



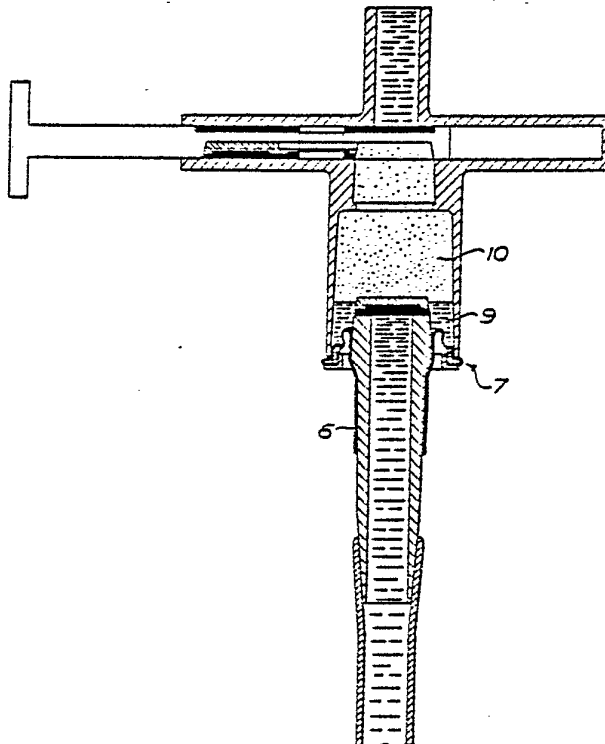
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification³: F16L 21/02, 25/00, 37/28; A61M 1/03, 5/31</p>	<p>A1</p>	<p>(11) International Publication Number: WO 82/00698 (43) International Publication Date: 4 March 1982 (04.03.82)</p>
<p>(21) International Application Number: PCT/SE80/00202 (22) International Filing Date: 12 August 1980 (12.08.80)</p> <p>(71) Applicant: and (72) Inventor: SVENSSON, Jan, Axel [SE/SE]; Solhemsgatan 12, S-561 35 Huskvarna (SE).</p> <p>(74) Agents: STRÖM, Tore et al.; Ström & Gulliksson AB, Rundelsgatan 14, S-211 36 Malmö (SE).</p>	<p>(81) Designated States: AT (European patent), CH (European patent), DE (European patent), DK, FR (European patent), GB (European patent), JP, LU (European patent), NL (European patent), NO, SE (European patent), SU, US.</p> <p>Published <i>With international search report</i> <i>With amended claims</i> <i>In English translation (filed in Swedish)</i></p>	

(54) Title: ARRANGEMENT IN A STERILIZING COUPLING

(57) Abstract

Arrangement permitting sterilization during engagement of two coupling components. One coupling component comprises a coupling element (1) and the other a coupling housing (2) capable of connection thereto. The arrangement in accordance with the invention comprises a flexible casing arrangement (6) which surrounds at least one part of the coupling element (1). A disinfectant (9) is contained inside the casing arrangement. The casing arrangement is provided with a seal (6a, 7) to interact with an abutment (8) on the coupling housing (2) during an introductory coupling movement between the components, the casing arrangement (6) being capable of being rolled or pulled along the outside of the coupling element (1) during the progressive engagement between the coupling components until they reach a fully engaged position.



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ARRANGEMENT IN A STERILIZING COUPLING

The present invention relates to an arrangement in a sterilizing coupling, more precisely to a coupling of the type described and illustrated in the International Application PCT/SE80/00019.

Thus, in conjunction with FIG. 11 of the drawings in said International Application, a coupling is shown in which a sterilizing action is obtained by utilizing a sealing ring prepared with a disinfectant, which gives off disinfectant to the coupling component which comes into contact with the ring during engagement. When using couplings of this type e.g. in conjunction with dialysis procedures the demands for sterility are extremely great.

The object of the present invention is thus to provide a coupling of the type referred to in the International Application PCT/SE80/00019, which is self-sterilizing during use. This object is achieved in accordance with the present invention in that the coupling has obtained the characteristics specified in claim 1.

To illustrate the invention this will be described in more detail in the following with reference to the accompanying drawings, in which

FIG. 1 shows a vertical section of the coupling in accordance with the invention before the coupling element is connected to the coupling housing;

FIG. 2 shows the coupling components according to FIG. 1 during initial engagement;

FIG. 3 shows the coupling in the engaged position which permits through-flow; and

FIG. 4 illustrates the coupling in a position wherein the coupling element is being disengaged from the coupling housing.

FIG. 1 shows the coupling element 1 and coupling housing 2 in a disengaged position. The coupling housing

has a movable slide 3 in which at least one recess 4 is arranged for accommodating a cover, and the coupling element 1 has a cover 5 which is received for displacement in a groove. The more detailed design of the coupling is disclosed in the International Application PCT/SE80/00019.

The new feature of the coupling in accordance with the present invention is the arrangement of a casing 6 which is located around the coupling element 1. The casing 6 is preferably made from an elastic material, e.g. latex rubber, and extends up and over the cover 5. Two ring-shaped elements 7a and 7b with L-shaped cross section are arranged on both sides of the casing adjacent to the free end 6a of the casing 6. Instead of the two ring-shaped elements 7a and 7b a reinforcement can be moulded into the casing 6, which - similar to the elements 7a and 7b - is pushed in and sealingly rests against the internal peripheral surface of an abutment 8.

Inside the upper section of the casing 6 there is a disinfectant, e.g. spirit, which forms a barrier in respect of bacteria and also has a sterilizing effect on the coupling components during their engagement.

FIG. 2 illustrates the coupling components during initial engagement, whereby the disinfectant is present in the cavity 10. By making the casing 6 elastic, this will expand somewhat during the continued insertion of the coupling element 1 into the coupling housing 2.

FIG. 3 illustrates the two coupling components 1 and 2 in an engaged and locked position, said locking being achieved by displacement of the slide 3, i.e. the coupling permits free passage through both coupling components. However, external locking can also be provided between the coupling element 1 and the coupling housing 2, i.e. the coupling components should be

capable of being locked in an engaged position without a free passage necessarily existing between the coupling components. This facilitates operation of the coupling by preventing the casing 6 pushing the coupling components apart. Such a locking device between the coupling components can for example comprise a spring lock, etc.

When separating the coupling components (FIG. 4), the disinfectant 9 collects in the folded portion 11 of the casing, which means that a thin film of disinfectant will be present between the outside wall of the coupling element 1 and the casing 6 when the coupling element is removed completely from the coupling housing 2.

The coupling element 1 with the casing 6 arranged thereon can be supplied complete with liquid disinfectant, which means that a cover 12 (FIG. 1) of a suitable type has to be provided at the free end 6a of the casing 6.

Disinfectant is replenished as required in the casing 6.

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CLAIMS

1. Arrangement in a coupling comprising a coupling element (1) and a coupling housing (2) to be connected with this element, which permits sterilization of the coupling components, characterized by a flexible cover arrangement (6) surrounding at least a part of the coupling element (1) and containing a disinfectant (9), said arrangement (6) being provided with a seal (6a, 7) to interact with an abutment (8) at the coupling housing (2) during an initial coupling movement, the cover arrangement (6) being of such a nature and design that it is rolled or pulled along the sides of the coupling element (1) as the engagement of the coupling components continues until these components reach a fully engaged position.

2. Arrangement according to claim 1, characterized in that a locking device holds the coupling components (1, 2) in the fully inserted position.

3. Arrangement according to claim 1, characterized in that a cover (12) is provided at the free end (6a) of the casing arrangement (6).

AMENDED CLAIMS

(received by the International Bureau on 1 May 1981 (01.05.81))

1 (amended). Arrangement in a coupling comprising
a coupling element (1) closed at one end by means of a
slide valve (5) and a coupling housing (2) to be
5 connected therewith and having a socket into which the
coupling element can be introduced, c h a r a c t e r -
i z e d in that a thin flexible casing (6) which
surrounds at least a part of the coupling element (1)
and projects axially from the closed end thereof to
10 define together with the coupling element a cavity
for accommodating a disinfection agent, at the pro-
jecting end thereof is capable of being connected
essentially fluid-tight to the socket to be pulled
backwards over the coupling element at the introduction
15 thereof into the socket in order that during introduc-
tion into the socket the coupling element shall be
passed through the disinfection fluid.

2 (amended). Arrangement according to claim 1,
c h a r a c t e r i z e d by a locking device for
20 disengagable holding of the coupling element (1) and
the coupling housing (2) with the coupling element
fully introduced into the socket.

3 (amended). Arrangement according to claim 1,
c h a r a c t e r i z e d in that the cover (12) is
25 provided at the free end (6a) of the casing (6).

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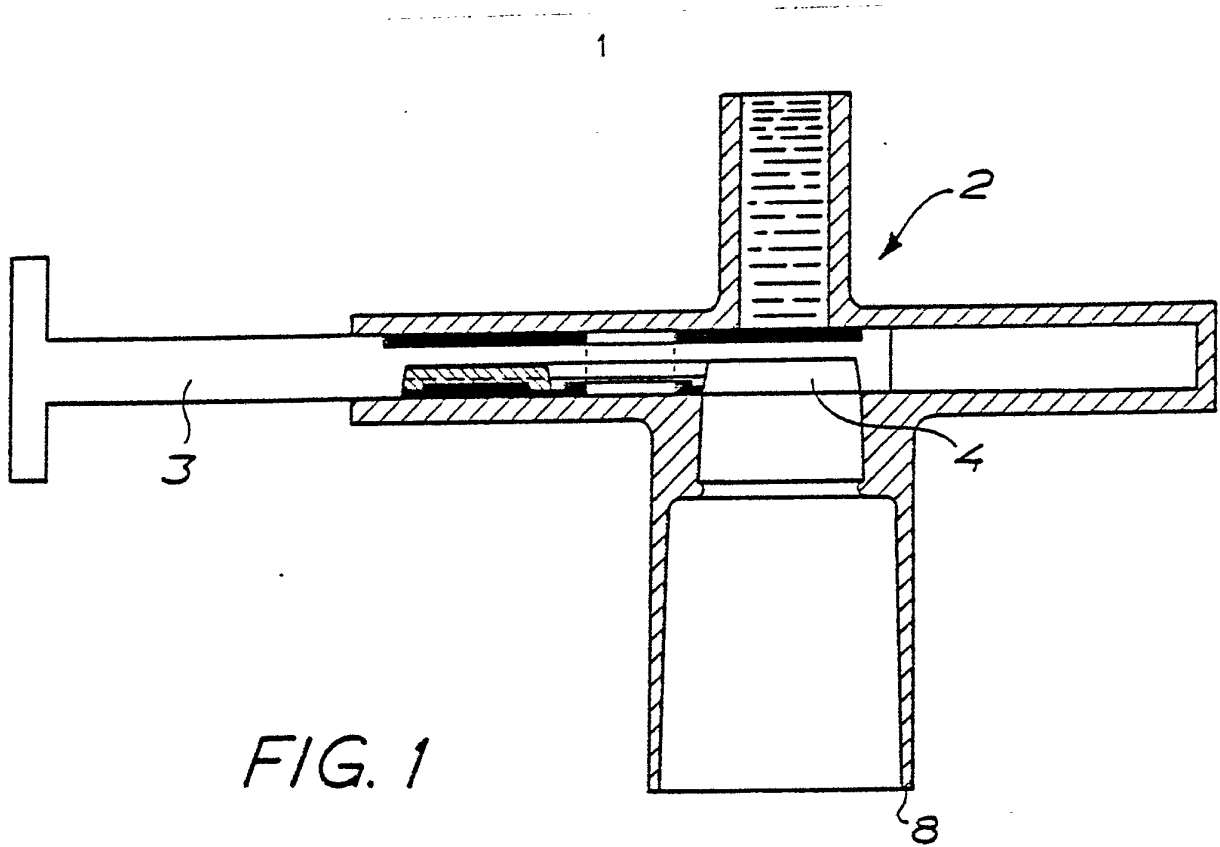
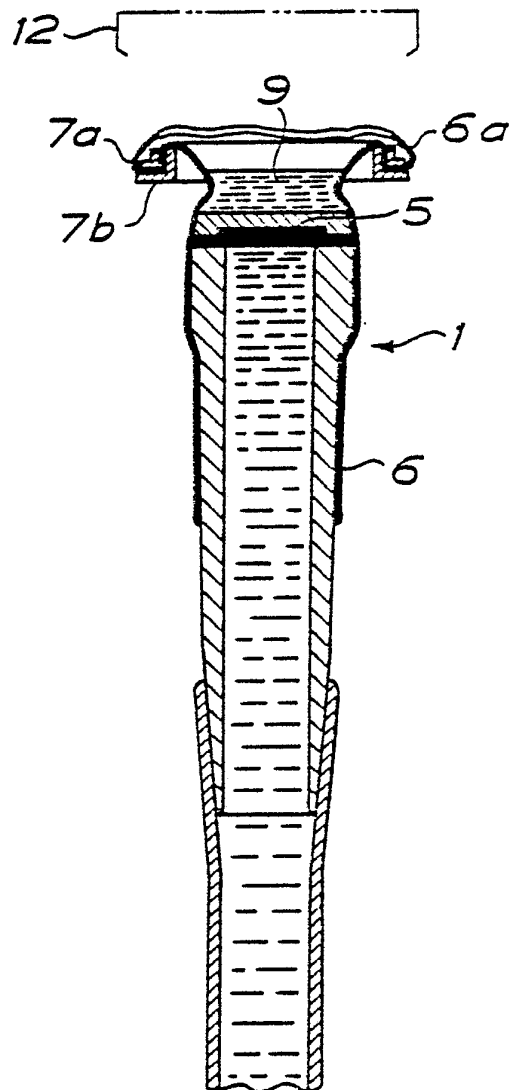


FIG. 1



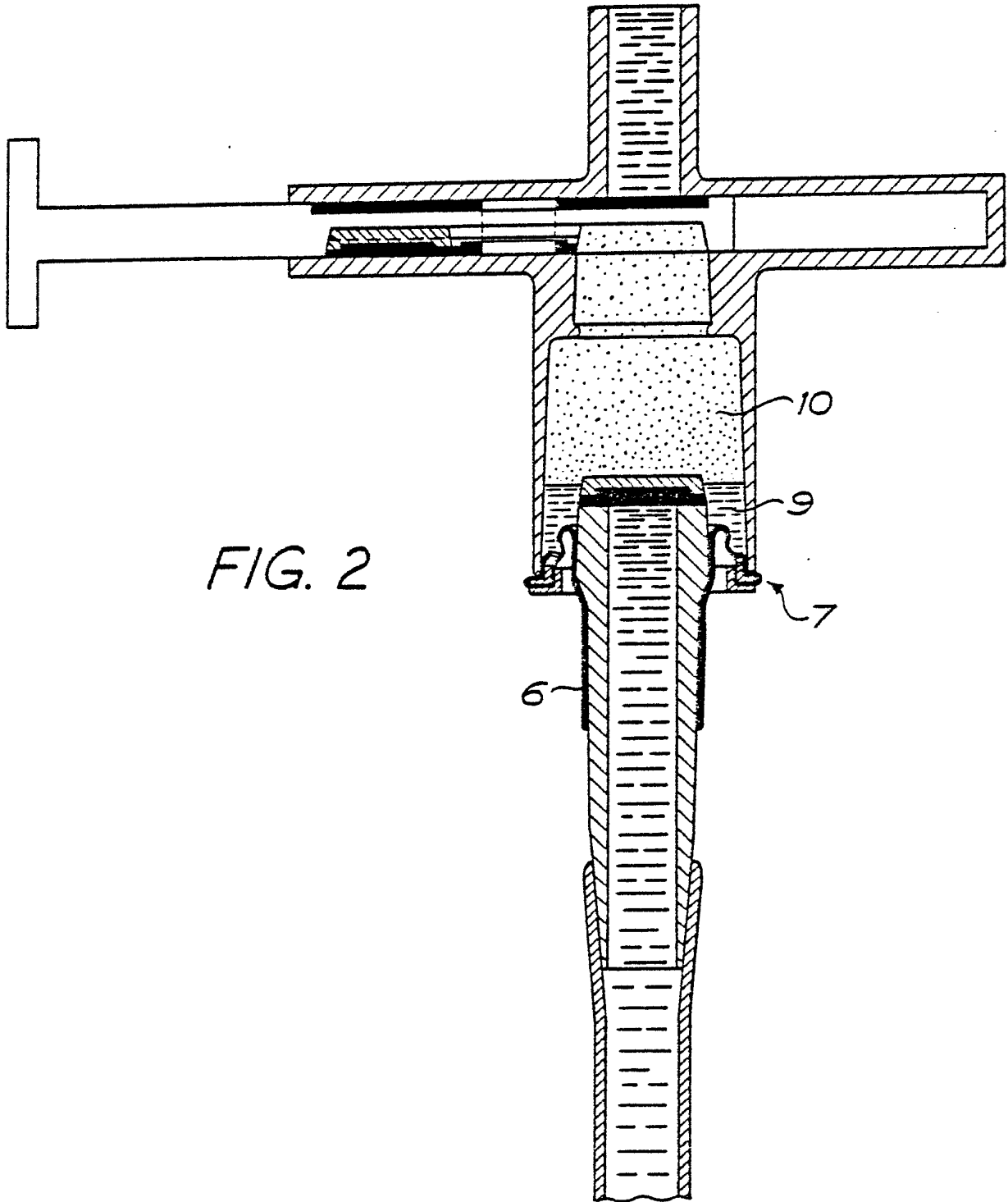


FIG. 2

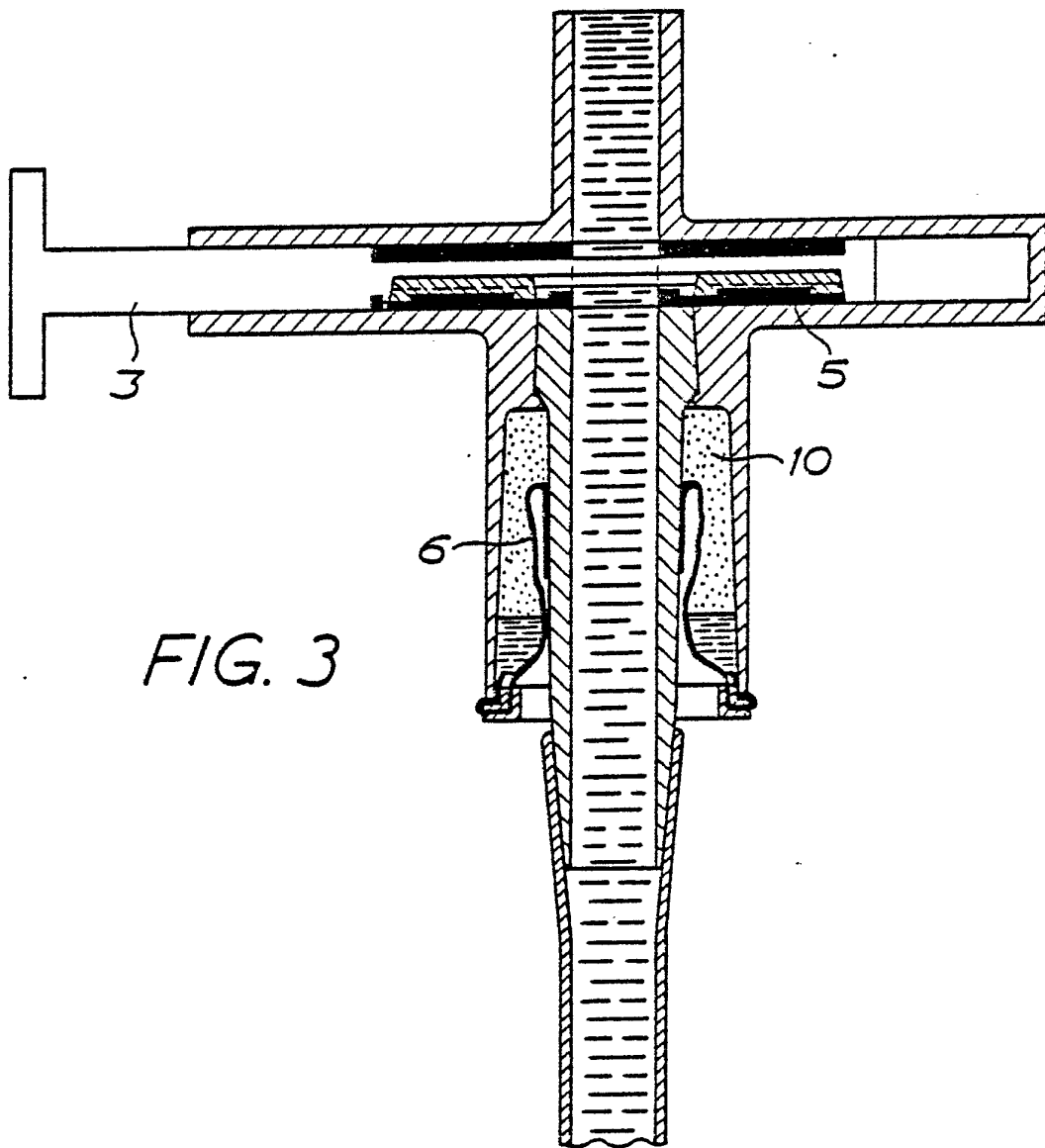


FIG. 3

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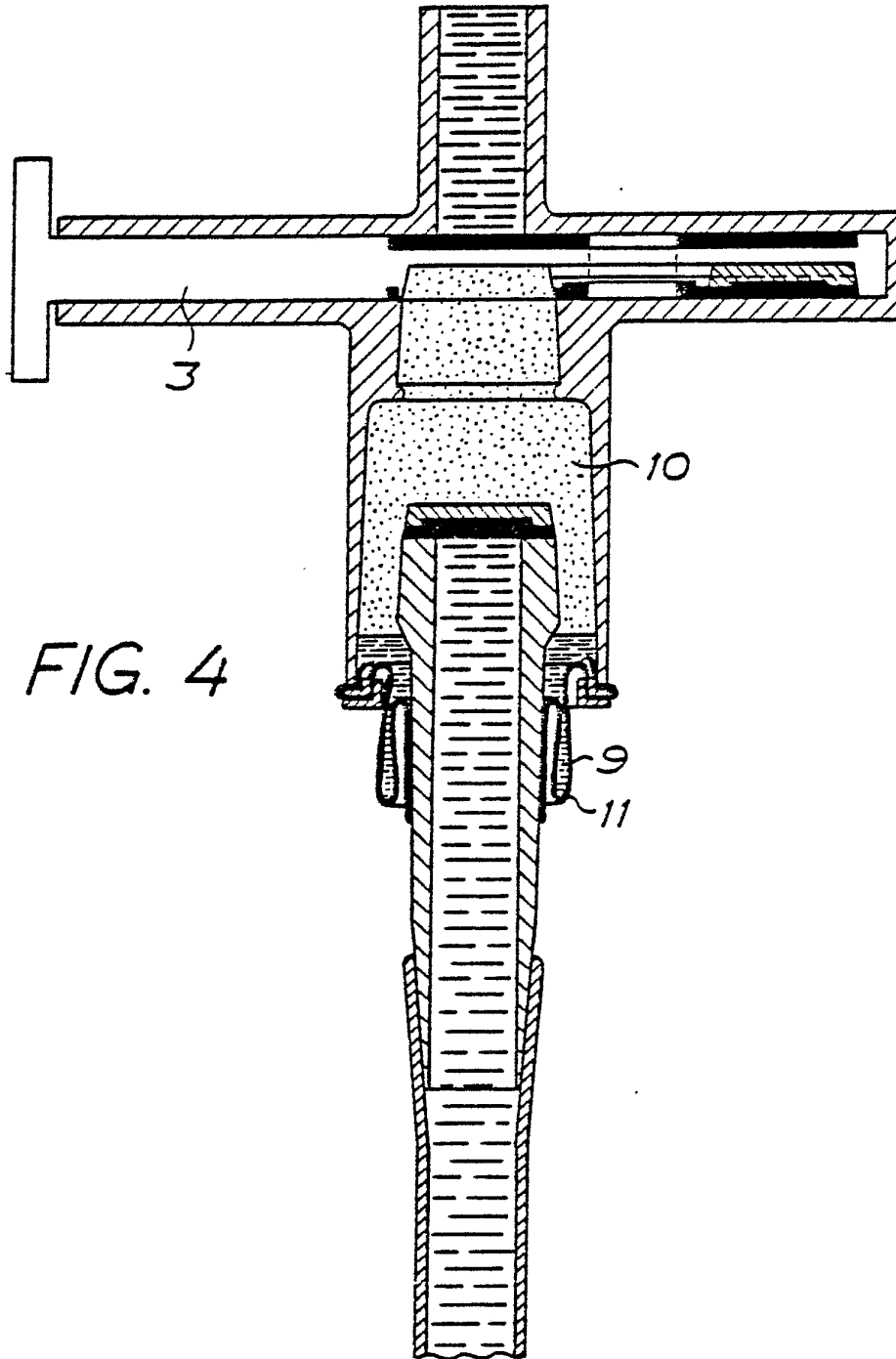
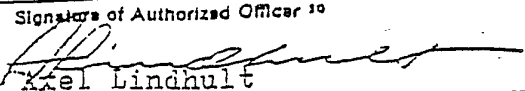


FIG. 4

INTERNATIONAL SEARCH REPORT

International Application No PCT/SE80/00202

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) ¹ According to International Patent Classification (IPC) or to both National Classification and IPC ²		
F 16 L 21/02, 25/00, 37/28, A 61 M 1/03, 5/31		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁴		
Classification System	Classification Symbols	
IPC3	A 61 M 1/03, 5/00, 5/31, F 16 L 17/06, 21/00-21/08, 25/00, 29/00, 37/00-37/04, 37/28	
National Cl	47f:S/01-8/20, 12	
Documentation Searched other than Minimum Documentation to the extent that such Documents are included in the Fields Searched ⁴		
SE, NO, DK, FI classes as above		
III. DOCUMENTS CONSIDERED TO BE RELEVANT ¹⁴		
Category ⁶	Citation of Document, ¹⁶ with indication, where appropriate, of the relevant passages ¹⁷	Relevant to Claim No. ¹⁸
X	SE, B, 314 259 published 1969, September 1, Rheinstahl Hüttenwerke AG	1
X	GB, A, 1 453 634 published 1976, October 27, Laboratoires Medicoplast	1, 3
A	GB, A, 2 008 705 published 1979, June 6, Pennwalt Corporation	1, 2
A	US, A, 3 201 148 published 1965, August 17, Louis Charles Shurtleff	1, 2
A	PCT,A1, WO 80/01510 published 1980, June 26, Hedima Sassco APS	3
A	PCT,A1, WO 80/01507 published 1980, July 24, Svensson Jan Axel	1
* Special categories of cited documents: ¹⁵		
"A" document defining the general state of the art	"P" document published prior to the international filing date but on or after the priority date claimed	
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Date of the Actual Completion of the International Search ¹	Date of Mailing of this International Search Report ²	
1981-02-26	1981-03-02	
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Swedish Patent Office	 Axel Lindhult	

FURTHER INFORMATION CONTINUED FROM THE SECOND SHEET

II Fields Searched (continuation)

US C1 137:67-70, 797
285:3, 4, 9, 33, 80, 226, 369-375

V. OBSERVATIONS WHERE CERTAIN CLAIMS WERE FOUND UNSEARCHABLE ¹⁰

This international search report has not been established in respect of certain claims under Article 17(2) (a) for the following reasons:

1. Claim numbers because they relate to subject matter ¹³ not required to be searched by this Authority, namely:

2. Claim numbers because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out ¹³, specifically:

VI. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING ¹¹

This International Searching Authority found multiple inventions in this international application as follows:

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims of the international application.

2. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims of the international application for which fees were paid, specifically claims:

3. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claim numbers:

Remark on Protest

The additional search fees were accompanied by applicant's protest.

No protest accompanied the payment of additional search fees.