

Description

[0001] The invention relates to a cleaning tool comprising a handle, a cleaning head attached to one end of the handle, a fluid reservoir removably attached to the handle or the cleaning head, a sprayer nozzle for dispensing fluid from the reservoir, and a pump member connected between the reservoir and the sprayer nozzle for pumping the fluid towards the nozzle.

[0002] Cleaning tools having a fluid reservoir attached to the handle or the cleaning head are generally known. One type of cleaning tool uses the principle of gravity to bring the fluid from the reservoir to the nozzle. Another type of cleaning tool uses a pump system for pumping the fluid towards the nozzle. In comparison with the gravity system, the pump systems offers an even spray pattern which will not be disturbed by the change in fluid content of the reservoir during use. However, a disadvantage of the pump system is that in case of malfunction of the pump system, the user has to buy a complete new cleaning tool.

[0003] In these type of cleaning tools, the reservoir is filled with cleaning fluid. When the fluid is used and the reservoir is empty, another reservoir filled with fluid is placed on the cleaning tool. Full reservoirs can be bought as refills in the supermarket or a domestic shop. The refills contain different kinds of cleaning liquids. The assortment of cleaning liquids offered is limited.

[0004] The present invention relates to cleaning tools of the pump system type only.

[0005] The object of the invention is to provide an improved cleaning tool. A further object of the invention is to provide a cleaning tool and reservoir with which all kinds of cleaning liquids can be used. Still a further object of the invention is to provide a cleaning tool and reservoir which are relatively low in price.

[0006] According to the invention a cleaning tool of the above identified type is characterized in that the pump member is attached to the reservoir. The user can switch between reservoirs with different kinds of cleaning fluid without the risk that the pump system of the cleaning tool is contaminated. Malfunction of the pump system is herewith reduced.

[0007] Preferably, the reservoir comprises a container for fluid and a closure member for closing the container. When the reservoir is empty, the user can fill the reservoir with its own cleaning product.

[0008] In a preferred embodiment, the pump member is accommodated in or attached to the closure member. The pump member is removed together with the closure member when the reservoir is filled with cleaning product.

[0009] The sprayer nozzle can be attached either to the cleaning head or to the handle of the cleaning tool.

[0010] Furthermore, the cleaning head is preferably pivotally attached to the one end of the handle by means of a universal joint. A universal joint provides increased maneuverability of the cleaning tool.

[0011] In a preferred embodiment, a holder is attached to the handle for removably accommodating the reservoir. The reservoir with pump member is placed in the holder on the handle. In order to lock the reservoir in the holder, locking means are provided between the holder and the reservoir.

[0012] In another preferred embodiment an activating member accommodated in the holder for activating the pump member and operating means for operating the activating member are provided. The operating means comprise a trigger located at the end of the handle remote from the cleaning head, a sliding element attached to the activating member and a cable attached between the trigger and the sliding member. Finally, the activating member is connected to the sprayer nozzle via a hose.

[0013] The cleaning tool might be used with a cleaning fabric which preferably is removably attached to the cleaning head.

[0014] Finally, the invention also relates to a fluid reservoir for a cleaning tool, wherein a pump member is attached in the reservoir. The reservoir can be sold as a refill. If the pump member of the cleaning tool malfunctions, only a refill has to be bought.

[0015] The invention will be further elucidated with reference to the attached drawings. The drawings show:

Figure 1A a perspective view of a cleaning tool with a reservoir in place according to the invention,
Figure 1B a detailed view of the cleaning tool of Figure 1A with removed reservoir,
Figure 2 a further detailed and partly cut away view of the cleaning tool of Figure 1,
Figure 3 a partly cut away view of the reservoir with pump, and
Figure 4 a sectional view according to arrow IV in Figure 2.

[0016] In figure 1A the cleaning tool comprises a handle 1, a cleaning head 2 attached to one end of the handle 1, a fluid reservoir 3 removably attached to the handle 1, a sprayer nozzle 4 for dispensing fluid from the reservoir 3, and a pump member 5 connected between the reservoir 3 and the sprayer nozzle 4 for pumping the fluid from the reservoir 3 towards the nozzle 4. The sprayer nozzle 4 is attached to the cleaning head, although it could also be attached to the handle 1. A cleaning fabric can removably be attached to the lower side of the cleaning head 2. Between the cleaning head 2 and the handle 1 a universal joint 5 is attached which provides increased maneuverability to the cleaning tool. Remote from the cleaning head, the handle 1 is provided with a trigger 6 for operating the pump system of the cleaning tool. Upon actuating the trigger 6, liquid from the reservoir 3 will be pumped towards the nozzle 4 via a hose 7.

[0017] Figure 1B shows the reservoir 3 removed from the cleaning tool. The cleaning tool further comprises a holder 8 attached to the handle 1. The holder 8 serves

for accommodating the reservoir 3. The reservoir 3 comprises a container 9 for fluid and a closure member 10 for closing the container. The closure member 10 is provided with screw thread and can be screwed onto the neck portion of the container 9 (see figure 3). According to the invention a pump member 11 is attached to the reservoir 3. Figures 3 and 4 clearly show that the pump member 11 is attached to the closure member 10 of the reservoir 3.

[0018] In figure 2 the reservoir 3 is placed into the holder 8 of the cleaning tool. An activating member 12 accommodated in the holder is in contact with the pump member 11. A seal ring 13 is located between the activating member 12 and the pump member. The activating member 12 is operated by operating means. The operating means comprise the trigger 6 (figure 1), a sliding element 13 and a cable 14. The sliding element 13 is attached to the activating member 12 and received in the hollow tube of the handle 1. The cable 14 is at one end attached to the trigger 6 and at the other end attached to the sliding member 13. Furthermore, figure 2 shows the hose 7 in fluid connection with the pump member 11 (see also figure 4). Finally, the reservoir 3 is provided with locking means 21, which will be explained below.

[0019] Figures 3 and 4 show a possible construction of the pump member 11. The pump member 11 comprises a piston member 15, which is cooperating with the activating member 12. During action, the piston member 15 slides in the closure member 10. The closure member 10 is further provided with an inner wall 16. A release spring member 17 is mounted between the inner wall 16 of the closure member 10 and the piston member 15. The pump member 11 further comprises an air inlet valve member 18, a fluid inlet valve member 19 and a fluid outlet valve member 20.

[0020] The locking means 21 lock the slidable piston member 15 into the closure member 10 during transport and sale of the reservoir 3. If the reservoir is to be used in a cleaning tool, the piston member 15 is first unlocked from the closure means. The locking means 21 easily unlock by rotating and pushing the piston member 15 in relation to the closure member 10.

[0021] Further locking means 22 are operative between the holder 8 and the reservoir 3 for locking the reservoir 3 in the holder 8 in use (figures 3 and 4). The locking means 22 comprise a latch member 24 and a recess 25 in the outer wall of the container 9. The locking means 22 unlock if a pushing force is applied to button 23.

[0022] Upon actuation of the trigger 6, the sliding member 13 slides inside the hollow tube in upwards direction. Because the sliding member is attached to the activating member 12, the latter slides correspondingly upwardly. This causes the piston member 15 to be moved inside the closure member 10. Upon releasing the trigger 6, the piston member 15 slides back to its initial position due to the spring force of the release spring

member 17. This results in a pumping action with which fluid from the reservoir 3 is pumped towards and through the nozzle 4.

[0023] The invention is not limited to the embodiment shown in the figures. For example, the reservoir 3 could be removably attached to the cleaning head 2. The invention is only limited by the scope of the claims attached.

Claims

1. A cleaning tool comprising:

- a handle;
- a cleaning head attached to one end of the handle;
- a fluid reservoir removably attached to the handle or the cleaning head;
- a sprayer nozzle for dispensing fluid from the reservoir, and
- a pump member connected between the reservoir and the sprayer nozzle for pumping the fluid from the reservoir towards the nozzle,

characterized in that the pump member is attached to the reservoir.

2. The cleaning tool according to claim 1, wherein the reservoir comprises a container for fluid and a closure member for closing the container.

3. The cleaning tool according to claim 2, wherein the pump member is accommodated in or attached to the closure member.

4. The cleaning tool according to one of the preceding claims, wherein the sprayer nozzle is attached to the cleaning head or the handle.

5. The cleaning tool according to one of the preceding claims, wherein the cleaning head is pivotally attached to the one end of the handle by means of a universal joint.

6. The cleaning tool according to one of the preceding claims, wherein a holder is attached to the handle for removably accommodating the reservoir.

7. The cleaning tool according claim 6, further comprising locking means operative between the holder and the reservoir for locking the reservoir in the holder.

8. The cleaning tool according to one of the preceding claims, further comprising an activating member accommodated in the holder for activating the pump member and operating means for operating the ac-

tivating member.

9. The cleaning tool according to claim 8, wherein the operating means comprise a trigger located at the other end of the handle, a sliding element attached to the activating member and a cable attached between the trigger and the sliding member. 5
10. The cleaning tool according to claim 8 or 9, wherein the activating member is connected to the sprayer nozzle via a hose. 10
11. The cleaning tool according to one of the preceding claims, further comprising a cleaning fabric removably attached to the cleaning head. 15
12. A fluid reservoir for a cleaning tool, wherein a pump member is attached in the reservoir.

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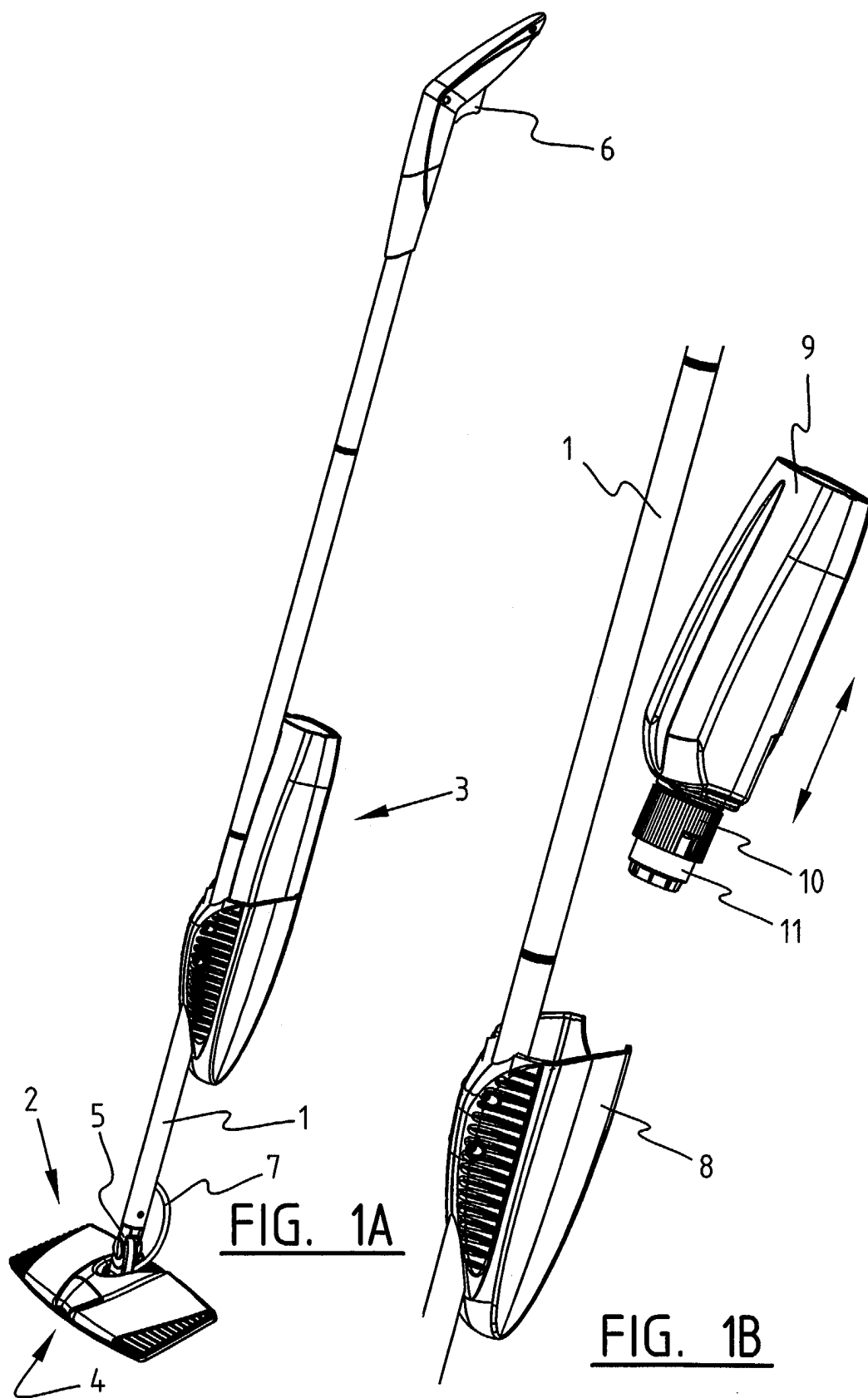
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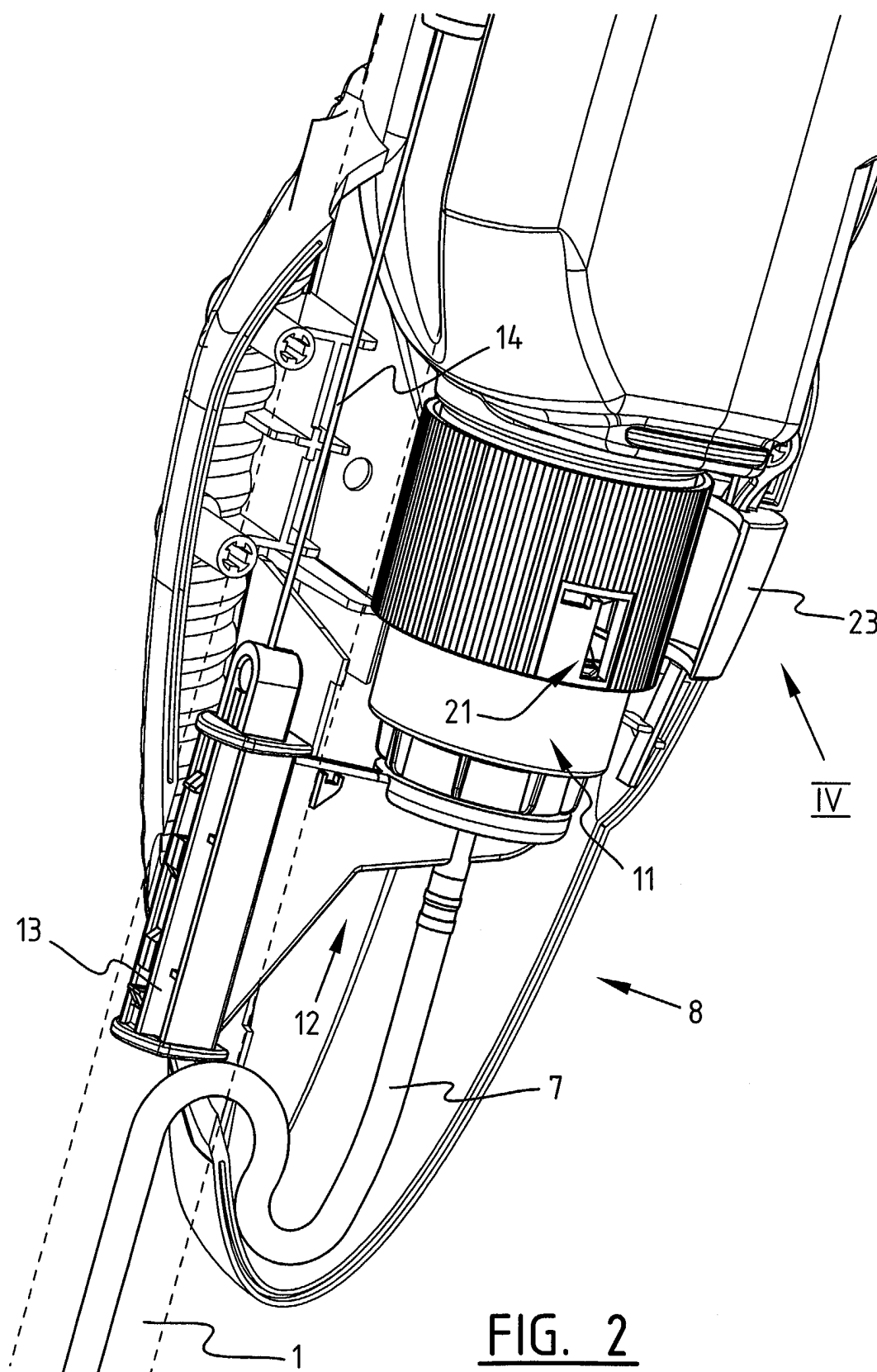
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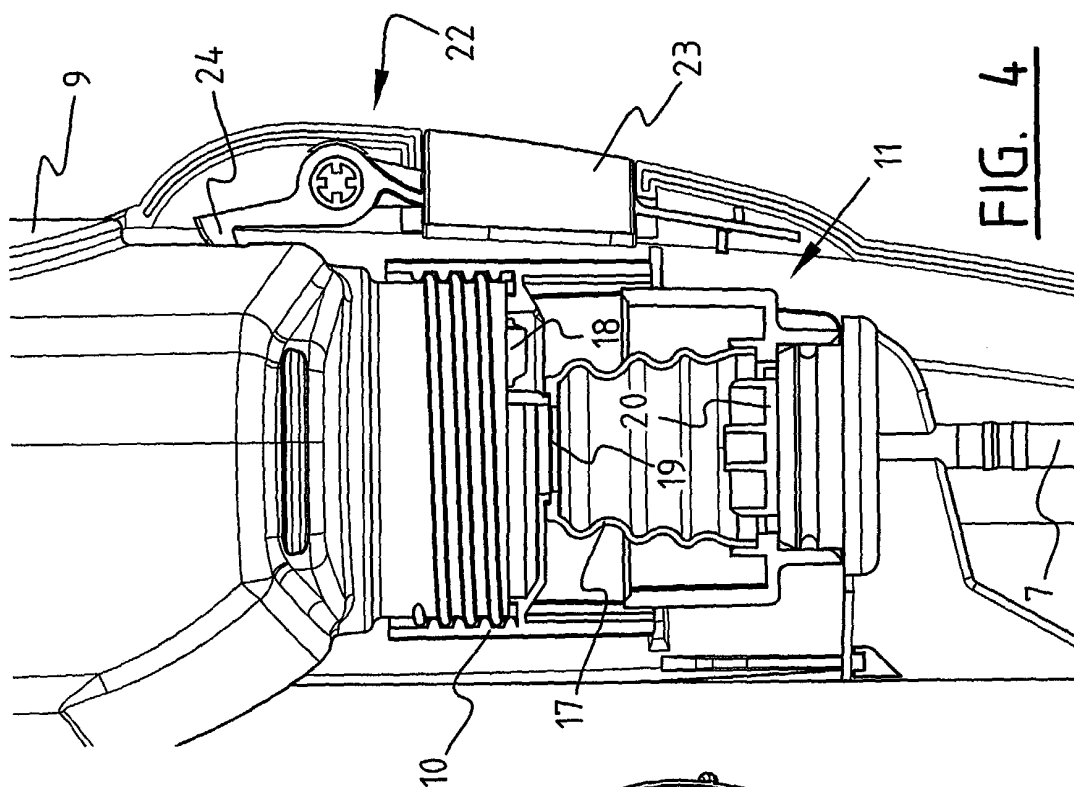


FIG. 4

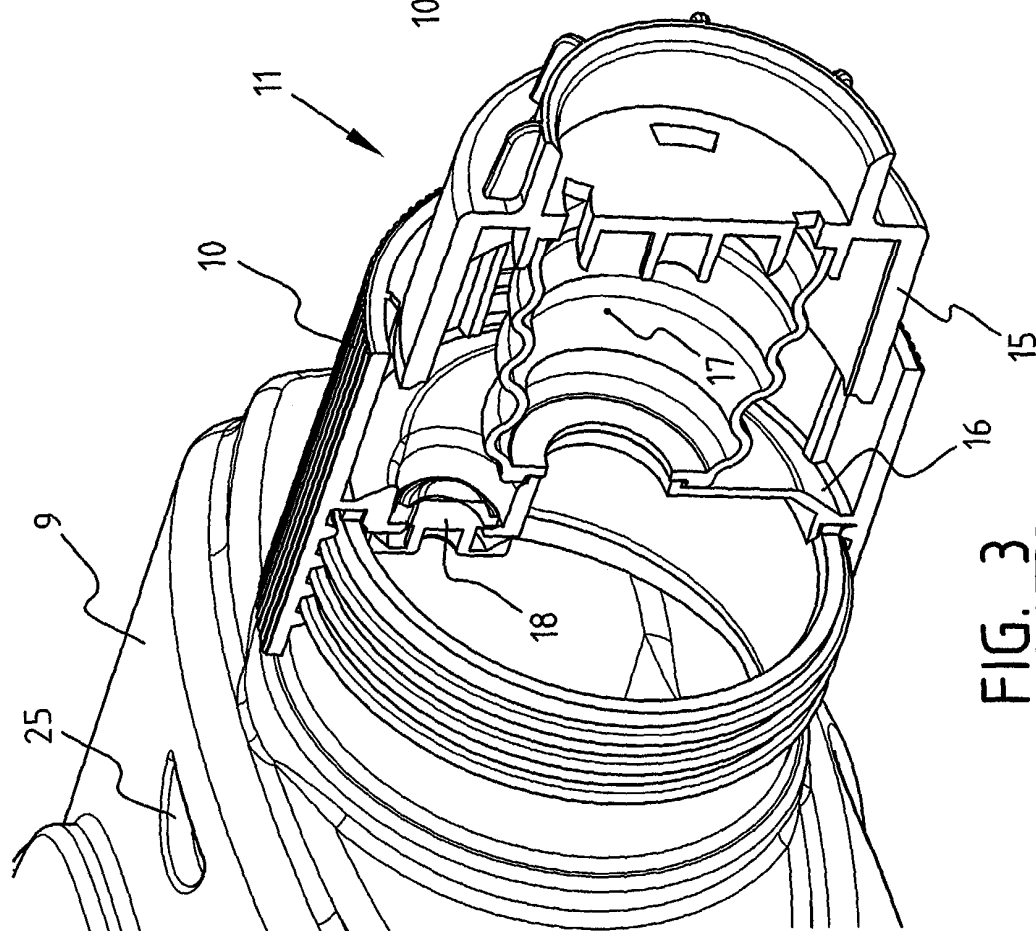


FIG. 3



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 07 5009

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 6 010 267 A (VITO JOHN) 4 January 2000 (2000-01-04) * column 2, line 6 - column 3, line 35; figure 1 *	1-12	A47L13/22
X	US 6 659 670 B1 (BLOUSE GARY) 9 December 2003 (2003-12-09) * column 1, line 13 - column 3, line 30; figures 1-3 *	1-12	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			A47L
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 11 June 2004	Examiner Lopez Vega, J
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			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 04 07 5009

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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11-06-2004

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6010267	A	04-01-2000	NONE	
US 6659670	B1	09-12-2003	WO 03059115 A1	24-07-2003