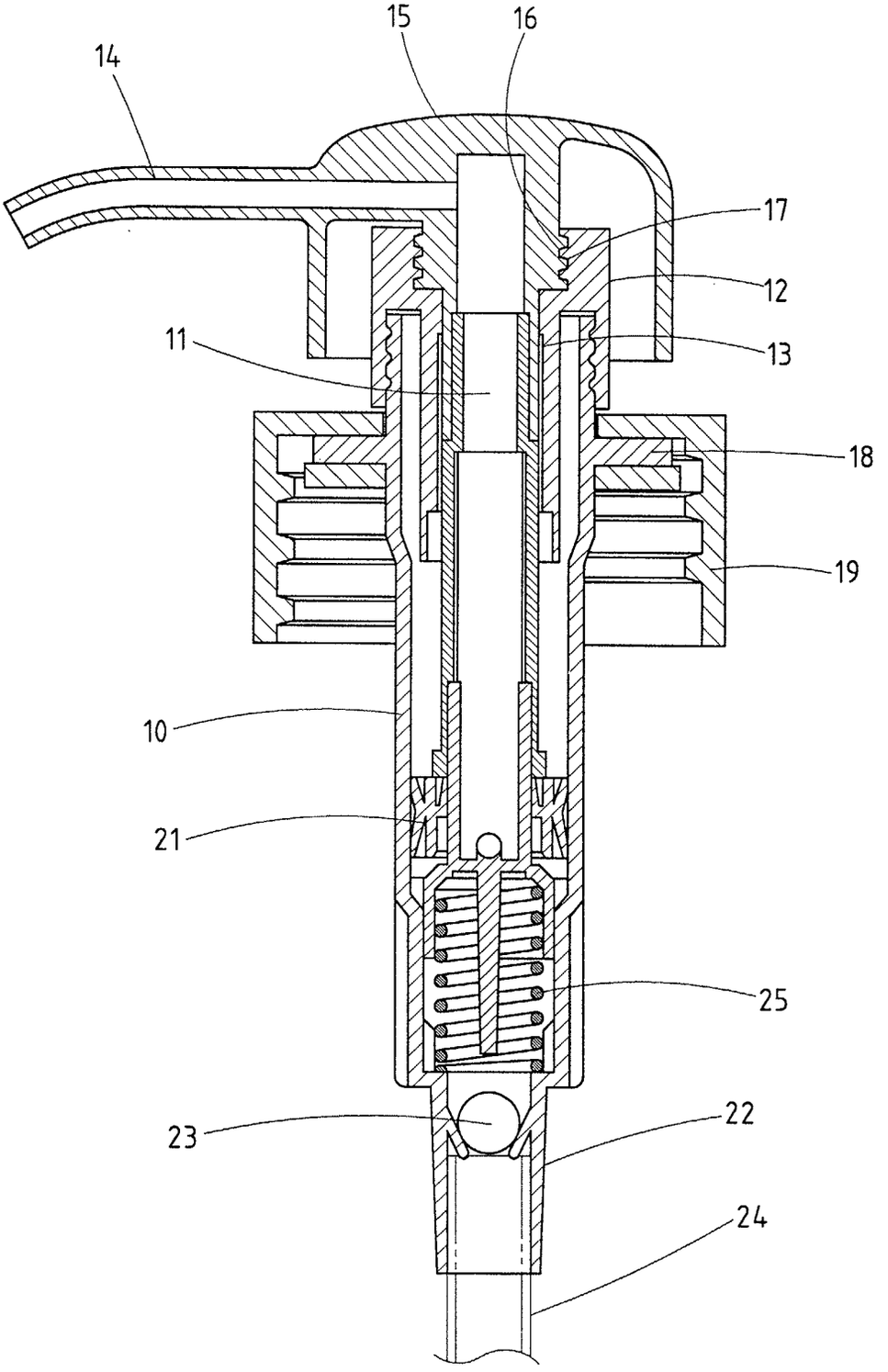

FIG.1 PRIOR ART

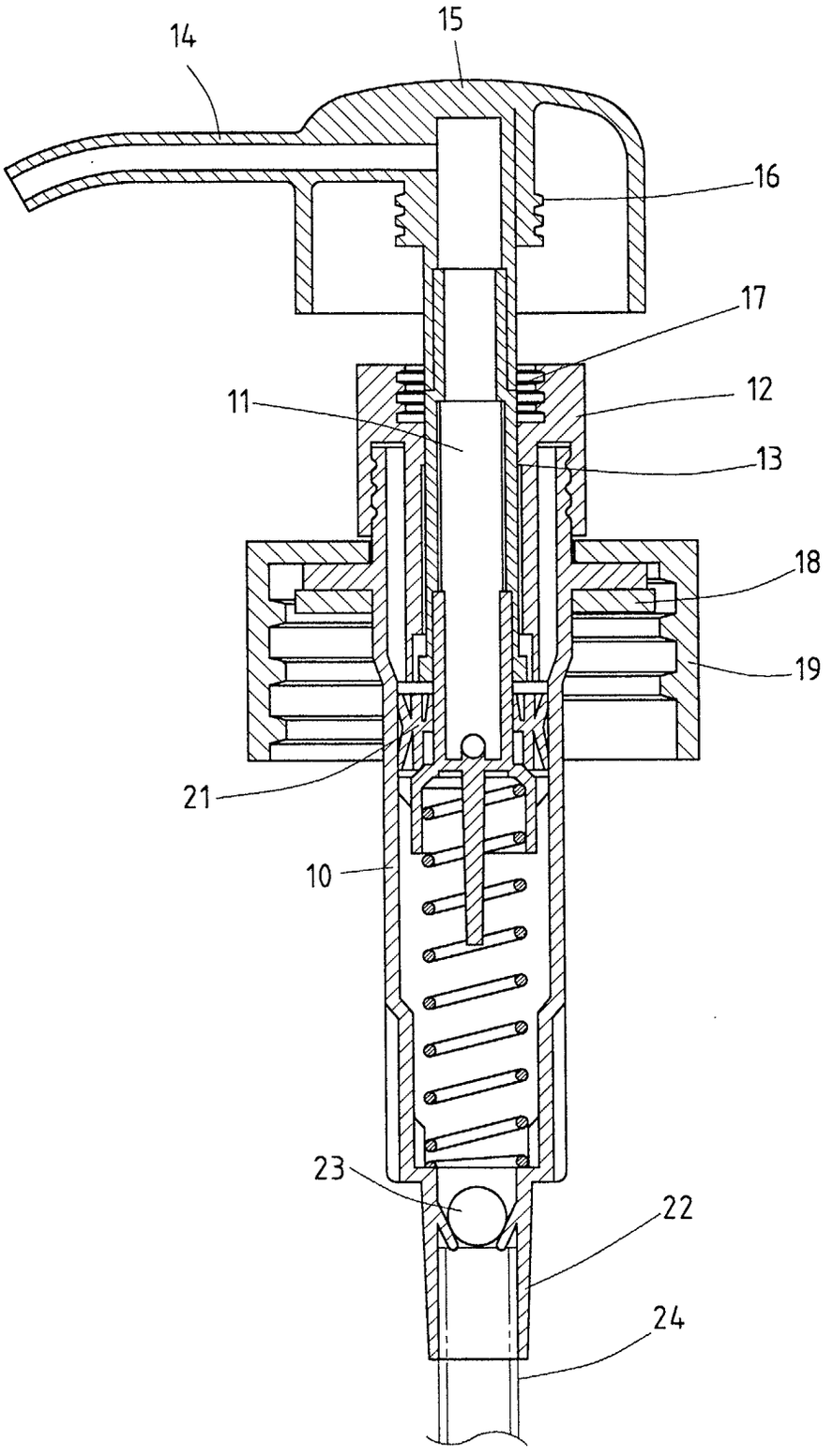

FIG.2 PRIOR ART

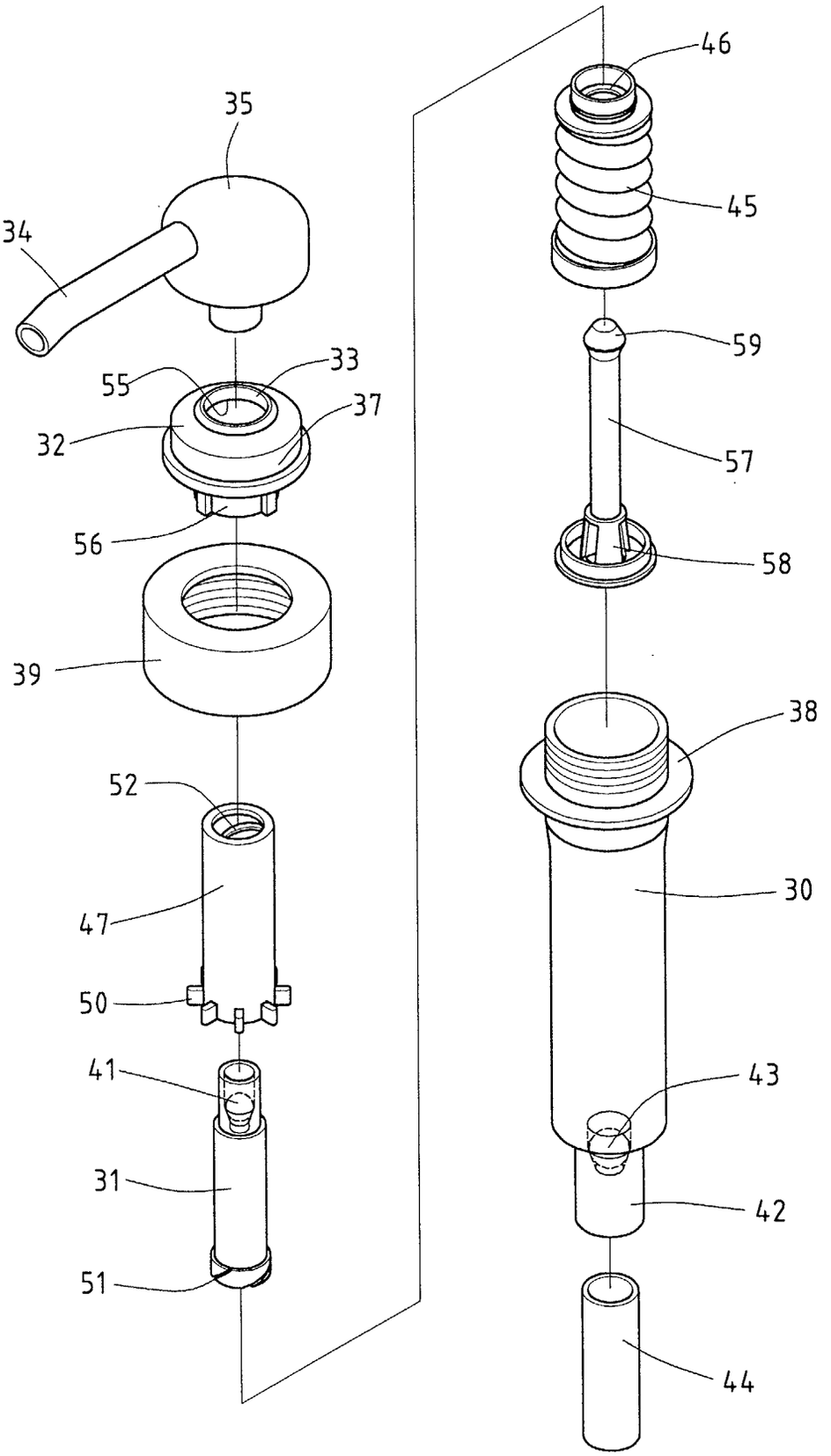

FIG.3

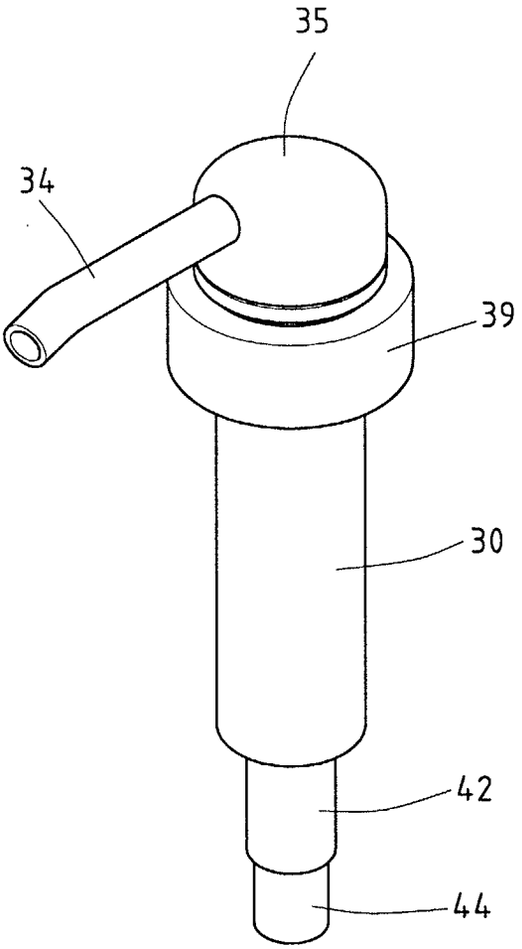

FIG.4

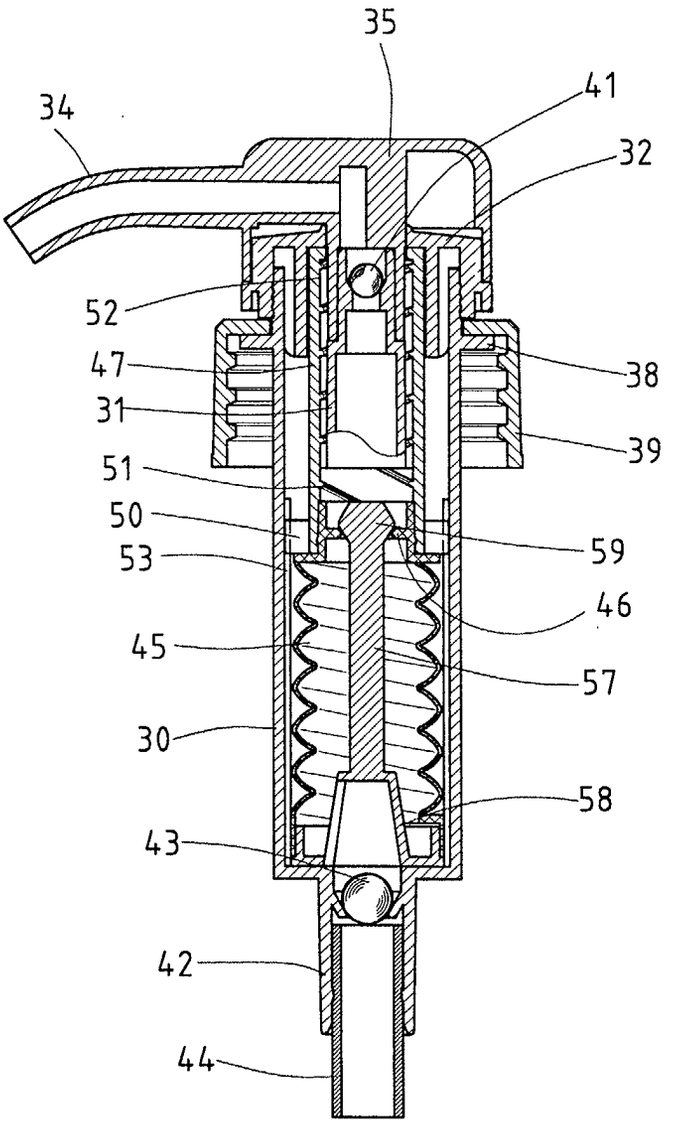

FIG.5

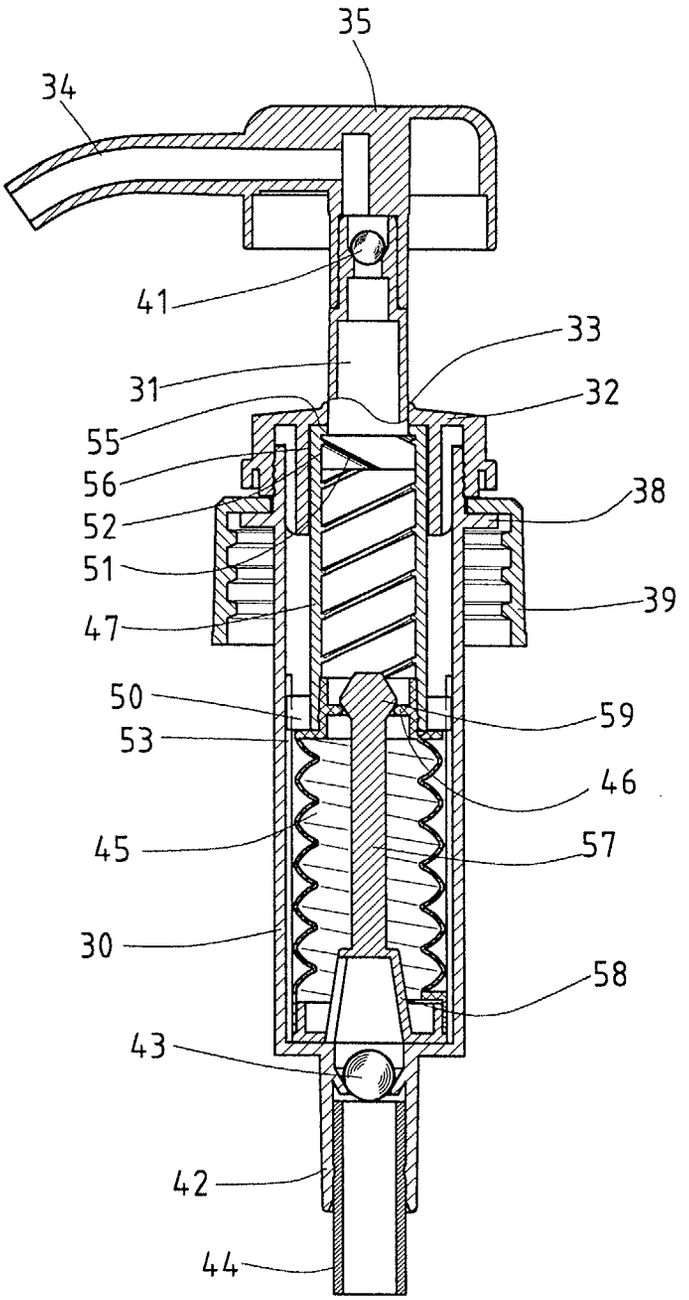

FIG.6

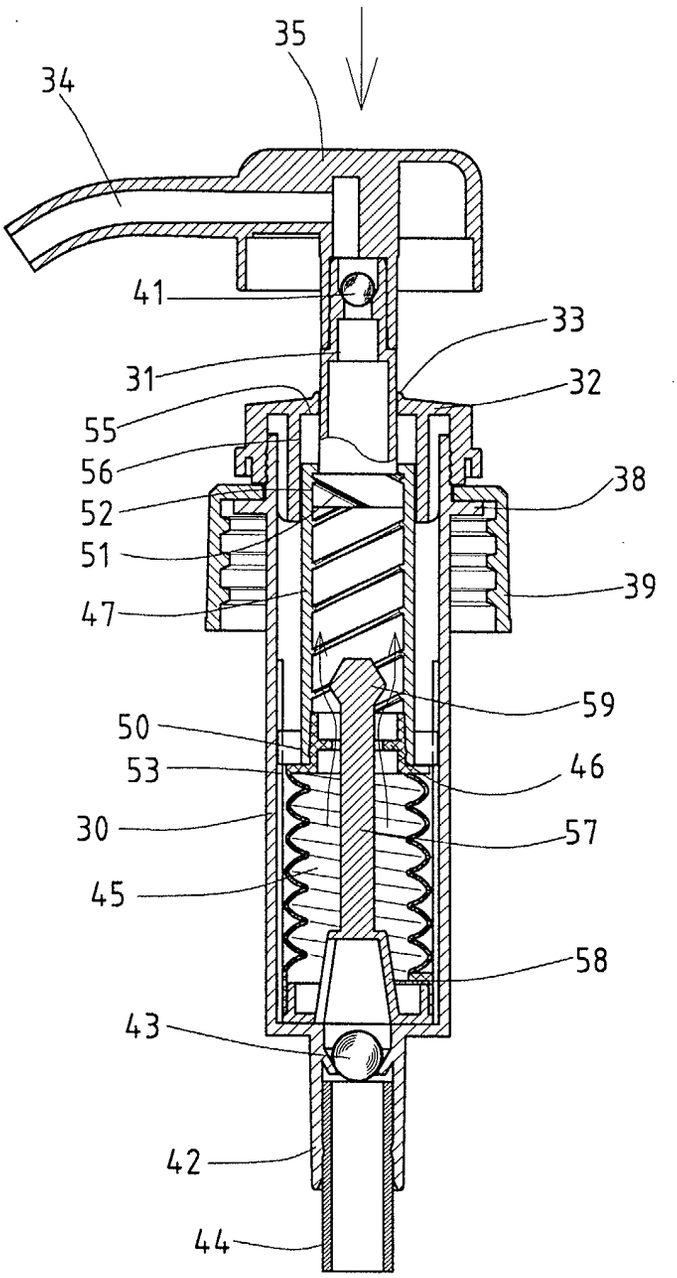

FIG.7

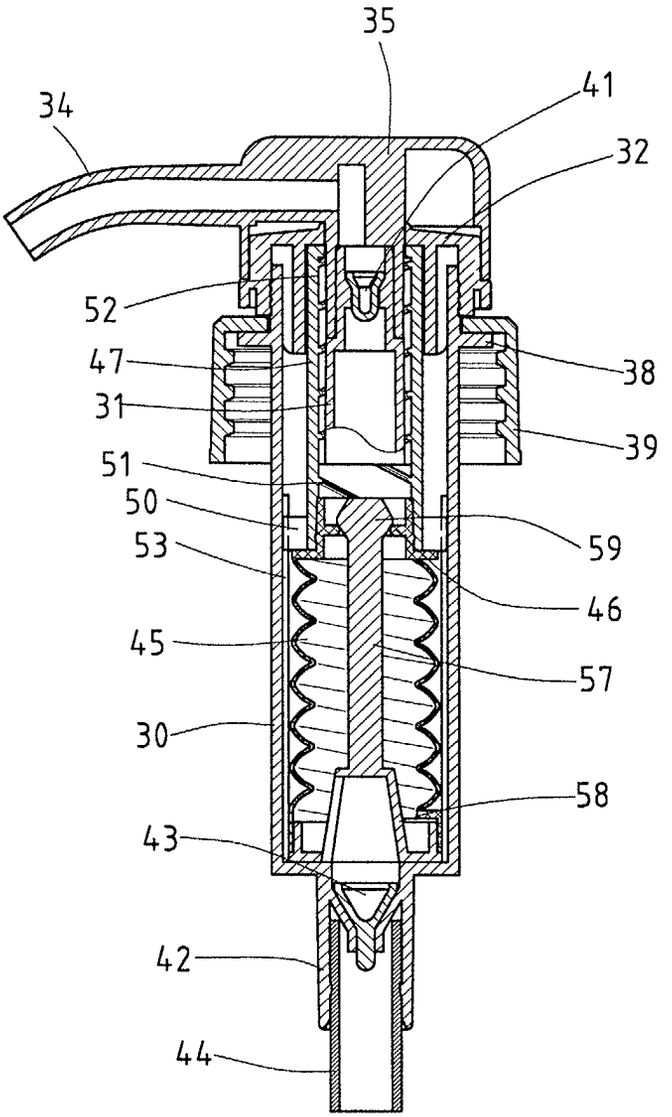

FIG.8

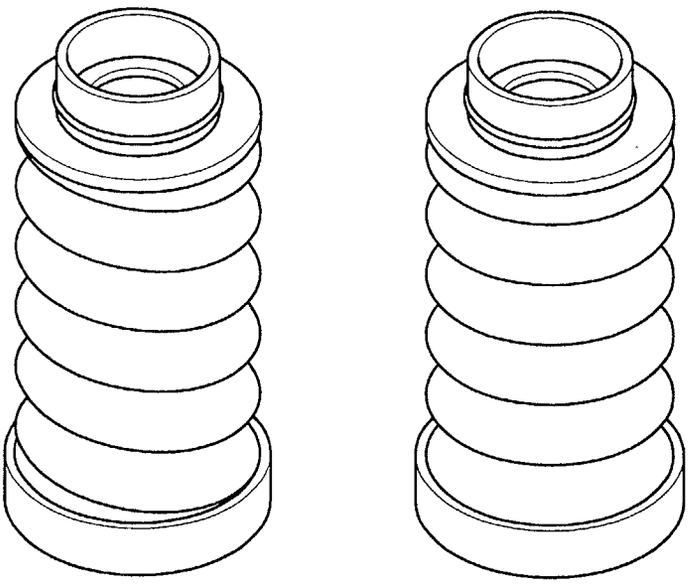

FIG.9

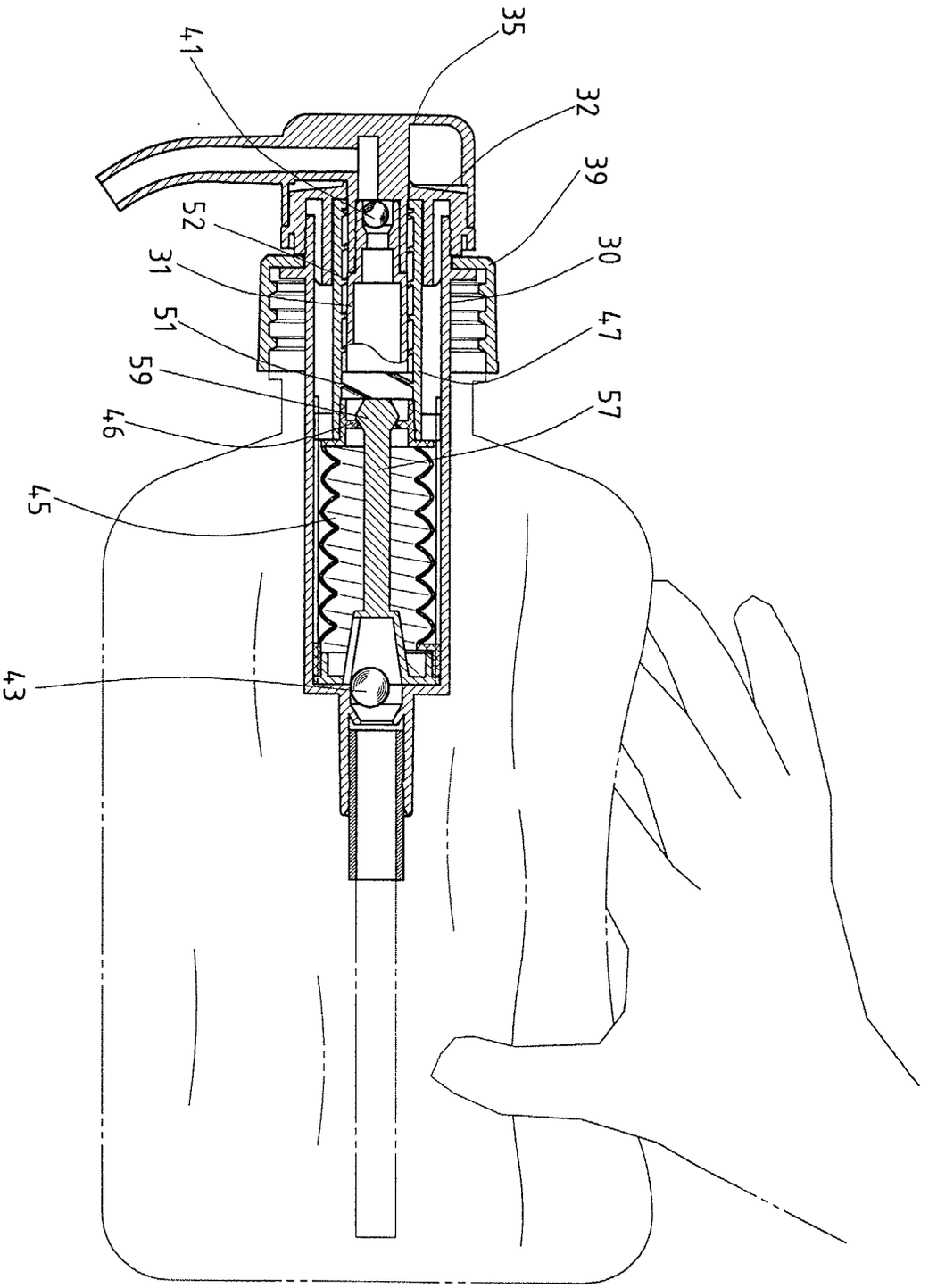

FIG.10

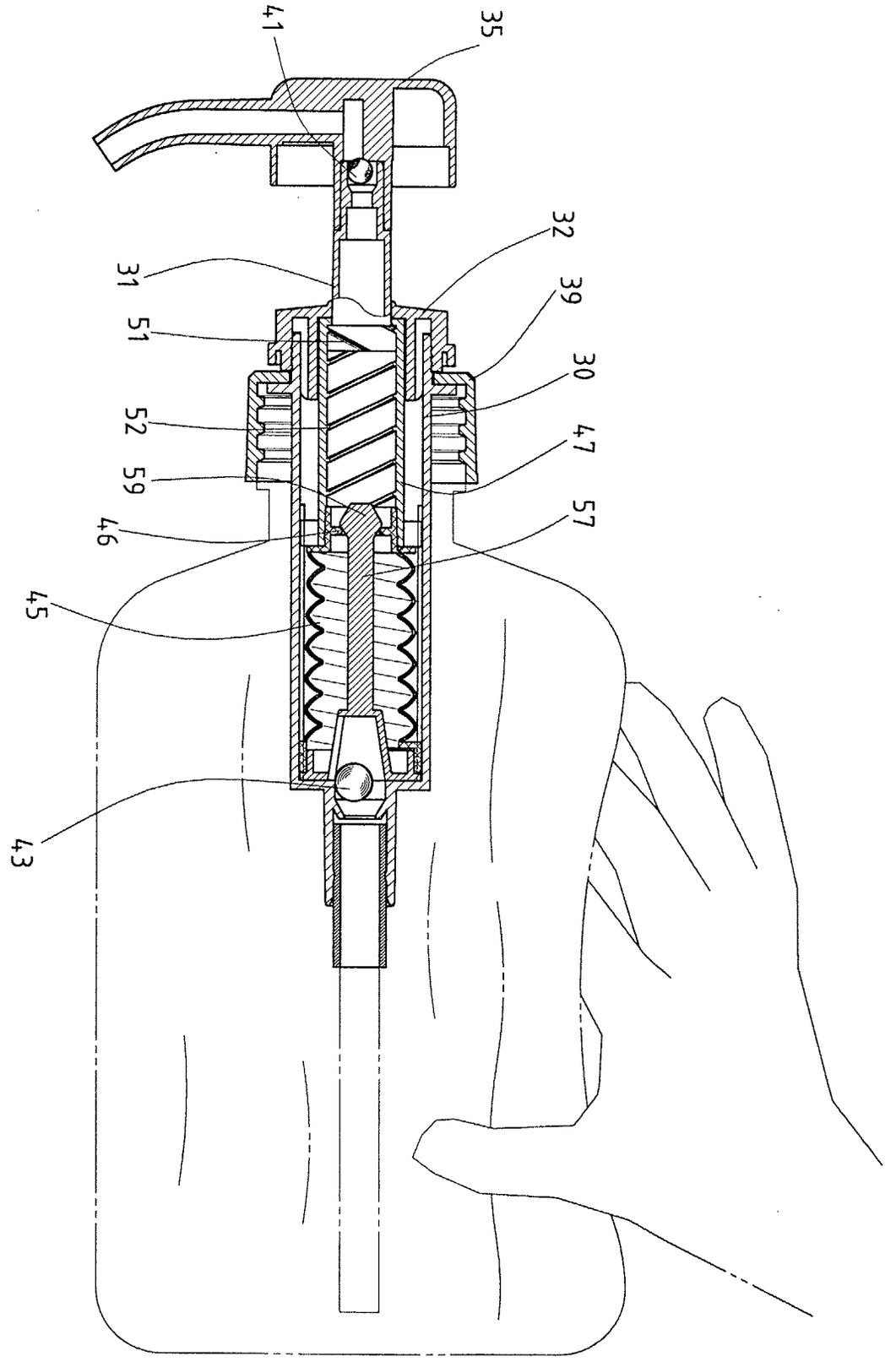

FIG.11

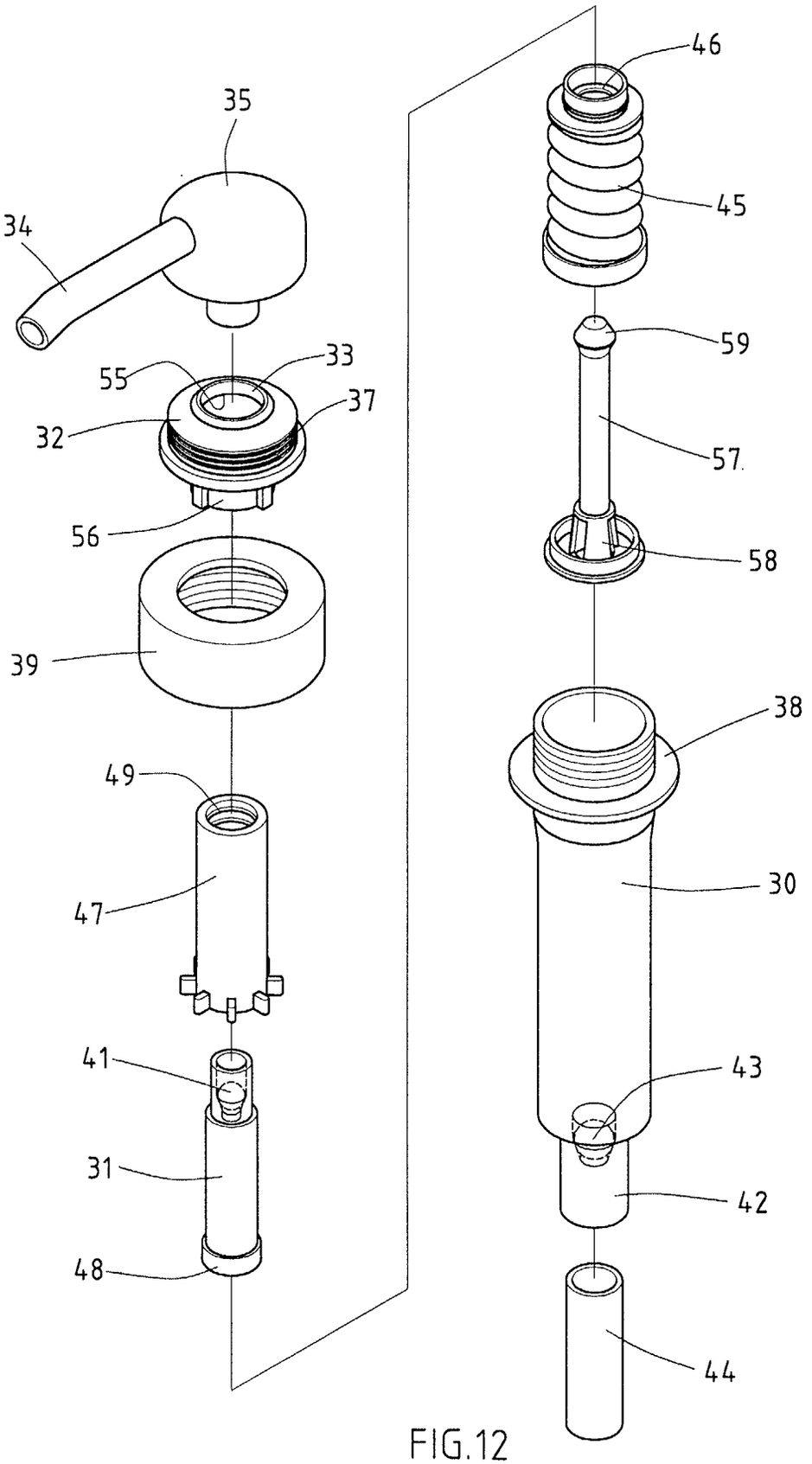

FIG.12

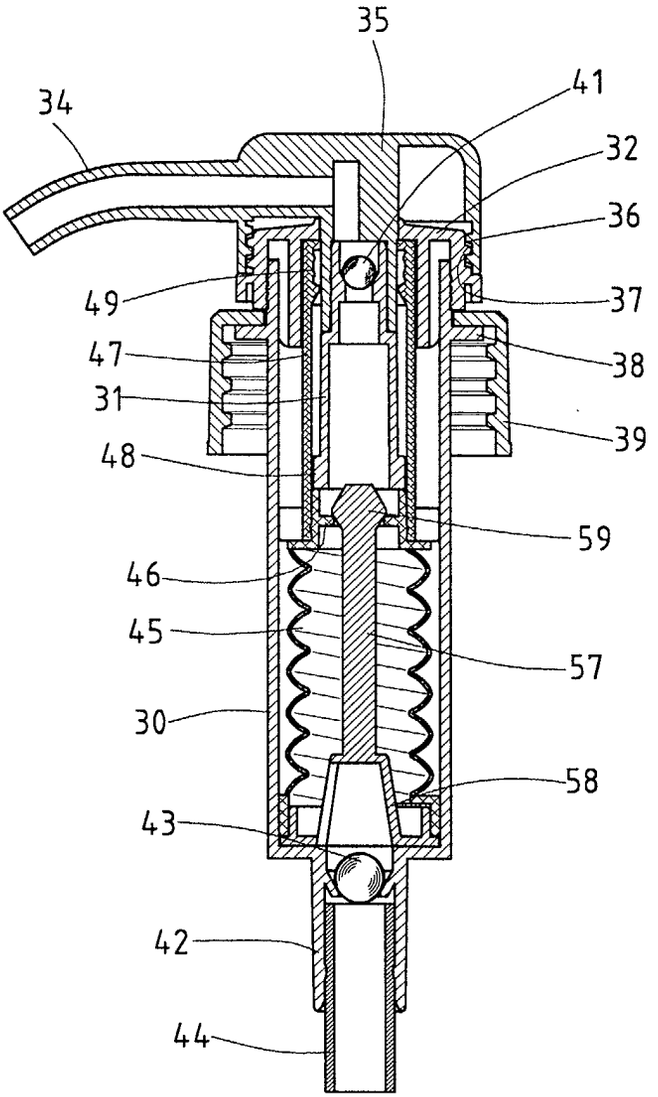

FIG.13

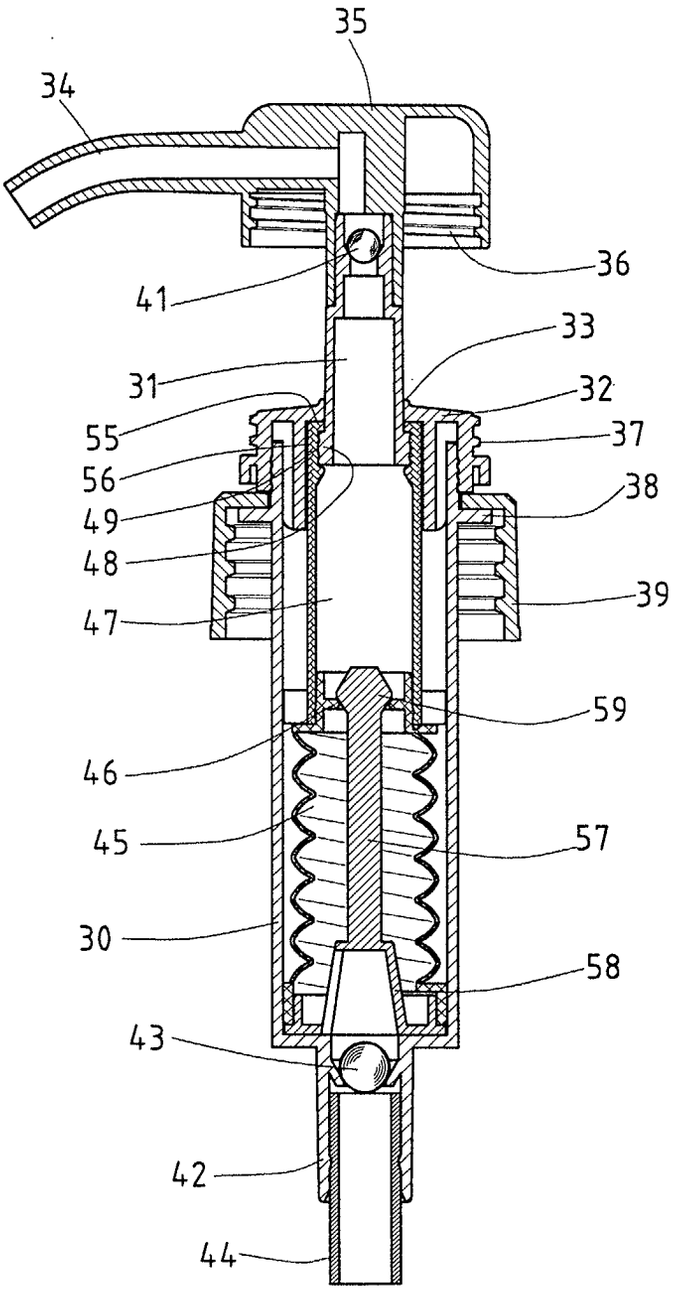

FIG.14

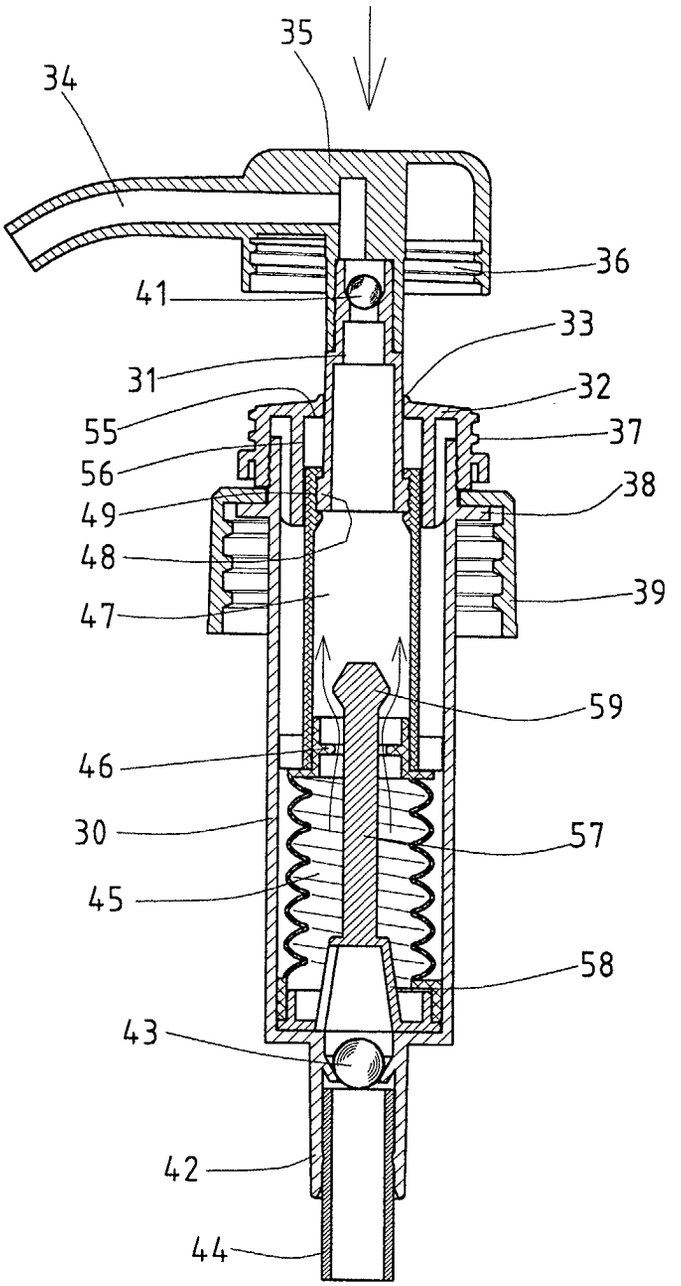

FIG.15

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 02 25 3623

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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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Y	* paragraph '0027! - paragraph '0030!; figures 1,2 *	2	
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	24 October 2002	Jelercic, D

CATEGORY OF CITED DOCUMENTS

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