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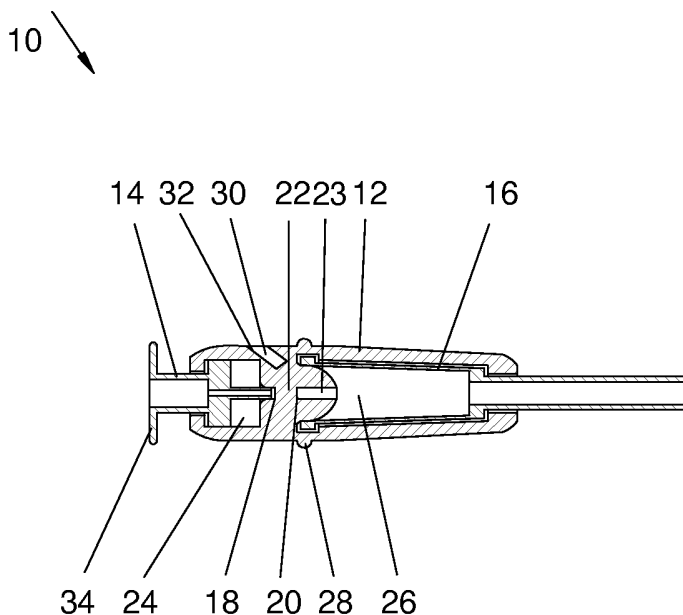
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(54) Title: VALVE



(57) Abstract: Valve (10) including housing (12) having first opening side (18) and second opening side (20); closing element (22) made of deformable material, located between first and second opening sides and adapted to prevent communication between first and second opening side in inoperative state and adapted to allow communication between first and second opening side in operative state. Closing element may be integrally formed with housing. Housing and/or closing element made of liquid plastics material such as liquid silicone. Valve adapted to allow object such as needle or other medical device, to penetrate closing element in operative state and allow closure of closing element in inoperative state.

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VALVE

FIELD OF INVENTION

The present invention relates to a valve.

BACKGROUND TO INVENTION

- 5 Valves are defined as devices for controlling the passage of fluid through a pipe, especially a device allowing movement in one direction only. Numerous valve types and designs are known from the prior art.

Valves are also utilised in the various medical fields, in particular intravenous therapy, a method for administering fluids and/or
10 medications directly into the venous system, usually into a patient's vein. In order to administer intravenous fluids, venous access is required and this is acquired by means of a catheter over needle.

The fluids to be administered are provided by way of tubing to the catheter. Valves for such tubing have been developed, but are either
15 difficult to operate, i.e. require two hands or are mechanically operated and due to continuous usage lead to one or other mechanical failure.

Furthermore, needle-stick injuries is a common feature when operating known medical valves for administering fluids.

It is an object of the invention to suggest a valve which will assist in
20 overcoming the afore-mentioned problems.

SUMMARY OF INVENTION

According to the invention, a valve includes

- (a) a housing having a first opening side and a second opening side; and

- 5 (b) a closing element, made of a deformable material, located between the first opening side and the second opening side, and being adapted to prevent communication between the first opening side and the second opening side in an inoperative state and being adapted to allow communication between the first opening side and the second opening side in an operative state.

Also according to the invention, a valve includes

- 10 (a) a housing having a first opening side and a second opening side;
- 15 (b) a closing element, made of a deformable material, located between the first opening side and the second opening side, and being adapted to prevent communication between the first opening side and the second opening side in inoperative state and being adapted to allow communication between the first opening side and the second opening side in an operative state;
- 20 (c) an output section adjacent to the second opening side and being adapted to receive an associated output docking component, such as a luer connector adapted to be connected to a medical device insert, such as a needle, a medical bottle, a syringe, a dripping chamber, an infusion flow regulator, a medical fluid connection, a medical fluid adapter, an infusion equipment, a filter, an intravenous catheter tube, a cannula, a tube and/or a dosing device; and
- 25 (d) an input section adjacent to the first opening side and adapted for receiving an insert guide having a luer connection and being adapted to be connected to a medical device insert, including a needle, a medical bottle, a syringe, a

dripping chamber, an infusion flow regulator, a medical fluid connection, a medical fluid adapter, an infusion equipment, a filter, an intravenous catheter tube, a cannula, a tube and/or a dosing device.

5 Yet further according to the invention, a catheter includes

(a) a catheter; and

(b) a valve including a housing having a first opening side and a second opening side; and a closing element, made of a deformable material, located between the first opening side and the second opening side, and being adapted to prevent communication between the first opening side and the second opening side in an inoperative state and being adapted to allow communication between the first opening side and the second opening side in an operative state.

15 The closing element may be integrally formed with the housing.

The housing and/or the closing element may be made of liquid plastics material, such as liquid silicon.

The valve may be adapted to allow an object to penetrate the closing element in the operative state and to allow closure of the closing element in the inoperative state.

The object may be a needle or other medical device.

The closing element may include a slit and/or guiding channel.

The valve may include hardened points and/or annular collars to assist in handling the valve and/or for guiding the penetrating object through the closing element in the operative state.

The valve may include an output section adjacent the second opening side.

The output section may be adapted to receive an associated output docking component, such as a medical device insert, including a needle, a medical bottle, a syringe, a dripping chamber, an infusion flow regulator, a medical fluid connection, a medical fluid adapter, an infusion
5 equipment, a filter, an intravenous catheter tube, a cannula, a tube and/or a dosing device.

The output docking component may include a lure lock connection, a slip lock connection and/or a thread connection.

The output docking component may be a female part of a luer connector
10 and/or a female luer cover.

The valve may include an input section adjacent the first opening side.

The input section may be adapted to receive an associated input docking component, such as a medical device insert, including a needle, a medical bottle, a syringe, a dripping chamber, an infusion flow regulator,
15 a medical fluid connection, a medical fluid adapter, an infusion equipment, a filter, an intravenous catheter tube, a cannula, a tube and/or a dosing device.

The input docking component may include a lure lock, a slip lock connection, a thread connection, a male part of a luer connector and/or a
20 male luer cap.

The input section may include a piston chamber for receiving an insert guide.

The insert guide may be a male part of a luer connector and/or a male luer cap.

25 The insert guide may be adapted to receive various medical device inserts, such as a needle, a medical bottle, a syringe, a dripping chamber, an infusion flow regulator, a medical fluid connection, a medical

fluid adapter, an infusion equipment, a filter, an intravenous catheter tube, a cannula, a tube and/or a dosing device.

The valve may include a guiding channel passing from the outside through its wall to allow a penetrating object to penetrate the closing
5 element and enable liquid to be injected through the second opening side.

The guiding channel may include a polycarbonate sleeve.

The valve may be integrated into a catheter.

The valve may include a safety clip for engaging with a needle to prevent
10 needle-stick injuries.

The safety clip may be adapted to be inserted into the valve.

The safety clip may be integrally formed with the valve.

At least one safety clip may be located in the closing element, the guiding channel of the closing element and/or in the insert guide.

15 The valve may be used for medical, laboratory and/or chemical purposes.

BRIEF DESCRIPTION OF DRAWINGS

The invention will now be described by way of example with reference to the accompanying schematic drawings.

In the drawings there is shown in:

20 Figure 1: a sectional side view of a valve in accordance with the invention, in the inoperative state;

Figure 2: a sectional view of the valve shown in Figure 1, but in operative state;

- Figure 3: a sectional side view of the housing of the valve shown in Figure 1;
- Figure 4: a sectional side view of the housing seen along arrows IV-IV in Figure 3;
- 5 Figure 5: a sectional side view of the housing seen along arrows V-V in Figure 3;
- Figure 6: a sectional side view of the housing seen along arrows VI-VI in Figure 3;
- Figure 7: a sectional side view of the connecting member of the valve
10 shown in Figure 1;
- Figure 8: a sectional side view of the connecting member seen along arrows VIII-VIII in Figure 7.
- Figure 9: a sectional side view of the insert guide of the valve shown in Figure 1;
- 15 Figure 10: a sectional side view of the insert guide seen along arrows X-X in Figure 9; and
- Figure 11: an end view of the insert guide seen along arrow XI in Figure 9.

DETAILED DESCRIPTION OF DRAWINGS

- 20 Referring to Figures 1 to 11 of the drawings, a valve in accordance with the invention, generally indicated by reference numeral 10, is shown.

The valve 10 includes

- (a) a housing 12;
- (b) an insert guide 14; and

(c) a connector member or output docking member 16.

The housing 12 includes a first opening side 18 and a second opening side 20 of a closing element 22, thus being located between the first opening side 18 and the second opening side 20. A blind hole 23 is provided in the closing element 22 extending from the end face of the closing element 22 up to the second opening side 20.

The closing element 22 is made of a deformable material which allows it to be penetrated by an object but which returns to its original position after withdrawal of the object.

10 In the embodiment example, the housing 12 and the closing element 22 consist of liquid silicon plastics material.

The insert guide 14 is adapted to be located in the input section 24 adjacent to the first opening side 18 of the closing element 22. The input section 24 has the shape of a piston chamber.

15 The connector member 16 is designed to be located in an output section 26 located adjacent to the second opening side 20 of the closing element 22. The connector member 16 can be a cannula holder or the female part of a luer connector.

The connector member 16 in the output section 26 is adapted to receive or be connected to associated docking components, such as various medical device inserts, including needles, medical bottles, syringes, dripping chambers, infusion flow regulators, medical fluid connections, medical fluid adapters, infusion equipment, filters, intravenous catheter tubes, cannulas, tubing and/or dosing devices.

25 The connector member 16 in the embodiment example as shown in the Figures includes a luer lock connection, however in other embodiments it may include luer slip lock connections or thread connections.

The insert guide 14 in the input section 24 is adapted to receive or be connected to associated docking components, such as medical device inserts, needles and medical bottles.

The insert guide 14 in the embodiment example as shown in the Figures
5 includes a lure lock connection, however in other embodiments it may include lure slip lock connections or thread connections. The insert guide 14 is adapted to receive the male part of a luer connection.

As shown in Figure 1, the closing element 22 prevents communication
10 between the first opening side 18 and the second opening side 20 in its inoperative state and as shown in Figure 2 is adapted to allow communication between the first opening side 18 and the second opening side in its operative state 20.

The closing element 22 is integrally formed with the housing 12.

The insert guide 14 is made of polycarbonate material.

15 Thus the valve 10 in accordance with the invention allows an object (not shown) to penetrate the closing element 22 in the operative state and to allow closure of the closing element 22 in the inoperative state. The object can be a needle or other medical device.

The valve 10 includes a hardened annular collar 28 to assist in handling
20 the valve 10 and guiding the penetrating object through the closing element 22 in the operative state.

The valve 10 includes a guiding channel or injection port 30 passing from the outside through its wall to allow a penetrating object, such as a injecting needle, to penetrate the closing element 22 so as to enable
25 liquid, such a pharmaceutical, to be injected into the blind hole 23.

The guiding channel or injection port 30 includes a polycarbonate sleeve 32.

The insert guide 14 is provided with a disc 34 for assisting in operating the insert guide 12, i.e. pushing, pulling, turning and locking the insert guide 14.

5 The valve 10 in accordance with the invention can be integrated into a catheter (not shown).

In other embodiment examples, the valve 10 is adapted to include a safety clip (not shown) for engaging with a needle to prevent needle-stick injuries. The safety clip can be located in a channel in the insert guide 14, the closing element 22 or a channel in the closing element 22.

10 In an example of use, a needle or medical dripping device (not shown) is inserted via the insert guide 14 into the input section 24 into the valve 10 (Figure 1).

The insert guide 14 with the needle is pushed towards the output section 26 and the insert guide 14 together with the needle or dripping device
15 penetrates the closing element 22 into the blind hole 23.

Once the insert guide 14 is retracted or withdrawn, the material of the closing element 22 retracts to its original position and closes off and thus seals the first opening side 18 from the second opening side 20.

The liquid silicon plastics material of the closing element 14 is not
20 removed by the insert guide 14 nor the needle, but is merely displaced. Thus the closing element 22 automatically and independently closes after removal of the insert guide 14.

Thus no pressure or pulling forces are required to open the valve 10 in accordance with the invention and which can be manufactured easily and
25 cost-effectively.

LIST OF REFERENCE NUMERALS

	10	Valve
	12	Housing
5	14	Insert guide
	16	Connecting member
	18	First opening side
	20	Second opening side
	22	Closing element
10	23	Blind hole
	24	Input section
	26	Out put section
	28	Annular collar
	30	Guiding channel / injection port
15	32	Polycarbonate sleeve
	34	Disc

PATENT CLAIMS

1. A valve, which includes
 - (a) a housing having a first opening side and a second opening side; and
 - 5 (b) a closing element, made of a deformable material, located between the first opening side and the second opening side, and being adapted to prevent communication between the first opening side and the second opening side in an inoperative state and being adapted to allow communication
10 between the first opening side and the second opening side in an operative state.
2. A valve as claimed in claim 1, in which the closing element is integrally formed with the housing.
3. A valve as claimed in claim 1 or claim 2, in which the housing
15 and/or the closing element are made of liquid plastics material, such as liquid silicon.
4. A valve as claimed in any one of the preceding claims, which is adapted to allow an object to penetrate the closing element in the operative state and to allow closure of the closing element in the
20 inoperative state.
5. A valve as claimed in claim 4, in which the object is a needle or other medical device.
6. A valve as claimed in any one of the preceding claims, in which the closing element includes a slit and/or guiding channel.
- 25 7. A valve as claimed in any one of the preceding claims, which includes a hardened annular collar and/or points to assist in

handling the valve and/or for guiding the penetrating object through the closing element in the operative state.

8. A valve as claimed in any one of the preceding claims, which includes an output section adjacent the second opening side.
- 5 9. A valve as claimed in claim 8, in which the output section is adapted to receive an associated output docking component, such as a medical device insert, including a needle, a medical bottle, a syringe, a dripping chamber, an infusion flow regulator, a medical fluid connection, a medical fluid adapter, an infusion equipment, a
10 filter, an intravenous catheter tube, a cannula, a tube and/or a dosing device.
10. A valve as claimed in claim 9, in which the output docking component includes a lure lock connection, a slip lock connection and/or a thread connection.
- 15 11. A valve as claimed in claim 8 or claim 9, in which the output docking component is a female part of a luer connector and/or a female luer cover.
12. A valve as claimed in any one of the preceding claims, which includes an input section adjacent the first opening side.
- 20 13. A valve as claimed in claim 12, in which the input section is adapted to receive an associated input docking component, such as a medical device insert, including a needle, a medical bottle, a syringe, a dripping chamber, an infusion flow regulator, a medical fluid connection, a medical fluid adapter, an infusion equipment, a
25 filter, an intravenous catheter tube, a cannula, a tube and/or a dosing device.

14. A valve as claimed in claim 13, in which the input docking component includes a lure lock, a slip lock connection, a thread connection, a male part of a luer connector and/or a male luer cap.
15. A valve as claimed in any one of claims 11 to 14, in which the input
5 section includes a piston chamber for receiving an insert guide.
16. A valve as claimed in claim 15, in which the insert guide is a male part of a luer connector and/or a male luer cap.
17. A valve as claimed in claim 15 or claim 16, in which the insert
10 guide is adapted to receive various medical device inserts, such as a needle, a medical bottle, a syringe, a dripping chamber, an infusion flow regulator, a medical fluid connection, a medical fluid adapter, an infusion equipment, a filter, an intravenous catheter tube, a cannula, a tube and/or a dosing device.
18. A valve as claimed in any one of the preceding claims, which
15 includes a guiding channel passing from the outside through its wall to allow a penetrating object to penetrate the closing element and enable liquid to be injected through the second opening side.
19. A valve as claimed in claim 18, in which the guiding channel includes a polycarbonate sleeve.
20. 20. A valve as claimed in any one of the preceding claims, which is integrated into a catheter.
21. A valve as claimed in any one of the preceding claims, which includes a safety clip for engaging with a needle to prevent needle-stick injuries.
22. 25 22. A valve as claimed in claim 21, in which the safety clip is adapted to be inserted into the valve.

23. A valve as claimed in claim 21, in which the safety clip is integrally formed with the valve.
24. A valve as claimed in claim 21, in which at least one safety clip is located in the closing element, the guiding channel of the closing element and/or in the insert guide.
25. A valve as claimed in any one of the preceding claims, which is used for medical, laboratory and/or chemical purposes.
26. A valve , which includes
- (a) a housing having a first opening side and a second opening side;
 - (b) a closing element, made of a deformable material, located between the first opening side and the second opening side, and being adapted to prevent communication between the first opening side and the second opening side in inoperative state and being adapted to allow communication between the first opening side and the second opening side in an operative state;
 - (c) an output section adjacent to the second opening side and being adapted to receive an associated output docking component, such as a luer connector adapted to be connected to a medical device insert, such as a needle, a medical bottle, a syringe, a dripping chamber, an infusion flow regulator, a medical fluid connection, a medical fluid adapter, an infusion equipment, a filter, an intravenous catheter tube, a cannula, a tube and/or a dosing device; and
 - (d) an input section adjacent to the first opening side and adapted for receiving an insert guide having a luer

5 connection and being adapted to be connected to a medical device insert, including a needle, a medical bottle, a syringe, a dripping chamber, an infusion flow regulator, a medical fluid connection, a medical fluid adapter, an infusion equipment, a filter, an intravenous catheter tube, a cannula, a tube and/or a dosing device.

27. A valve as claimed in claim 26, in which the closing element is integrally formed with the housing.
- 10 28. A valve as claimed in claim 26 or claim 27, in which the housing and/or the closing element are made of liquid plastics material, such as liquid silicon.
29. A valve as claimed in any one of claims 26 to 28, in which the output docking component includes a lure lock connection, a slip lock connection and/or a thread connection.
- 15 30. A valve as claimed in any one of claims 26 to 29, in which the insert guide includes a lure lock, a slip lock connection, a thread connection, a male part of a luer connector and/or a male luer cap.
31. A valve as claimed in any one of claims 26 to 30, in which the input section includes a piston chamber for receiving the insert guide.
- 20 32. A catheter, which includes
- (a) a catheter; and
 - (b) a valve as claimed in any one of the preceding claims.
33. A valve substantially as hereinbefore described with reference to the accompanying drawings.
- 25 34. A catheter substantially as hereinbefore described with reference to the accompanying drawings.

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FIG. 1

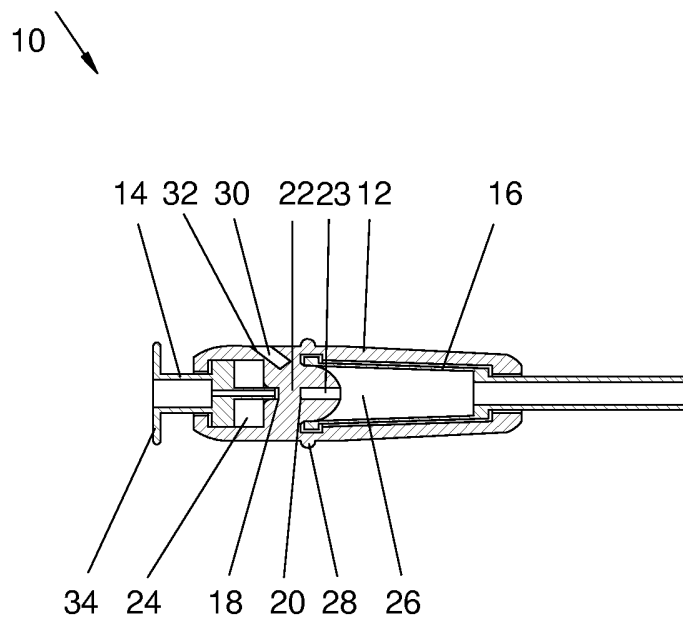
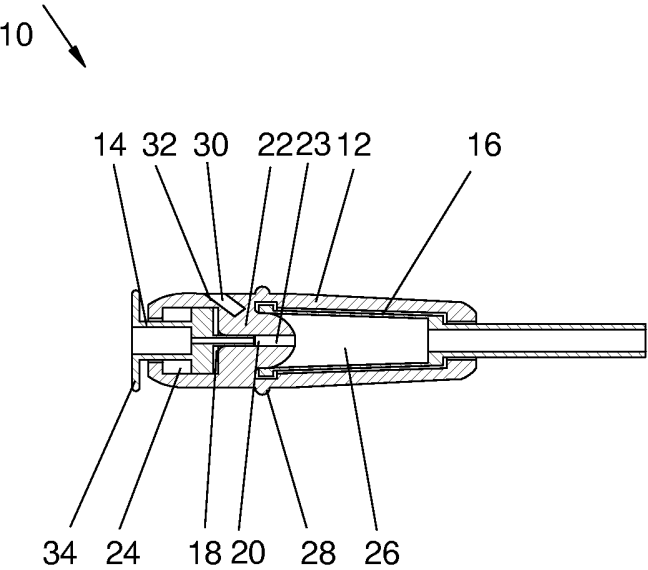
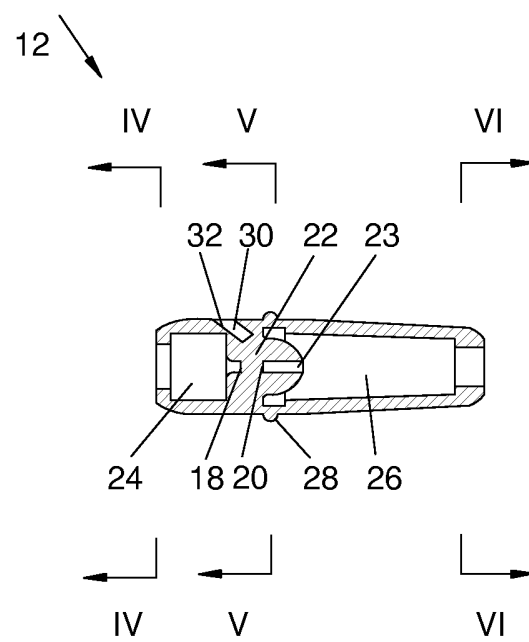


FIG. 2



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FIG. 3



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FIG. 4

12 ↘

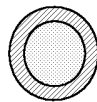
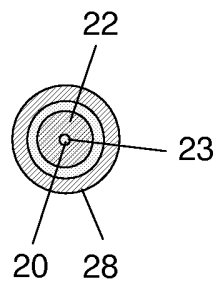


FIG. 5

12 ↘



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FIG. 6

12 ↘



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FIG. 7

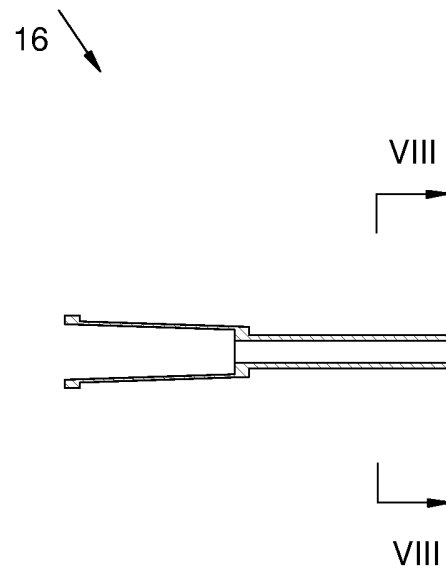
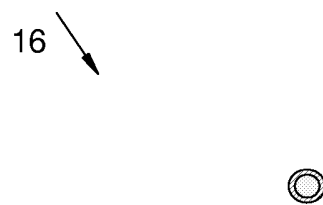
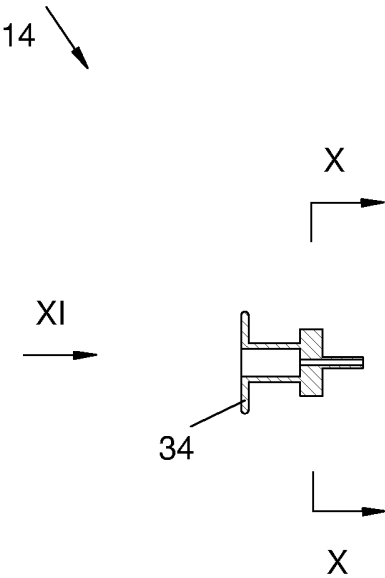


FIG. 8



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FIG. 9



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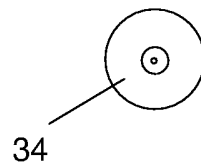
FIG. 10

14 



FIG. 11

14 



INTERNATIONAL SEARCH REPORT

International application No.

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A. CLASSIFICATION OF SUBJECT MATTER		
Int. Cl.		
A61M 39/00 (2006.01) A62B 9/02 (2006.01) F16K 7/00 (2006.01)		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols)		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) DWPI IPC A61M 39/IC, A62 B 9/IC, A61M 16/IC, F16 L 55/IC, F16 K 7/00 & keywords, (valve, pierce, penetrate, seal, close, (liquid plastic), (liquid silicone), integral, housing)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2003/066152 A2 (ALARIS MEDICAL SYSTEMS INC) 14 August 2003 Pages 9-16, figures	1, 4-6, 8-14, 25, 26, 29, 30, 33
X	EP 0484092 A1 (CARE MEDICAL DEVICES INC) 6 May 1992 Whole document	1, 2, 4, 5, 8- 14, 18, 25-27, 33
Y		3, 28
X	WO 2004/062721 A1 (FUKAI KOGYO KK) 29 July 2004 Figures	1, 6, 8, 12-15, 17, 25, 26, 30, 32-34
☒ Further documents are listed in the continuation of Box C ☒ See patent family annex		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "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) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "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 "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "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 "&" document member of the same patent family		
Date of the actual completion of the international search 13 March 2006		Date of mailing of the international search report 31 MAR 2006
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustalia.gov.au Facsimile No. (02) 6285 3929		Authorized officer Sue Thomas Telephone No : (02) 6283 2454

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB2005/054144

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5771935 A (MYERS) 30 June 1998 Whole document	1, 7, 8, 12, 13, 25, 33
Y		3, 28
X	EP 1243285 A1 (TERUMO KK) 25 September 2002 Whole document	1, 3, 4-6, 8- 14, 18, 20, 25, 26, 28-30, 32- 34
X	WO 1998/052631 A1 (BAXTER INTERNATIONAL INC) 26 November 1998 Pages 12-26, figures	1, 3-6, 8-14, 18, 20, 25, 26, 28-30, 32-34
X	WO 1999/006099 A2 (COOK INCORPORATED) 11 February 1999 Pages 4-17, figure 7	1, 3, 4-6, 8- 14, 18, 20, 25, 26, 28-30, 32- 34

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/TB2005/054144

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian 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		Patent Family Member			
US	5771935	DE	19545421		
EP	484092	CA	2054547	JP	5123404
WO	2004/062721	CA	2512775	EP	1584346
WO	1999/006099	AU	86020/98	CA	2298518
		US	2001041872		
EP	1243285	AU	18938/01	CN	1437492
		US	2003066980	WO	2001/043813
WO	1998/052631	AU	74996/98	CA	2260781
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				JP	2001170187
				EP	923391
				EP	1474201
				US	2005148994

Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.

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