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DESCRIPTION

Device to facilitate putting an elastic envelope on a part projecting from the human body and a method of expanding the cross section of the envelope

Technical Field

The present invention relates to a device for facilitating putting an elastic envelope onto a part projecting from the human body, and a method of expanding the cross section of the envelope. The invention is particularly utilisable in conjunction with a condom-like urinal drop collector connected to a urinal collection bag and fixable onto a penis.

Background Art

To fix a urinal drop collector onto a penis a fixing strip has so far been provided which has adhesive on both sides, or a latex emulsion brought round the penis has been used, after which the urinal drop collector has been rolled up onto the penis by hand to become affixed thereto.

The disadvantages with this method are that a) two work operations are required for the application of the collector, namely one for arranging the adhesive and another for applying the collector, b) the adhesive does not adhere to the collector around the whole of its inner periphery, especially if the collector has a larger cross section than the penis, whereby urine can pass out between the penis and the collector and c) difficulties occur in applying the collector in the proper position, especially if the penis is retracted or if only one hand can be used to put the collector on, e.g. if a person suffers from rheumatism, with consequently reduced mobility in the fingers.

A device has also been developed, comprising a stiff tube surrounding the urinal drop collector, one open end of which removably retains the stretched-out opening portion of the elastic collector. A piston is arranged at the other end of the tube, and on movement away from said opening removes the air in the space between the inside of the tube and the outside of the collector so that the cross section of the



latter is expanded and becomes greater than that of the penis. The tube with the expanded collector can subsequently be moved over the penis, and the piston moved towards said opening so that air is introduced in said space once again, the cross
5 section of the collector then diminishing and enclosing the penis. The tube is then released and removed from the collector which is then retained on the penis by means of sticky tape attached to the penis before the collector is put on.

The primary drawbacks with this device are that the
10 tubular portion at the front end of the urinal drop collector must be sealed off for the device to function at all, and this enclosure must be opened by clipping off a piece of the tubular portion before the collector is connected to a urine collection bag, that the device is voluminous, complicated and expensive,
15 that several work operations must be carried out before the collector is correctly placed and that the seal between the penis and drop collector may be incomplete, since the sticky tape is put on the penis before the collector.

Disclosure of Invention

20 The object of the present invention is to provide a device to facilitate putting on the elastic envelope and correctly placing it on the penis and to improve the seal between the latter and the envelope, as well as a method of enlarging the cross section of this envelope. This object is
25 achieved by the invention having been given the characterizing features disclosed in the claims.

Description of Figures

Figure 1 is a perspective view of a first embodiment of a device in accordance with the invention in the position
30 of use,

Figure 2 is an end view seen in the direction of the arrow A in Figure 1 of the device according to Figure 1 in a position before use.

Figure 3 is a perspective view of a second embodiment
35 of a device in accordance with the invention,

Figure 4 is a sectional side view of a modified portion of the device in Figure 3, and Figure 5 is a perspective view

of a urinal drop collector particularly adapted for use together with the devices illustrated in Figures 1 and 3.

Best Mode for Carrying Out the Invention

A urinal drop collector 1 is shown in Figure 5 and consists of an elastic tubular envelope 1a and an elastic tube 1b communicating with the envelope and integral therewith, the tube 1b being intended for connection to a conventional urine collection bag (not shown). The end of the envelope 1a facing away from the tube 1b is provided with an opening 2, and its edge is rolled over or folded over on the outside of the envelope. An elastic adhesive agent 9 is applied on the inside of the envelope somewhat inside the opening 2, the adhesive forming a closed ring round the inner periphery of the envelope and is covered by a strip-off membrane 3 which is first removed in conjunction with putting the collector onto a penis.

To facilitate putting the collector onto a penis, there is provided in accordance with the invention a device consisting, in a first embodiment illustrated in Figures 1 and 2, of a casing-like member, hereinafter called "casing" and denoted by the numeral 4. The casing 4 is tubular and comprises two substantially triangular walls 5 and 6 made from flexible plastics, which are mutually connected along side edges 5a, 6a and 5b, 6b, respectively. Each mutually attached pair of side edges can form a weakened zone to facilitate flattening the casing, or they can have the same thickness as the walls 5, 6 and thus constitute an unnoticeable portion thereof. Openings 7 and 8 are formed between the mutually unconnected side edges, the outmost portion of the tube 1b and the portion of the envelope 1a surrounding the opening 2 being foldable over said openings such that these portions engage against the edges of the openings 7, 8 and against the outsides of the walls 5 and 6 in the manner illustrated in Figure 1.

When the device in accordance with the invention is in use, the casing 4 and the collector 1 partially enclosed therein as described above, are substantially flat, which is



apparent from Figure 2. When the device is to be used, the side edges 5a, 6a and 5b, 6b of the walls 5 and 6 are pressed with the fingers of one hand towards each other at a point near the opening, in a manner illustrated in Figure 1, such that the casing is expanded and is substantially given the shape of a hollow cone, the opening 8 also expanding and obtaining a substantially circular or oval shape, which is also illustrated in Figure 1. Since the space between the inside of the casing 4 and the outside of the collector 1 in the flat condition of casing and envelope is very small and furthermore airtight, which is because the portions 1a and 1b of the collector 1 are folded over the edges of the openings 7 and 8 and resiliently press and seal against said edges and against the outside of the walls 5 and 6, the portion of the elastic envelope 1a of the collector close to the tube 1b will be expanded and the envelope will therefore assume the shape shown in Figure 1. The reason for the envelope 1a expanding substantially along the whole of its length is that the amount of air enclosed between the envelope and casing on urging the casing into conical shape is moved to the area outside the tube 1b, a sub-pressure being formed between the envelope 1a and the casing, said sub-pressure causing the envelope to be forced against the inside of the casing by atmospheric pressure.

The strip of membrane 3 covering the adhesive agent 9 on the inside of the envelope 1a is now easily accessible and can be removed. Removal is facilitated by the membrane being partially released from the adhesive 9 on the expansion of the envelope 1a, since a relative movement occurs between it and the membrane during expansion. The expanded collector 1 partially enclosed in the casing 4 is thereafter moved over the penis until the ring of adhesive 9 has passed over the glans, pressure against the side edges 5a, 6a, 5b, 6b being then eased and the walls 5 and 6 moved towards each other until the inside of the envelope 1a, and thereby the adhesive, comes into engagement against the penis. The walls 5 and 6 can now be lightly pressed towards each other to increase the pressure

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against the penis so that the adhesive 9 fastens against it. The portion of the envelope 1a facing away from the tube 1b can then be rolled off the edge round the opening 8 and the outer portion of the tube 1b can be rolled off the edge round the opening 7, thus introducing air into the space between the casing 4 and the collector 1, the cross section of the envelope 1a then diminishing to cause the envelope to surround the penis. The casing 4 can then be removed from the collector. By subsequently squeezing the envelope 1a against the penis in the area of the adhesive 9, not only does the inside of the envelope adhere to the penis but the surfaces on the inside of the envelope which do not come into contact with the penis due to the fact that the cross section of the envelope can be greater than that of the penis, can also adhere to each other, whereby no air or urine-passing channels 12 can be formed between penis and envelope. The tube 1b is finally connected to a urine collection bag in a conventional manner.

In a modification of the device illustrated in Figure 1, the opening 7 as well as the tube 1b can be closed, and the closed end of the tube situated inside the space between the walls 5 and 6, whereby the space between the inside of the casing 4 and the outside of the urinal drop collector 1 will be airtight in this embodiment as well. The device thus functions in the same way as the one described above. An advantage with the embodiment modified in this way is that the operation of folding the outmost portion of the tube 1b round and away from the edge surrounding the opening 7 is dispensed with. A disadvantage is, however, that the closed end of the tube 1b must be clipped off before the urinal drop collector is connected to a urine collection bag. The device in a second embodiment according to the invention illustrated in Figures 3 and 4 comprises an elastic funnel-shaped plastics tube 10 open at both ends, with a less circular opening 11 and a greater circular opening 12, over the edges of which the outermost portion of the tube 1b and the portion surrounding the opening 2 of the envelope 1a, respectively, on the urinal drop collector



1 inserted in the tube 10 can be folded so that these portions
removably and sealingly engage against the edges of the
openings 11, 12, and against the outside of the tube 10 in the
mode illustrated in Figure 3. Instead of folding the outmost
5 portion of the tube 1b over the edge of the opening, this
portion can be permitted to stick out of the opening 11, where-
by a preferably hollow, somewhat conical plug 13 is inserted
in the elastic tube 1b so that the walls thereof are sealingly
urged against the opening 11. This embodiment is indicated in
10 Figure 4. In both these last-mentioned embodiments the seal
between the opening 11 and the tube 1b ensures that air can
pass through the collector between both its open ends, which
is of importance when putting the collector onto the penis.

Before the device in accordance with the invention is
15 used, there is a relatively large amount of air between the
inside of the tube 10 and the outside of the drop collector 1,
resulting in that the envelope 1a has a relatively small cross
section along the whole of its length, with the exception of
the part of the envelope connected to the opening 12. Before
20 the collector is put onto the penis, the cross section of the
envelope must be increased so that it will be greater than the
cross section of the penis in the vicinity of the tube 1b also.
A suction means is used to increase the cross section, this
means being connected in a suitable way to the space between
25 the tube and the collector in the area outside the tube 1b,
where the distance between said wall and the collector is
greatest. When the suction means is operated, air is sucked
out of said space, the envelope 1a expanding so that it con-
tacts the inside of the tube and its shape thus conforming
30 thereto in the way illustrated in Figure 3.

Some suitable known means can be used to remove air
from the space between the tube 10 and envelope 1a. In an
embodiment indicated in Figure 4, a third opening 14 can be made
in the wall of the tube 10, and a small tube 5, possibly
35 provided with a non-return valve 16, can be connected to said
third opening. This tube can be connected to a suction pump

such as an injection syringe without a needle, or air can be sucked from said space with the aid of the mouth. The non-return valve 16 prevents air being re-introduced into the space in the latter case.

5 The strip-off membrane covering the adhesive 9 on the inside of the envelope 1a is taken away after the envelope has been expanded. The expanded collector 1 enclosed in the tube 10 is thereafter put over the penis and the walls of the tube pressed against the penis so that the adhesive 9 fastens to it, 10 after which the portion of the tube 1a facing away from the tube 1b is rolled off the edge around the opening 12 and the outermost portion of the tube 1b is rolled off the edge round the opening 11, air thereby being introduced into the space between the tube 10 and the collector 1, the cross section of 15 the envelope 1a thus being diminished and caused to surround the penis. The tube 10 can subsequently be removed from the collector. By afterwards squeezing the envelope 1a against the penis in the area of the adhesive 9, not only does the inside of the envelope adhere to the penis, but the surfaces on the 20 inside of the envelope which do not come into engagement with the penis adhere to each other, whereby no air or urine - passing channels are formed between penis and envelope. The tube 1b is finally connected to a urine collection bag conventionally.

25 The invention is naturally not limited to the embodiments described above and shown on the drawings, but can be modified in different ways. Accordingly, the tube 11 can, for example, have a shape not conforming to the funnel shape shown in Figure 3, and could be cylindrical in a conceivable embodiment. Neither is the device in accordance with the invention 30 limited to use as an aid for putting a urinal drop collector on a penis but can also be used for such tasks as facilitating putting on a condom on a handicapped person, or putting a latex glove on a surgeon's hand. In both these cases, similar 35 to the case for the described embodiment where the tube 1b is closed, the device in accordance with the invention does not have an opening corresponding to the opening 7 or 11. The invention is thus only restricted by what is disclosed in the claims.

CLAIMS

1. A device to facilitate putting an elastic envelope onto a part projecting from the human body, characterized by a casing (4) at least partially surrounding the envelope (1), said casing being provided with a first opening (8) to which
5 a portion of the envelope is removably connected, this opening being expandable to increase the cross section of said portion of the envelope in conjunction with putting on the envelope.
2. A device as claimed in claim 1, characterized in that the envelope (1), at least round the first opening (2), is air-
10 tight and removably connected to the casing (4) formed as a flattenable tube in which the envelope is enclosed, in that for the flattened condition of the tube the amount of air enclosed between the inside of the tube and the outside of the envelope is small, and in that with the expansion of the first
15 opening of the tube and thereby the expansion of the envelope, by applying a compressive force along the large diameter of the tube, a subpressure occurs between tube and envelope which, under the urge of pressure equilization, extends the cross section of the envelope along a substantial portion of
20 its length.
3. A device as claimed in claim 1 or 2, characterized in that the casing (4) is substantially flat and expandable so that its opening (8) assumes a substantially oval or circular shape, and that the space between the casing and envelope is
25 air-tight.
4. A device as claimed in claims 1, 2 or 3, characterized in that the casing (4) comprises two flexible, substantially identical, preferably essentially triangular walls (5, 6) which are flexibly, mutually connected along at least two side edges
30 (5a, 6a; 5b, 6b) and which form, when the casing is expanded by pressing two opposing side edges towards each other, a hollow, substantially conical casing with the first opening (8) situated at the base of the cone.
5. A device as claimed in any of the preceding claims,
35 in which the envelope constitutes a urinal drop collector at



least partially surrounding a penis, and having a tubular portion (1b) connected to, and communicating with the envelope (1a), characterized in that the envelope (1a) is folded over the edge of the first opening (8) and that the tubular portion (1b) is folded over the edge of a second opening (7) opposite the first opening in the casing (4) for providing an air seal between these edges and the envelope and tubular portion, respectively.

6. A device as claimed in any of the claims 1 - 4, wherein the envelope formed as a urinal drop collector, a condom or a glove is provided with a single opening (2) intended for putting over a penis or hand, characterized in that the opening (1) is surrounded in its entirety by the casing (1), possibly excepting the portion of the envelope which is removably connected to the first opening (8) in the casing.

7. A method of expanding the cross section of an elongate elastic envelope along a substantial portion of its length, said envelope being intended for putting onto a part projecting from the human body, whereby a casing is utilized to facilitate the expansion, said casing removably and sealingly surrounding the envelope and being substantially flat, whereby the amount of air enclosed between the casing and envelope will be small, characterized in that the casing is subjected to an actuating force which causes expansion of the cross section thereof to a substantially oval or circular shape, and thereby displacement of said amount of air away from the space between the casing and the envelope (1a) so that the shape of the envelope conforms to that of the casing.

8. A device for expanding the cross section of an elastic urinal drop collector (1) along a substantial portion of its length for facilitating putting the collector on a penis, said device including a tube (10) at least partially surrounding the collector, said tube having a first opening (12), to which one end of the collector is sealingly and removably attached, a suction pump being used to remove air enclosed between

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collector and tube, characterized in that the tube (10) is provided with a second opening (11), to which there is sealingly and removably connected a portion (1b) of the collector (1) intended for connection to a urine collection bag.

5 9. A device as claimed in claim 8, said portion of the collector 1 comprising a tube (1b), open at both ends, characterized in that the elastic tube (1b) is partially taken through the second opening (11) and is folded over the edge thereof, or that the elastic tube (1b) is at least partially
10 passed through the second opening (11) and that a preferably hollow plug (13) is inserted in the elastic tube, the plug sealingly presses the walls of the latter tube (1b) against the edges of the second opening 11.

10. A device as claimed in claim 8 or 9, characterized in
15 that the pipe (10) has the shape of a funnel open at both ends, the minor opening constituting the second opening (11) of the tube, and that the tube is provided with a third opening (14), to which is connected a vacuum tube (15), preferably provided with a non-return valve (16), allowing evacuation of
20 air from, but preventing the access of air to the space between the pipe (10) and collector (1).

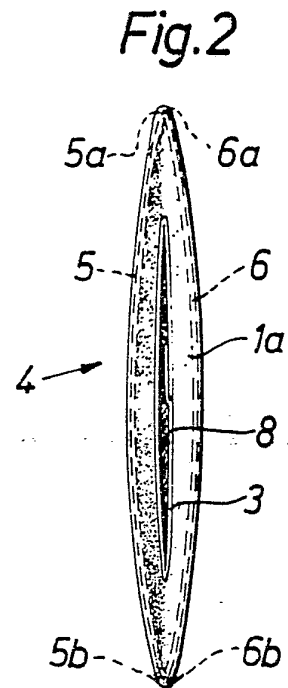
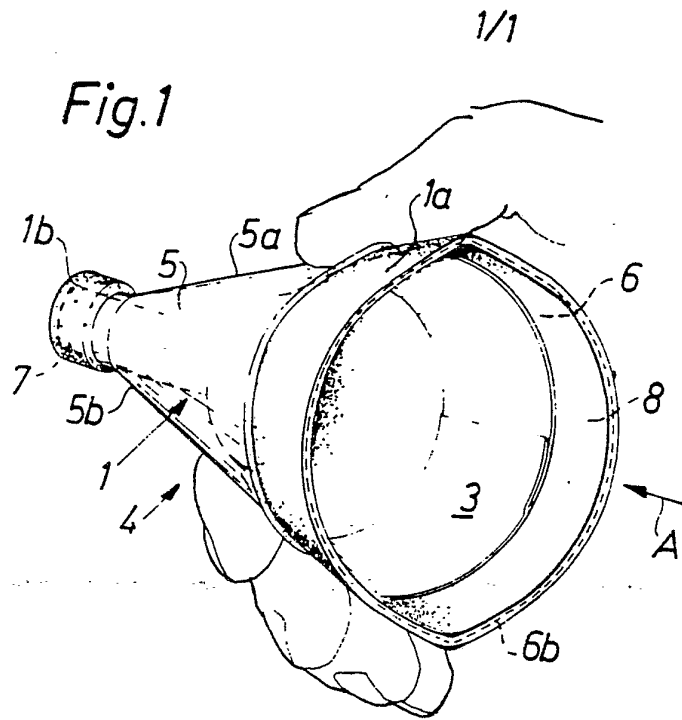


Fig.3

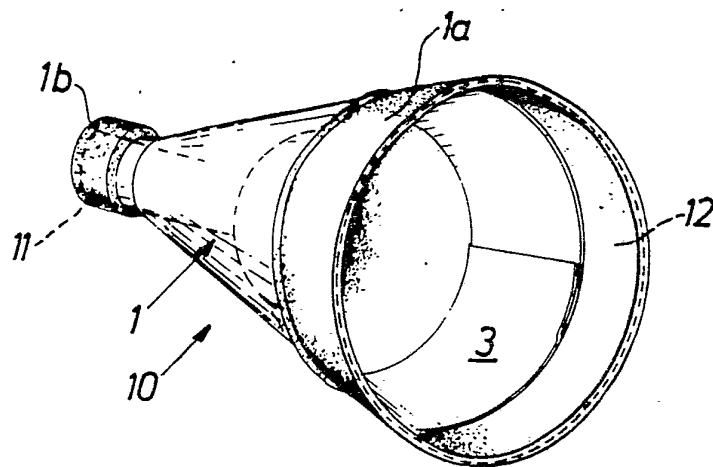


Fig.4

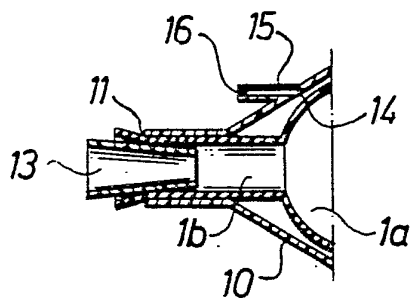
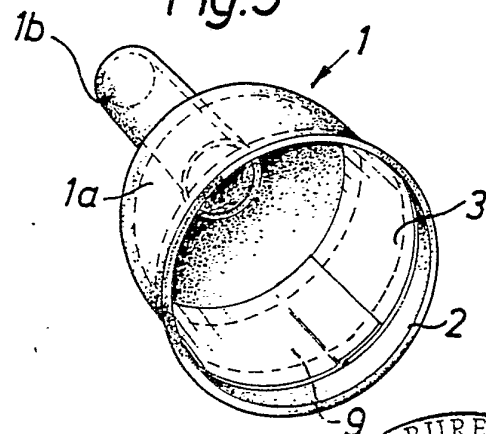
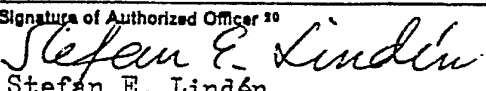


Fig.5



INTERNATIONAL SEARCH REPORT

International Application No PCT/SE81/00174

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) *		
According to International Patent Classification (IPC) or to both National Classification and IPC 3		
A 61 F 5/44, A 61 B 19/04, A 47 J 51/06		
II. FIELDS SEARCHED		
Minimum Documentation Searched *		
Classification System	Classification Symbols	
IPC 3	A 41 D 13/10, 19/00, A 47 G 25/00, 25/04, 25/05, A 47 J 51/06, 07, A 61 B 19/00, 19/04, A 61 F 5/42-5/44	
National Cl	3b:19/00; 30a:19/03; 30d:15, 16; 34b:51/00, 51/06 ...	
Documentation Searched other than Minimum Documentation to the extent that such Documents are included in the Fields Searched *		
SE, NO, DK, FI classes as above		
III. DOCUMENTS CONSIDERED TO BE RELEVANT 14		
Category *	Citation of Document, 15 with indication, where appropriate, of the relevant passages 17	Relevant to Claim No. 18
A	DE, C, 365 183 published 1922, December 9, Johann Bányay	
A	SE, B, 362 584 published 1973, December 17, AB Stille-Werner	
A	US, A, 4 002 276 published 1977, January 11, Mark P Poney, George W Poney, Richard P Poney	
<p>* Special categories of cited documents: 15</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>"A" document defining the general state of the art</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document cited for special reason other than those referred to in the other categories</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> </div> <div style="width: 45%;"> <p>"P" document published prior to the international filing date but on or after the priority date claimed</p> <p>"T" later document published on or 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</p> <p>"X" document of particular relevance</p> </div> </div>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search 1	Date of Mailing of this International Search Report 1	
1981-09-21	1981-09-23	
International Searching Authority 1	Signature of Authorized Officer 20	
Swedish Patent Office	 Stefan E. Lindén	

FURTHER INFORMATION CONTINUED FROM THE SECOND SHEET

II

Fields Searched (continuation)

US C1 2:16, 159, 168, 169, 270;
 128:294, 295;
 223:111

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 ¹² 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.