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

(11) **EP 3 369 699 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
05.09.2018 Bulletin 2018/36

(51) Int Cl.:
B67D 7/00 *(2010.01)* ***B67D 7/02*** *(2010.01)*

(21) Application number: **17158783.5**

(22) Date of filing: **01.03.2017**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
MA MD

(71) Applicant: **Bark Innovations B.V.**
6961 EC Eerbeek (NL)

(72) Inventors:
- **Veldhuis, Jorn**
  7534 BS Enschede (NL)
- **Debski, Edward Hendrik**
  7545 GL Enschede (NL)

(74) Representative: **'t Jong, Bastiaan Jacob**
Inaday Patent B.V.
Hengelosestraat 141
7521 AA Enschede (NL)

(54) **ADAPTER FOR A CONTAINER**

(57) An adapter (2) comprising:
- a central body (7) with a main axis and a fluid channel (8) extending through,
- a sleeve (6) arranged coaxially around the central body (7), wherein the sleeve (6) is movable in the direction of the main axis between a closing position and a dispensing position,
the sleeve (6) comprising a cap portion (14) arranged inside the sleeve (6),
wherein an annular space (16) is formed between the sleeve (6) and the cap portion (14) for reception of a spout of a second container,
- at least one resilient finger (18) arranged with one end to the central body (7) and wherein the other end of the finger (18) is provided with a hook-shaped end, wherein the hook-shaped end extends into the annular space (16) in the closed position of the sleeve and hooks with a protrusion arranged to the sleeve (6) and wherein the hook-shaped end is positioned outside of the annular space (16) in the dispensing position.

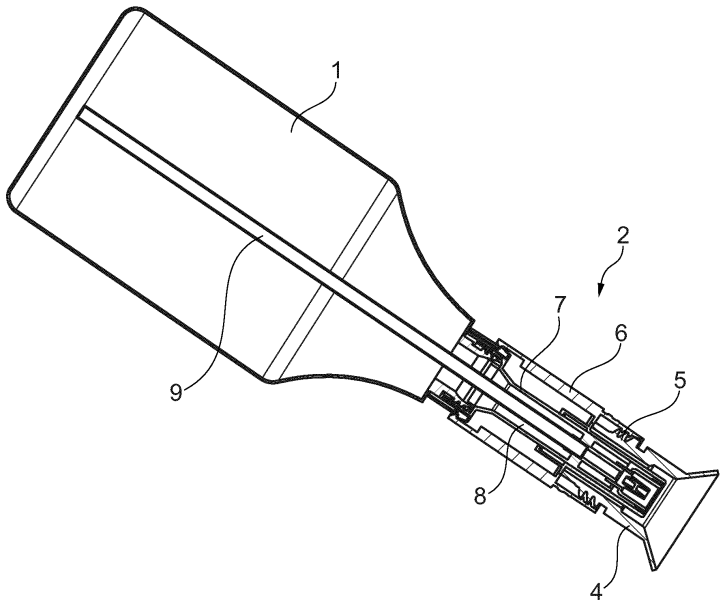

Fig. 2

EP 3 369 699 A1

Description

[0001] The invention relates to an adapter for a container. Such an adapter is known from WO 2007 085381, which discloses an adapter for a container, having a central body with a fluid channel and a sleeve coaxially arranged around the central body. An annular space is provided between the central body and the sleeve, wherein a spout of a container can be screwed. When the spout is fully screwed in, the central body is moved axially relative to the sleeve, such that locking fingers are moved out of engagement. These locking fingers lock axial movement of a valve member arranged in the fluid channel of the central body. A spring is arranged between the valve member and the sleeve, such that after disengagement of the locking fingers, the valve member can be shifted axially against the spring force and the fluid channel can be opened.

[0002] This known adapter comprises a plurality of parts, increasing the costs, and the adapter needs a constant force to push the valve member against the spring force, to open the container. Furthermore, the adapter can be screwed loose from the spout, while the valve member is in the open position. This provides a health risk when toxic fluids are to be dispensed with the adapter.

[0003] It is an object of the invention to reduce or even remove the above mentioned disadvantages.

[0004] This object is achieved with an adapter according to the invention, which adapter comprises:

- a central body with a main axis and a fluid channel extending through the central body along the main axis, which fluid channel has on a first side of the central body a first opening for connection with a container and has on the opposite, second side of the central body a second opening for dispensing fluid from the container;
- a sleeve arranged coaxially around the central body, wherein the sleeve is movable in the direction of the main axis between a closing position and a dispensing position, wherein the sleeve is fully rotatable around the main axis in the dispensing position, and wherein the rotation of the sleeve is blocked in the closed position;

the sleeve comprising a cap portion arranged inside the sleeve, wherein the cap portion closes the second opening in the closing position of the sleeve and wherein the cap portion has at least one opening, which is in fluid connection with the second opening in the dispensing position of the sleeve

wherein an annular space is formed between the sleeve and the cap portion for reception of a spout of a second container, wherein at least part of the wall of the annular space comprises connecting means, such as a screw thread;

- at least one resilient finger arranged with one end to the central body and wherein the other end of the finger is provided with a hook-shaped end, wherein the hook-shaped end extends into the annular space in the closed position of the sleeve and hooks with a protrusion arranged to the sleeve and wherein the hook-shaped end is positioned outside of the annular space in the dispensing position.

[0005] With the adapter according to the invention, a container, on which the adapter is arranged, can be coupled to a second container, for example by screwing the adapter onto the spout of the second container. The spout, which is inserted into the annular space, will engage the at least one resilient finger and push the hook-shaped end out of engagement with the protrusion, such that the sleeve can be pulled to the dispensing position and fluid from the container with the adapter can flow via the fluid channel into the second container.

[0006] As the sleeve is fully rotatable in the dispensing position, the coupling means cannot be disengaged by rotating the container with the adapter. The container will simply freely rotate in the dispensing position. Only when the sleeve is pushed back to the closed position, the coupling means can be disengaged as the rotation of the sleeve is blocked in the closed position.

[0007] This ensures for a safe handling of a container provided with the adapter according to the invention and minimizes the risk of any spillage of the fluid in said container.

[0008] A further advantage is that the adapter according to the invention can only consist of two parts, which provides for a cost effective manufacturing of the adapter.

[0009] In a preferred embodiment of the adapter according to the invention the hook-shaped end has a slanting surface facing in radial direction the protrusion and facing in the direction of the main axis an access opening of the annular space, through which access opening the spout of a second container can be inserted.

[0010] The slanting surface facilitates the movement of the resilient finger out of engagement with the protrusion upon insertion of a spout, which is to be coupled to the sleeve.

[0011] In another preferred embodiment of the adapter according to the invention a venting pipe extends from the second opening, through the fluid channel and out of the first opening. The venting pipe preferably extends to the bottom of the container to which the adapter is attached. This allows for venting the container, when the fluid flows from the container, via the fluid channel into the spout and second container.

[0012] In yet another embodiment of the adapter according to the invention at least one first rib is arranged on the central body, wherein at lease one second rib is arranged on the inside of the sleeve and wherein the at least one first rib and the at least one second rib are in engaging contact in the closed position and are out of engaging contact in the dispensing position.

[0013] The ribs allow for blocking of the rotation of the sleeve in the closed position, while the ribs are displaced relative to each other, when the sleeve is pulled into the dispensing position, allowing for the full rotation of the sleeve relative to the central body.

[0014] In still a further preferred embodiment of the adapter according to the invention the first opening of the central body comprises connecting means, such as a screw thread, for connection with a container and wherein a locking protrusion is provided extending radially in the first opening for locking the connection of a container with the adapter.

[0015] The adapter is preferably provided with a screw thread such that the adapter is easily mounted on known containers having a screw thread coupling. In order to avoid, that the adapter is screwed loose or decoupled from the container, a protrusion is provided in the first opening of the adapter, such that this protrusion can engage on a protrusion on the container and the adapter is locked to the container after mounting.

[0016] The invention also relates to a combination of an adapter according to the invention and a spout for a second container, wherein the spout has a cylindrical portion for insertion into the annular space, wherein the cylindrical portion is provided with connecting means, such as a screw thread, for connection with the connecting means of the annular space.

[0017] These and other features of the invention will be elucidated in conjunction with the accompanying drawings.

Figure 1 shows an embodiment of an adapter according to the invention mounted to a container.

Figure 2 shows the embodiment of figure 1 in cross-sectional view and in dispensing position and coupled to a spout of a second container.

Figure 3 shows a cross-sectional view of the adapter in closed position.

Figure 4 shows a cross-sectional view along the line IV-IV in figure 3.

Figure 5 and 6 shows cross-sectional views 90° displaced relative to the longitudinal axis of the adapter in dispensing position.

[0018] Figure 1 shows a first container 1 with an embodiment of an adapter 2 according to the invention and a lid 3 arranged over the adapter 2.

[0019] Figure 2 shows the container 1 with the adapter 2 in cross-sectional view. A spout 4 with a screw thread 5 is coupled to a sleeve 6 of the adapter 2. This sleeve 6 is arranged around a central body 7 with a central fluid channel 8. A venting pipe 9 extends from the bottom of the container 1 through the fluid channel 8.

[0020] Figure 3 shows the adapter 2 in more detail. The adapter 2 is in closed position and the lid 3 is arranged over the adapter 2.

[0021] The container 1 is provided with a spout 10 provided with screw thread for coupling to the first opening of the central body 7 and also provided with screw thread 11.

[0022] The sleeve 6 is arranged slidable around the central body 7. This sliding movement is limited by cams 12, 13 arranged on the central body 7 and sleeve 6 respectively.

[0023] The sleeve 6 has a cap portion 14 which has a conveniently shaped top 15, which closes both the fluid channel 8 and the venting tube 9.

[0024] The sleeve 6 and cap portion 14 form an annular space 16, in which, in the shown closed position, hook-shaped ends 17 of resilient fingers 18 extend. These resilient fingers 18 extend through openings 19 arranged in the bottom part of the cap portion 14 (see also figure 4). The hook-shaped ends 17 hook through these openings 19 and behind the protrusion formed by the bottom part of the cap portion 14. This prevents the sleeve 6 to slide from the shown closed position to a dispensing position.

[0025] Figure 5 and 6 show the adapter 2 in the dispensing position, after the spout 4 has been screwed in the annular space 16 and after the hook-shaped ends 17 of the resilient fingers 18 have been urged radially by the leading edge 20 of the spout 4. This causes the hook-shaped ends 17 to disengage and allow for sliding of the sleeve 6 to the dispensing position.

[0026] As a result the top 15 of the cap portion 14 is removed from the fluid channel 8 and the venting pipe 9 allowing for dispensing fluid F from the container 1 through the fluid channel 8 into the spout 4, while air A flows in opposite direction through the venting pipe 9.

[0027] As shown in figure 6, ribs 21 are provided on the inside of the sleeve 6, which cooperate with the cams 12 arranged on the central body 7, which cams 12 also function as ribs. In the closed position (as shown in figure 3, the ribs 21 and 12 block rotation of the sleeve 6 relative to the central body 7, while in the dispensing position (shown in figures 5 and 6) the sleeve 6 can fully rotate around the central body 7.

Claims

1. Adapter for a container, which adapter comprises:

- a central body with a main axis and a fluid channel extending through the central body along the main axis, which fluid channel has on a first side of the central body a first opening for connection with a container and has on the opposite, second side of the central body a second opening for dispensing fluid from the container;
- a sleeve arranged coaxially around the central body, wherein the sleeve is movable in the direction of the main axis between a closing position and a dispensing position, wherein the sleeve is fully rotatable around the main axis in the dispensing position, and wherein the rotation

of the sleeve is blocked in the closed position;

the sleeve comprising a cap portion arranged inside the sleeve, wherein the cap portion closes the second opening in the closing position of the sleeve and wherein the cap portion has at least one opening, which is in fluid connection with the second opening in the dispensing position of the sleeve
wherein an annular space is formed between the sleeve and the cap portion for reception of a spout of a second container, wherein at least part of the wall of the annular space comprises connecting means, such as a screw thread;

- at least one resilient finger arranged with one end to the central body and wherein the other end of the finger is provided with a hook-shaped end, wherein the hook-shaped end extends into the annular space in the closed position of the sleeve and hooks with a protrusion arranged to the sleeve and wherein the hook-shaped end is positioned outside of the annular space in the dispensing position.

2. Adapter according to claim 1, wherein the hook-shaped end has a slanting surface facing in radial direction the protrusion and facing in the direction of the main axis an access opening of the annular space, through which access opening the spout of a second container can be inserted.

3. Adapter according to claim 1 or 2, wherein a venting pipe extends from the second opening, through the fluid channel and out of the first opening.

4. Adapter according to any of the preceding claims, wherein at least one first rib is arranged on the central body, wherein at lease one second rib is arranged on the inside of the sleeve and wherein the at least one first rib and the at least one second rib are in engaging contact in the closed position and are out of engaging contact in the dispensing position.

5. Adapter according to any of the preceding claims, wherein the first opening of the central body comprises connecting means, such as a screw thread, for connection with a container and wherein a locking protrusion is provided extending radially in the first opening for locking the connection of a container with the adapter.

6. Combination of an adapter according to any of the preceding claims and a spout for a second container, wherein the spout has a cylindrical portion for insertion into the annular space, wherein the cylindrical portion is provided with connecting means, such as a screw thread, for connection with the connecting means of the annular space.

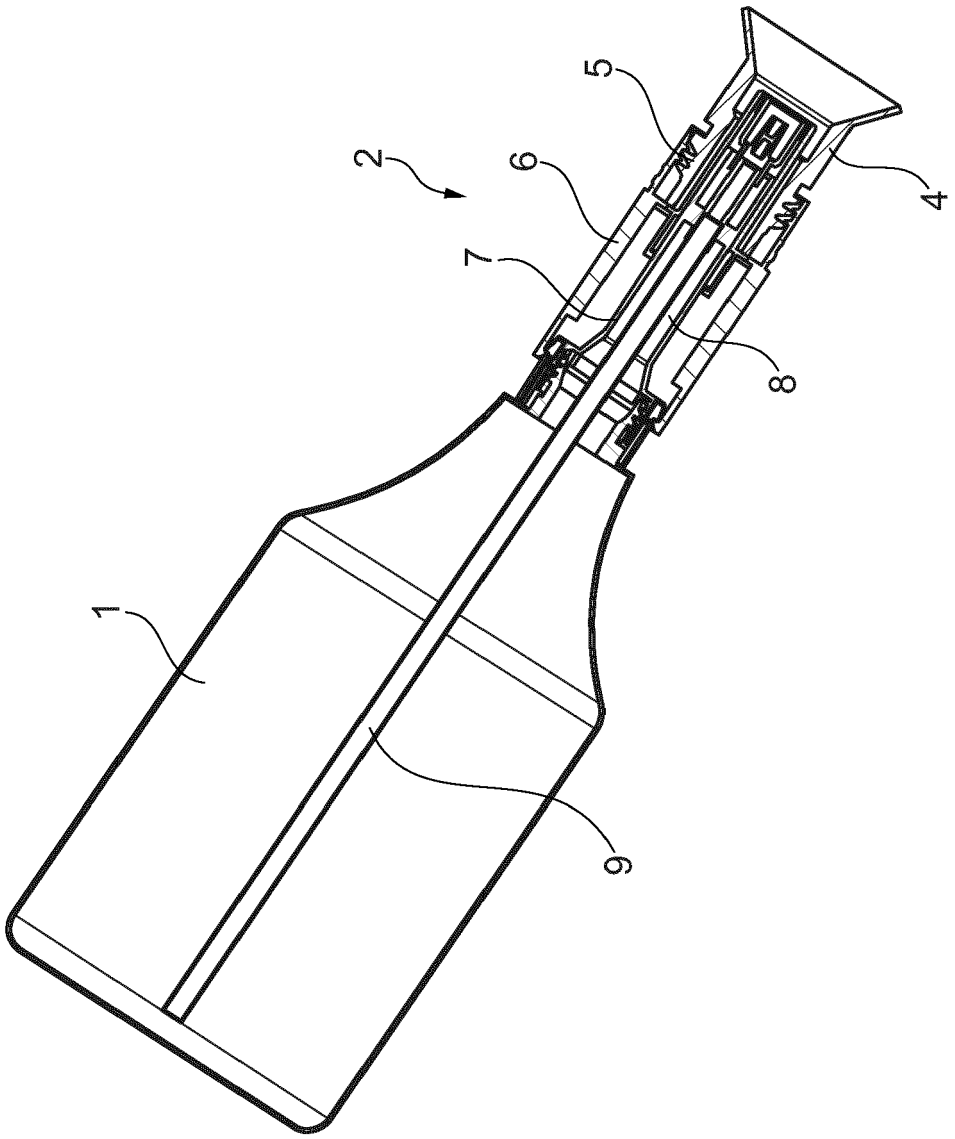

Fig. 2

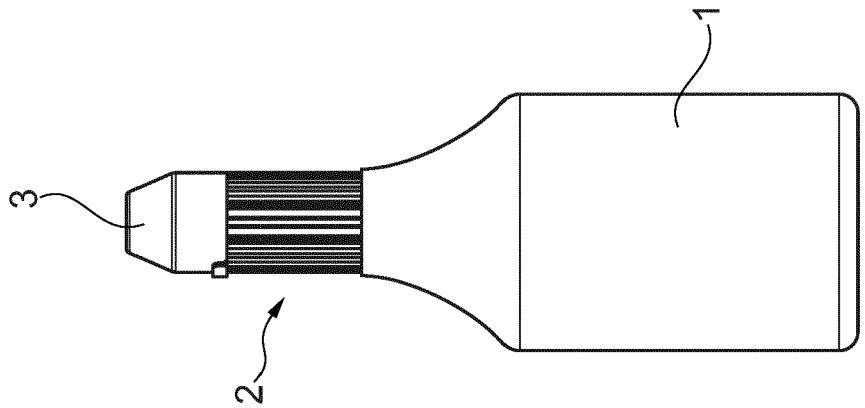

Fig. 1

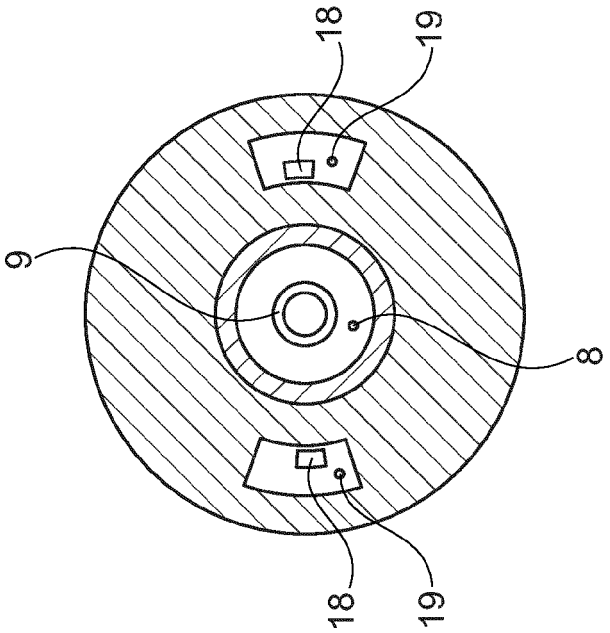

Fig. 4

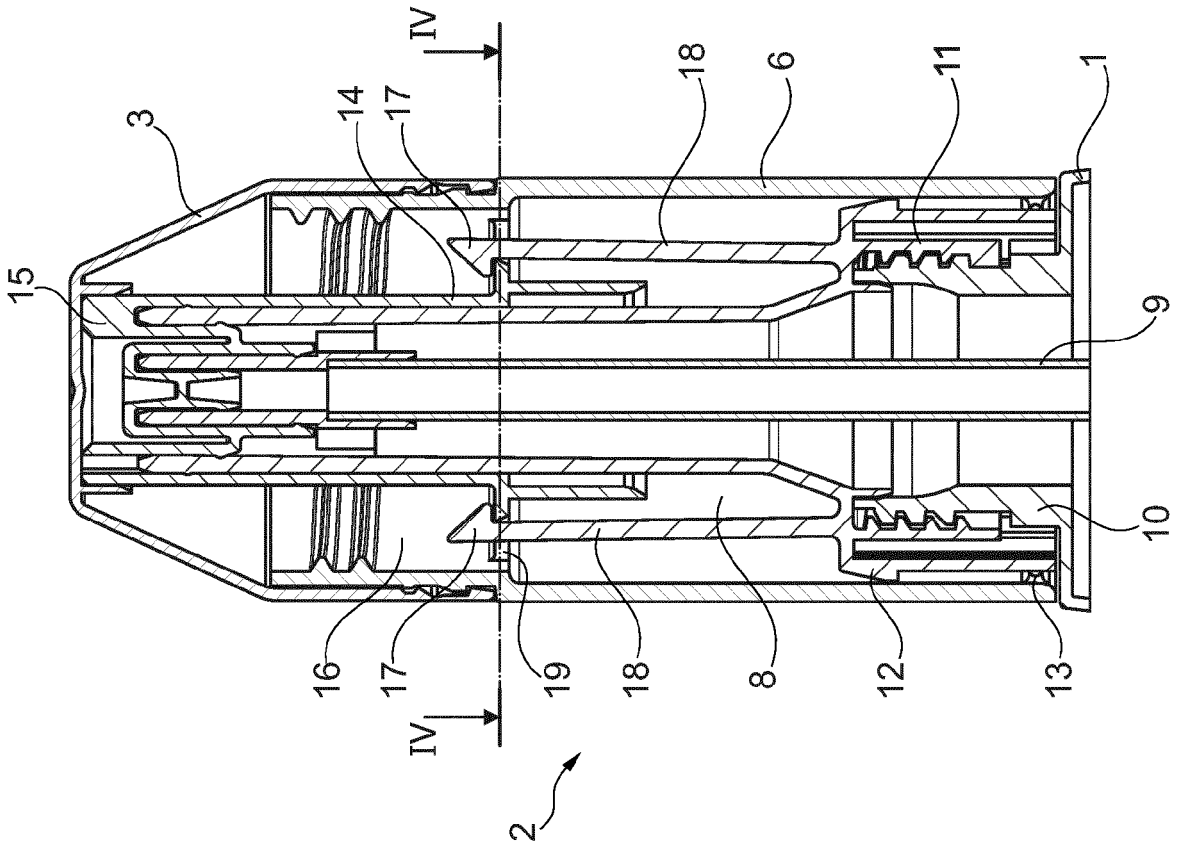

Fig. 3

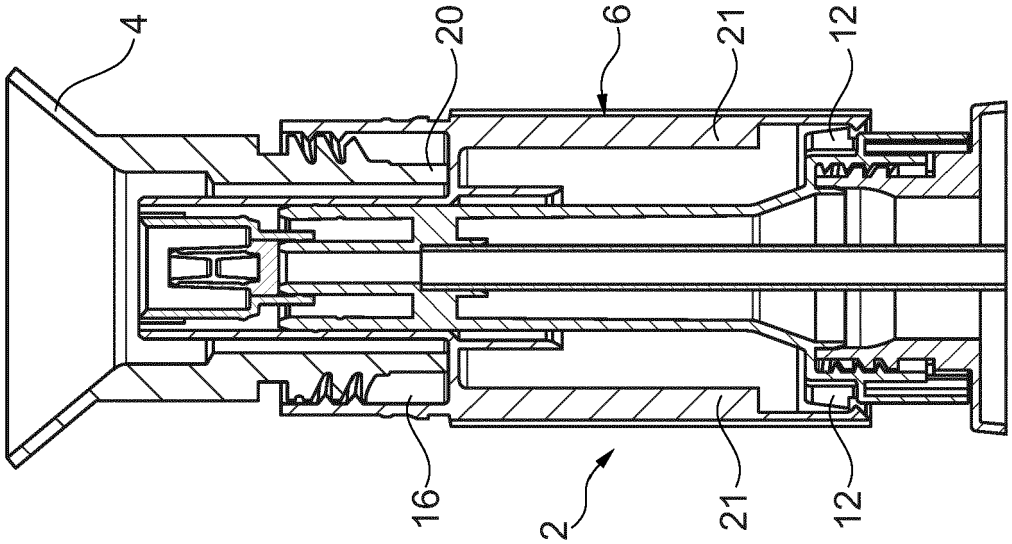

Fig. 6

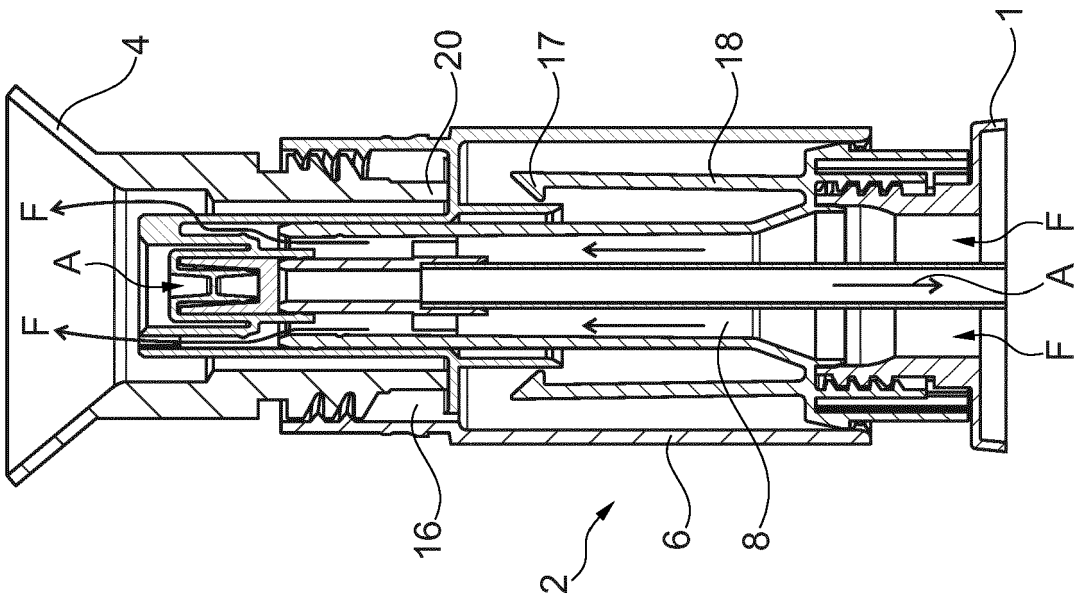

Fig. 5

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 17 15 8783

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	DE 20 2013 103516 U1 (KÄMPF RALF [DE]) 6 November 2014 (2014-11-06) * paragraph [0021] - paragraph [0025]; figure 1 *	1	INV. B67D7/00 B67D7/02
A,D	WO 2007/085381 A2 (KAEMPF RALF [DE]) 2 August 2007 (2007-08-02) * page 25, line 18 - page 27, line 28 * * figures 9a-9c *	1	

TECHNICAL FIELDS SEARCHED (IPC)

B67D
B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	8 August 2017	Schultz, Tom

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

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 17 15 8783

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

08-08-2017

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 202013103516 U1	06-11-2014	NONE	
WO 2007085381 A2	02-08-2007	AR 059169 A1	12-03-2008
		AT 485236 T	15-11-2010
		BR PI0706944 A2	12-04-2011
		CA 2639994 A1	02-08-2007
		DE 202006009585 U1	28-09-2006
		DK 1979265 T3	07-02-2011
		EP 1979265 A2	15-10-2008
		JP 2009523665 A	25-06-2009
		KR 20080094704 A	23-10-2008
		PT 1979265 E	26-01-2011
		SI 1979265 T1	28-02-2011
		WO 2007085381 A2	02-08-2007

EPO FORM P0459

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

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- WO 2007085381 A **[0001]**