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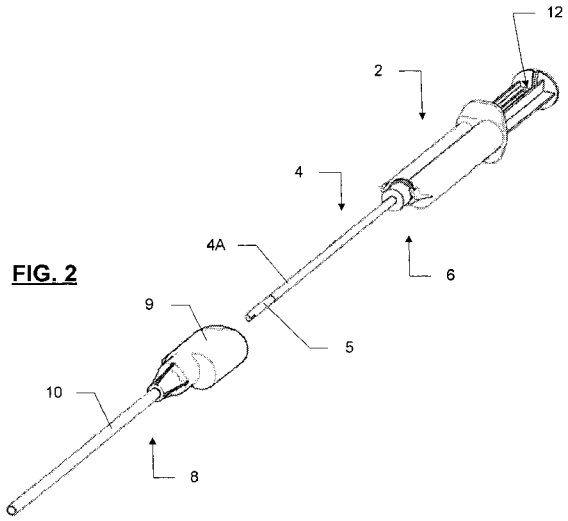
(54) Title: DISPENSING ASSEMBLY FOR TWO COMPONENTS WITH DOUBLE SYRINGE AND MIXER

FIG. 2



(57) Abstract: The dispensing assembly for two components comprises a double syringe and a mixer, a transfer device (3) being interposed between the double syringe (1) and the mixer (5) which is connected to the double syringe and comprises at least two longitudinal channels (14, 15). The transfer device (3) includes a transfer unit (4) with a transfer tube (4A) having a mixer (5) at one end and a coupling area (6) with an inlet portion (18) at the other end, and the coupling area is provided with coupling means (7, 25) which cooperate with coupling means (24) on the double syringe. At least around the coupling area (6) of the transfer unit (4), a support (8) is arranged which is attachable to the double syringe (1). An assembly of this kind allows a simple and economical manufacture of the transfer device and a reliable operation, which is important particularly in laparoscopy as the distance between the dispensing cartridge and the operating field in the abdominal cavity is large in this case.

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Dispensing Assembly For Two Components With Double Syringe And Mixer

The present invention relates to a dispensing assembly for at least two liquid components comprising a double syringe, a dispensing cartridge or dispensing device and a mixer according to the preamble of claim 1.

In most dispensing assemblies, the mixer is fastened to the cartridge and the assembly is used in this form. Often an accessory is attached to the mixer to influence the shape of the mixed components and to allow a targeted application of the material to the intended location in special situations. However, there are a number of applications, especially in medicine, where such a simple assembly of a double syringe, a mixer, and an accessory device is insufficient.

In medicine, it is now common practice to use two component adhesives to stop hemorrhages, to seal cuts and sutures, or to glue soft tissue. Thus, for example, the application of dispensing assemblies in operations involving the use of an endoscope requires a long transfer portion between the double syringe and the mixer, particularly in the case of laparoscopy. In laparoscopic operation techniques, relatively long tubes are required so that the distance between the double syringe und the dispensing tip is quite large.

WO 2004/100798 A1 to the applicant of the present invention discloses a dispensing assembly or a laparoscopic dispensing device according to the preamble of claim 1. This arrangement represented an improvement over the then known laparoscopic assemblies, particularly through the use of a mixer at the dispensing end. According to this solution, the

mixer can be disassembled from the transfer tube, thereby requiring a relatively complex construction.

WO-A2-03/039375 and US 2005/0096588 A1 disclose a spray device for laparoscopy comprising a tubular transfer portion adapted to be coupled with a dispensing device on its inlet side and with a spray device on its outlet side, the spray device being preceded by a mixing chamber having a flexible mixing member. The tubular transfer portion has two longitudinal channels.

US 6 161 730 A discloses a dispensing assembly with a mixer which is conected via a transition piece connecting the outlets of the cartridge with the inlet of the mixer thus that the mixer can be put in any rotational position in view of the cartridge.

On the background of this prior art, it is the object of the present invention to provide a dispensing assembly, particularly for laparoscopy, where a double syringe, dispensing cartridge, or dispensing device is connected by means of a transfer portion to a relatively remote mixer while a simple but solid and cost-efficient construction is desired. This is accomplished by the assembly as described in claim 1.

The invention will be explained in more detail hereinafter with reference to drawings of an exemplary embodiment.

Fig. 1 shows a first exemplary embodiment of a laparoscopic assembly according to the invention in a perspective view,

Fig. 2 shows the assembly of Fig. 1 prior to being fitted together,

Fig. 3 shows the transfer portion and double syringe coupling area in an enlarged detail in a sectional view according to plane III - III in Fig. 1,

Fig. 4 shows a variant of the embodiment of Fig. 3,

Fig. 5 shows the dispensing end of the assembly of Fig. 1 in an enlarged detail in a sectional view according to plane V - V in Fig. 1,

Fig. 6 shows a second exemplary embodiment of a laparoscopic assembly in a perspective view,

Fig. 7 shows the transfer portion and double syringe coupling area in an enlarged detail in a sectional view according to plane VII - VII in Fig. 6,

Fig. 8 shows the mixer end of the assembly of Fig. 6 in a sectional view according to plane VIII - VIII in Fig. 6, and

Fig. 9 shows a variant of the mixer end of the assembly of Fig. 6.

The first exemplary embodiment of dispensing assembly 1 for laparoscopy comprises, see particularly Figures 1 and 2, a double syringe 2 and a transfer device 3 including a transfer unit 4 with a transfer tube 4A having a mixer 5 attached thereto at one end and a coupling area 6 at the other end. Preferably, the mixer is connected to the transfer tube in a non-detachable manner. The transfer unit is attachable to the double syringe by means of a bayonet

ring 7. Around coupling area 6 and around transfer tube 4A, a support 8 is arranged which in this exemplary embodiment is formed of a support cap 9 to which a supporting tube 10 is fastened. As shown in Fig. 1, support cap 9 is pushed onto the double syringe and outlet 11 of mixer 5 extends beyond supporting tube 10. The double syringe is actuated by a double plunger 12.

Alternatively, a double cartridge or another dispensing device may be used instead of a double syringe. Hereinafter, the term double syringe will be used for the sake of simplicity.

Fig. 3 shows a cross-section according to plane III-III in Fig. 1 on an enlarged scale. This cross-section illustrates coupling area 6 of the transfer tube on the cartridge and fastening area 13 of the support cap on the double syringe. Inside transfer tube 4A, two separate channels 14 and 15 are arranged which on the syringe side open into two inlets 16 and 17 that are arranged in inlet portion 18 and communicate with outlets 19 and 20 of the double syringe. The two outlets and thus also the two inlets as well as the transfer channels may have equal diameters or different diameters, respectively. In the present example, outlet 19 of storage container 21 of the double syringe has a larger diameter than outlet 20 of storage container 22. Outlet flange 23 of double syringe 2 is provided with a bayonet socket 24 for receiving bayonet tabs 25 on bayonet ring 7.

In the present exemplary embodiment, first support 8 according to Fig. 3 is composed of support cap 9 and of an intermediate portion 26 on which supporting tube 10 is arranged. Here, the cap, the intermediate portion and the supporting tube are made in one piece of plastics material or metal.

In the embodiment variant according to Fig. 4, all parts are identical to those of Fig. 3 except for the attachment of supporting tube 27 which is fastened inside intermediate portion 26 by gluing, welding or the like.

In Fig. 5, the outlet end is illustrated in a cross-section according to plane V-V in Fig. 1, supporting tube 10 or 27 and the end of transfer tube 4A being visible. The transfer tube is followed by a mixer 5 that extends partially beyond supporting tube 10 or 27, its outlet 28 being arranged laterally, i.e. perpendicularly to sectional plane V-V in the embodiment according to Fig. 5.

Figures 6 to 9 show a second exemplary embodiment of a laparoscopic assembly, this assembly 31 including the same double syringe 2 and double plunger and the same bayonet coupling means as in the preceding exemplary embodiment. One difference with respect to the previous exemplary embodiment is that transfer tube 32 has a greater wall thickness than transfer tube 4A and thus a higher rigidity.

Channels 14 and 15 are the same as in the previous example. Due to the greater wall thickness, transfer tube inlet portion 33 is not identical to inlet portion 18 of the previous example whereas inlets 19 and 20 are the same.

In this case, the support merely consists of support cap 34 and intermediate portion 35. In the present exemplary embodiment, the support provided by cap 34 is sufficient as the transfer tube has a sufficient rigidity. Mixer 36 with mixing elements 29 has outlets 37 that are arranged in housing 38 radially, as appears in Fig. 8.

In Fig. 9, a mixer 39 having a commonly used axial outlet 40 is depicted.

Within the scope of the above disclosure, different variations are possible. Thus, instead of the bayonet coupling by means of a ring, the attachment of the coupling area may be obtained by a snap-in, a push-on or a screw connection.

Fitting together the assembly is very simple: First, by means of the bayonet ring, the transfer tube with the mixer is attached, and then the support along with the support cap and possibly with the supporting tube is pushed over the transfer tube onto the double syringe and fastened thereto. The attachment may be obtained by a simple friction fit or by snap-in elements or the like.

The support may be reused whereas the inner part, i.e. the transfer tube with the mixer, is discarded after each application. The material is generally a suitable plastics material, but certain parts may also be made of metal.

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Claims

1. Dispensing assembly for at least two liquid components, comprising a multicomponent syringe, cartridge or dispensing device and a mixer, a transfer device being interposed between the multicomponent syringe (1), cartridge or dispensing device and the mixer (5) which is connectable both to the multicomponent syringe, cartridge or dispensing device and to the mixer and comprises at least two channels, characterized in that the transfer device (3) includes a transfer unit (4) with a transfer tube (4A, 32) having a mixer (5) at one end and a coupling area (6) with an inlet portion (18, 33) at the other end, and that the coupling area is provided with coupling means (7, 25) which cooperate with coupling means (24) on the multicomponent syringe, cartridge or dispensing device, and in that at least around the coupling area (6) of the transfer unit (4), a support (8) is arranged that is attachable to the multicomponent syringe, cartridge or dispensing device.

2. Assembly according to claim 1, characterized in that the support (8) comprises a support cap (9, 34) that is attachable to the multicomponent syringe, cartridge or dispensing device.

3. Assembly according to claim 2, characterized in that the support (8) comprises a supporting tube (10, 27) that is fastened to the support cap (9), the supporting tube (10) being either made in one piece with the support cap, or the supporting tube (27) being non-detachably connected to the support cap.

4. Assembly according to one of claims 1 to 3, characterized in that the transfer unit (4) with the mixer (5) is a non-detachably connected unit.

5. Assembly according to one of claims 1 to 4, characterized in that the coupling means are bayonet coupling means (7, 25; 24) comprising a bayonet ring (7).

6. Assembly according to one of claims 1 to 4, characterized in that the coupling means comprise a snap-in, push-on or screw connection.

7. Assembly according to one of claims 1 to 6, characterized in that the mixer outlet (28) is arranged in the mixer housing (30) laterally.

8. Assembly according to one of claims 1 to 6, characterized in that the mixer (36) has outlets (37) that are arranged radially on the circumference of its housing (38).

9. Assembly according to one of claims 1 to 6, characterized in that the mixer (39) has an axial outlet (40).

10. Assembly according to one of claims 1 to 9, characterized in that the multicomponent syringe (1), cartridge or dispensing device has outlets (19, 20), the mixer (5, 36, 39) has corresponding inlets (16, 17), and the transfer unit (4) has channels (14, 15) that have equal or different diameters, respectively.

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FIG. 1

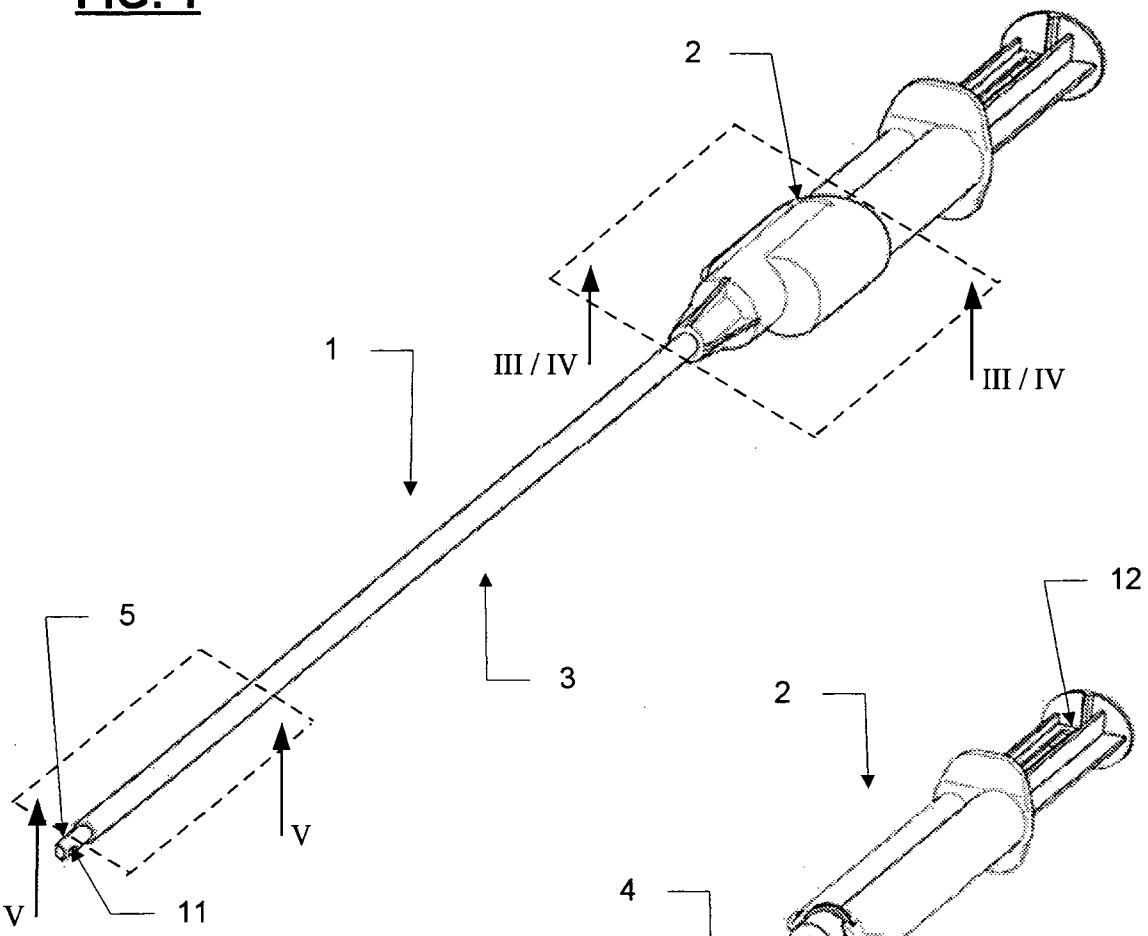


FIG. 2

FIG. 3

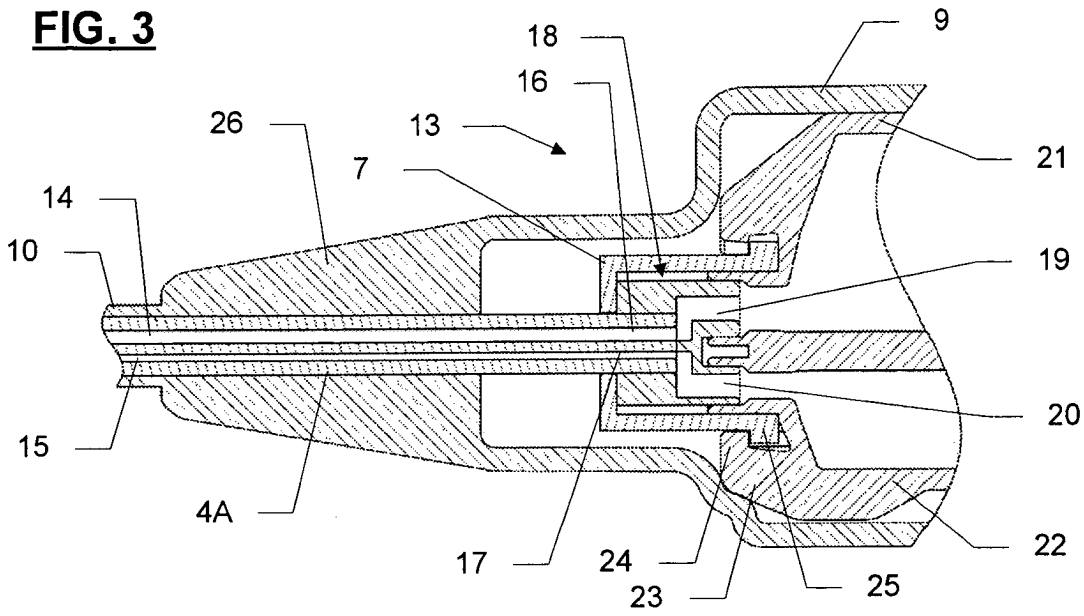


FIG. 4

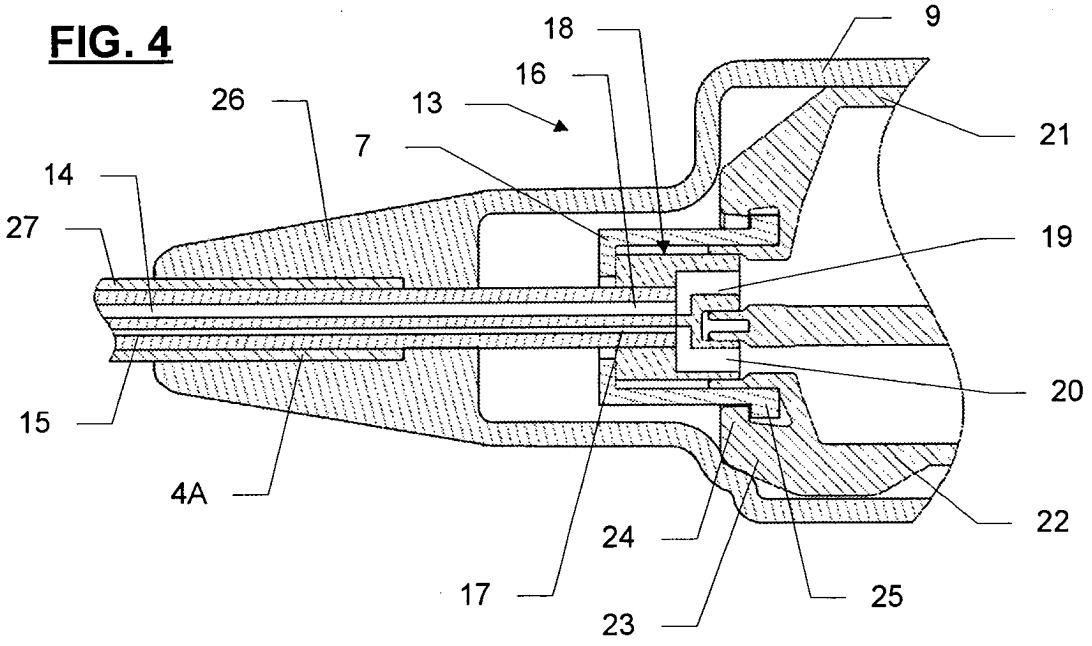


FIG. 5

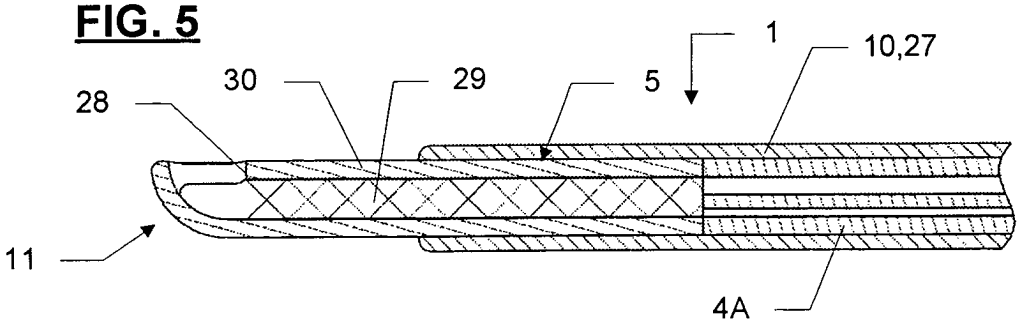


FIG. 6

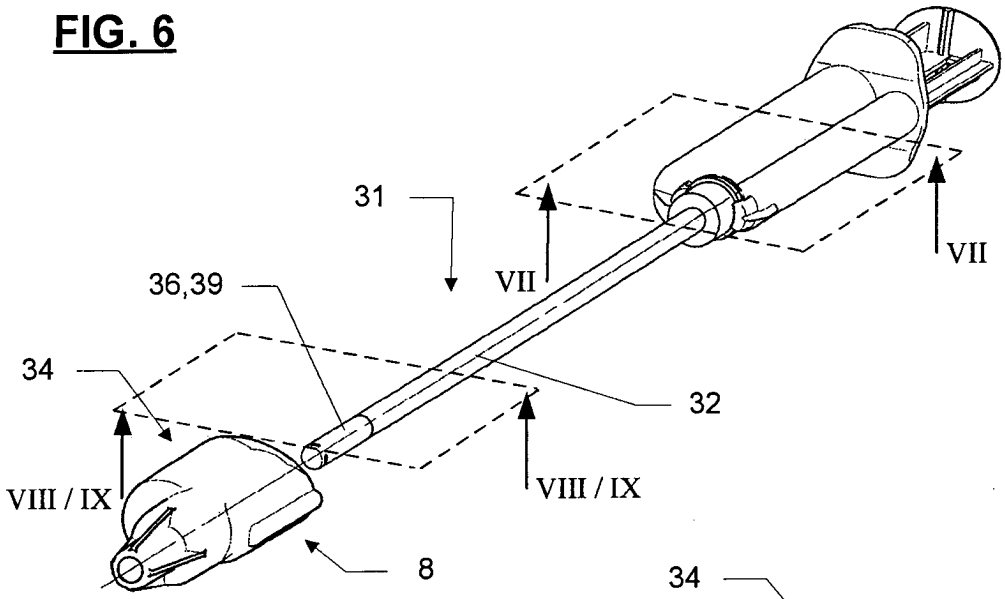


FIG. 7

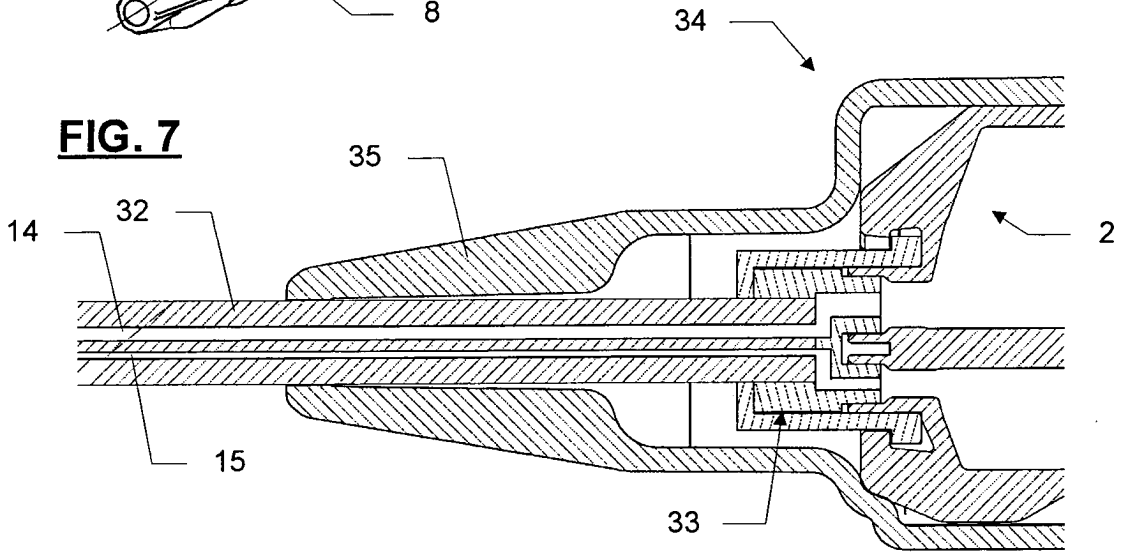


FIG. 8

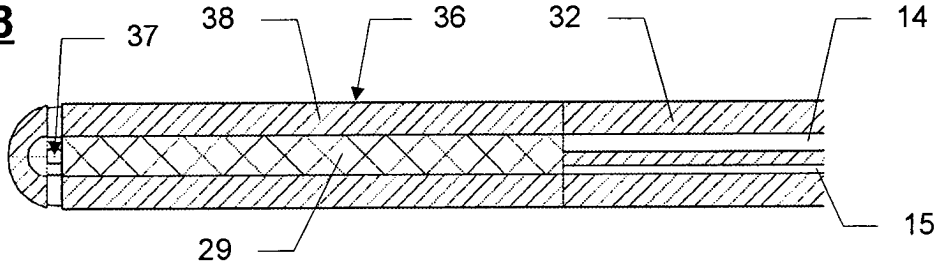
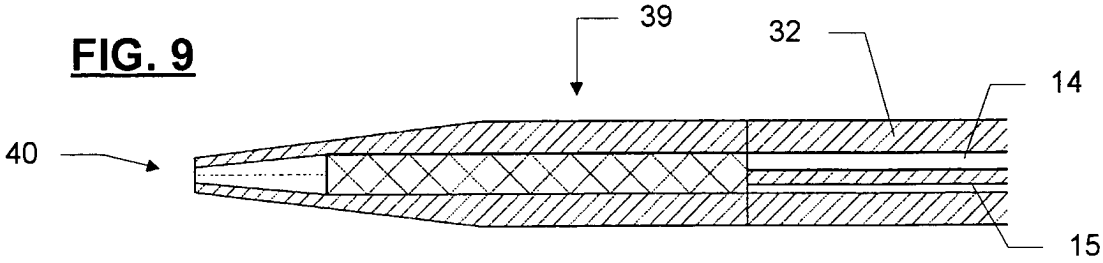


FIG. 9



INTERNATIONAL SEARCH REPORT

International application No
PCT/CH2008/000261

A. CLASSIFICATION OF SUBJECT MATTER
INV. B05C17/005
ADD. A61B17/00 A61C9/00

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)
A61B B05C

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 practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	US 6 161 730 A (HEUSSER ROLF [CH] ET AL) 19 December 2000 (2000-12-19) figures 4,6	1,2,4,6, 9,10 7,8
X Y	WO 2004/100798 A (MIXPAC SYSTEMS AG [CH]; KELLER WILHELM A [CH]) 25 November 2004 (2004-11-25) cited in the application	1,2,5,6, 9,10 7,8
Y	US 5 437 292 A (KIPSHIDZE NICHOLAS [US] ET AL) 1 August 1995 (1995-08-01) figure 9	7,8
A	US 2005/096588 A1 (HAGMANN ADAM [US] ET AL) 5 May 2005 (2005-05-05) figures 1-6	1

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
17 September 2008	06/10/2008

Name and mailing address of the ISA/	Authorized officer
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INTERNATIONAL SEARCH REPORT

international application No
PCT/CH2008/000261

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 39 00 635 A1 (SCHULTZ PFAHLER FELICITAS [DE]) 12 July 1990 (1990-07-12) figures 1,2	1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/CH2008/000261

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6161730 A	19-12-2000	JP 2000126569 A	09-05-2000
WO 2004100798 A	25-11-2004	CN 1784178 A	07-06-2006
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		JP 2007503272 T	22-02-2007
		US 2007016128 A1	18-01-2007
US 5437292 A	01-08-1995	AU 1184395 A	06-06-1995
		WO 9513748 A1	26-05-1995
US 2005096588 A1	05-05-2005	NONE	
DE 3900635 A1	12-07-1990	NONE	

专利名称(译)	使用双注射器和混合器分配两个组件的组件		
公开(公告)号	EP2152435A1	公开(公告)日	2010-02-17
申请号	EP2008757254	申请日	2008-06-09
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申请(专利权)人(译)	MEDMIX SYSTEMS AG		
当前申请(专利权)人(译)	MEDMIX SYSTEMS AG		
[标]发明人	KELLER WILHELM A		
发明人	KELLER, WILHELM, A.		
IPC分类号	B05C17/005 A61B17/00 A61C9/00		
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外部链接	Espacenet		

摘要(译)

用于两个部件的分配组件包括双注射器和混合器，转移装置（3）插入在双注射器（1）和混合器（5）之间，该混合器连接到双注射器并包括至少两个纵向通道（ 14,15）。转移装置（3）包括转移单元（4），转移单元（4）具有在一端具有混合器（5）的转移管（4A）和在另一端具有入口部分（18）的连接区域（6），以及联接区域设有联接装置（7,25），其与双注射器上的联接装置（24）配合。至少在转移单元（4）的耦合区域（6）周围布置有支撑件（8），该支撑件可附接到双注射器（1）。这种组件允许简单且经济地制造转移装置和可靠的操作，这在腹腔镜检查中尤其重要，因为在这种情况下分配盒与腹腔中的操作区域之间的距离很大。