United States Patent

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[54] **COLOSTOMY APPLIANCE**
6 Claims, 3 Drawing Figs.

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[50] Field of Search 128/283

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ABSTRACT: A colostomy appliance comprising a connecting member and a detachable bag adapted to be connected to the connecting member. Said connecting member having at one end a carrying flange attached to an adhesive flange adapted to be attached to the body, and at the other end an outer lock flange. Between said carrying flange and said lock flange the connecting member consists of an annular supporting member being outwardly tapered towards the lock flange. The bag is provided with an opening in the one side, the edges of which opening being secured to an outer flange of a retaining ring, having an axially extending annular engaging flange extending into the bag and being provided with a tapered inner side having cross sectional dimensions corresponding to but slightly smaller than the corresponding dimensions of the outside of the connecting member, so that when the retaining ring is arranged on the connecting member it squeezes around the same. Further the axial length of the said inner side being slightly smaller than the axial length of said outer side, so that the retaining ring is easy to arrange on the connecting member, but when arranged tends to slide towards the lock flange, whereby airtightness is ensured. The connecting member as well as the retaining ring being made from a relatively hard, but nevertheless resilient mouldable material, the ring preferably being somewhat more resilient than the connecting member.

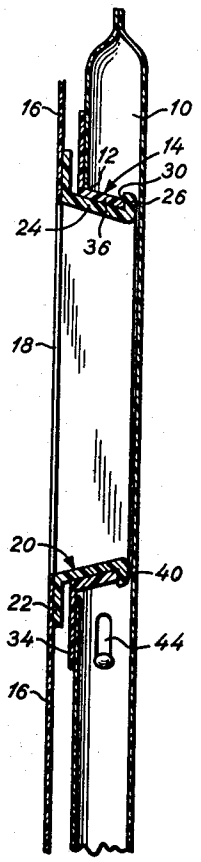


Fig. 1.

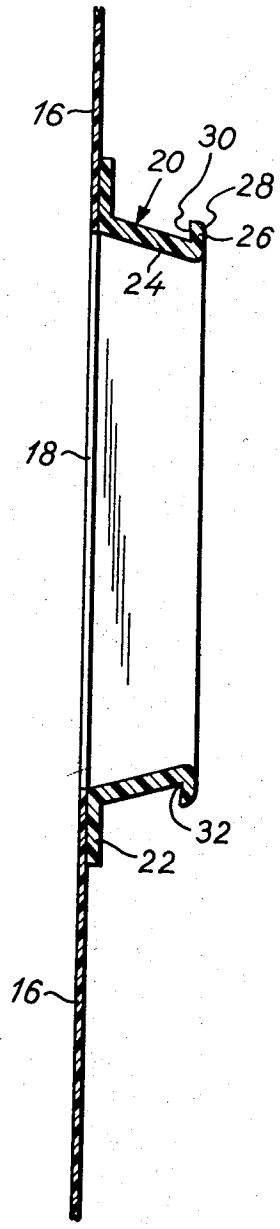


Fig. 2.

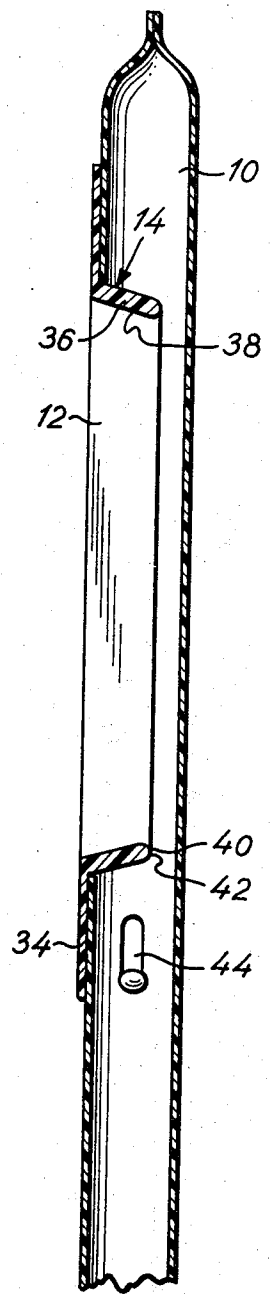
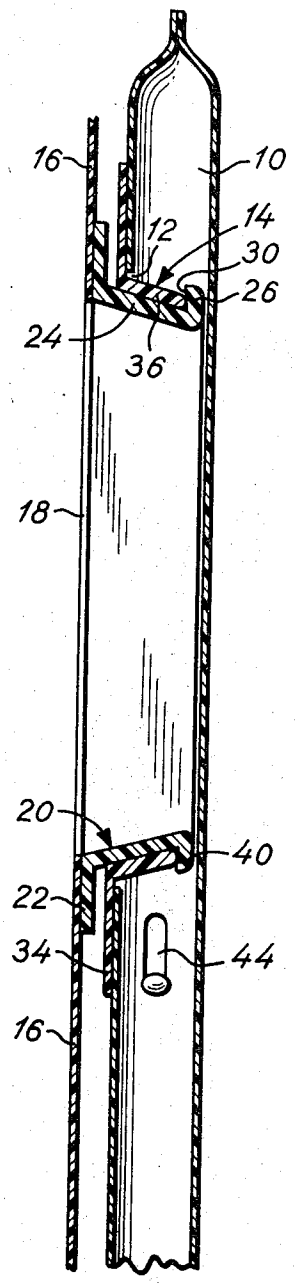


Fig. 3.



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COLOSTOMY APPLIANCE

This invention relates to appliances for post-operative use following colostomy, ileostomy and the like surgical treatment. Without being limited to the use in connection with colostomy in the following such an appliance is designated "colostomy appliance" and the invention is described and explained below for use following colostomy surgical treatment.

Especially the present invention relates to colostomy appliances comprising an annular connecting member attached to an adhesive flange adapted to be attached to the body surrounding the colostomy opening, and a detachable waste receiver or bag having an opening provided with a retaining ring attached to the bag and adapted to engage the said connecting member.

Colostomy appliances are known, comprising an annular connecting member of metal or rubber adapted to be held in position on the body by means of a belt and to which the bag may be attached. Such a colostomy appliance is easy to clean, since it may be entirely removed every time replacement of the bag is required. The attachment of the bag to the connecting member is inconvenient, however, and moreover, as a consequence of the movements of the body, it is difficult to secure airtightness between the connecting member and the body.

Colostomy appliances are also known, the connecting member of which is attached to the body surrounding the colostomy opening by means of an adhesive and is provided with an external circumferential groove, whereas the inlet opening of the bag is provided with a casing for a string or rubber band by means of which the edge of the inlet opening can be brought tightly to engage the groove of the connecting member. Provided the string is tightened sufficiently, such a colostomy appliance renders it possible to attain airtightness, on the other hand it may involve difficulty to release the bag and to keep the protuberant rim of the connecting member clean.

The object of the invention is to provide a colostomy appliance that permits replacement of the bag in a quick and convenient manner, and so that absolute airtightness be established automatically immediately the bag is in place, at the same time as convenient cleaning of the connecting member is secured.

This is attained according to the invention, in that the annular connecting member, being made of a relatively hard and nevertheless resilient mouldable material, comprises a radially extending carrying flange airtight secured to the adhesive flange, and an annular supporting member protruding axially from the carrying flange, and having an outside tapered away from the flange, and at the outer edge of the supporting member an external, radially extending lock flange, and in that the retaining ring likewise made of a relatively hard and nevertheless resilient mouldable material, comprises a radial connecting flange, by which the ring is airtight secured to the bag surrounding the opening thereof, and an axially extending annular engaging flange stretching into the bag and having an inside conform to the outside of the supporting member and so dimensioned that when engaging the supporting member it squeezes around the same, the axial length of the engaging flange, measured from the outside of the part of the connecting flange next to the opening thereof and to the inner edge of the engaging flange being slightly smaller than the minor axial distance between the outside of the carrying flange of the connecting member and the locking flange.

It appears that such a retaining ring can be quickly and securely pushed over and inside the lock flange of the connecting member, due to the resilience of the materials used. After the retaining ring has been thus pushed into position, its engaging flange will tightly surround the supporting member, and owing to the engaging flange having inside dimensions slightly smaller than the outside dimensions of the supporting member, the engaging flange will automatically tend to move outwards on the supporting member, until its edge engages the inner face of the lock flange on the supporting member. In this manner completely airtight connection is established between the connecting member and the retaining ring and the latter is simultaneously securely attached to the connecting member. On the other hand, when replacement of the bag is required, it is easy to strip off the retaining ring from the connecting member as for this operation it is only required to exert an outwards pull at a point of the circumference of the retaining ring, which pull can not be produced by the bag proper, not even through very vigorous movements by the user.

To facilitate positioning and removal of the retaining ring, this ring may be made of a mouldable material somewhat more resilient than the material used for the connecting member, whereby it is ensured that, during positioning and removal of the bag, mainly the members of the retaining ring will give way, so that it is avoided that the connecting member, generally used over a relatively long period of time is exposed to any permanent deformation.

The inner surface of the lock flange, facing the adhesive flange ought to form an angle not exceeding 90° with the axis of the connecting member and should preferably be undercut, whereby the locking effect of the lock flange on the engaging flange of the retaining ring is increased without any difficulty in connection with removal or positioning of the retaining ring arises.

Other aspects, objects and the several advantages of this invention will be apparent from a study of this disclosure, the accompanying drawings and the appended claims.

In the drawings:

FIG. 1 is a vertical sectional view of a connecting member constituting a part of a colostomy appliance according to an embodiment of the invention,

FIG. 2 is a vertical sectional view of a colostomy bag provided with a retaining ring according to an embodiment of the invention and

FIG. 3 is a fragmental sectional view of the retaining ring shown in FIG. 2 positioned on the connecting member shown in FIG. 1.

10 indicates the upper part of a colostomy bag provided with an opening **12** enclosing a retaining ring **14** of a relatively hard and nevertheless resilient mouldable material, for example a medium hard synthetic plastics material such as a polyvinyl chloride.

16 indicates a for example square or circular adhesive flange of a relatively thin and flexible material, for example a synthetic plastics material. This flange **16** has a central opening **18** and, on the back, an adhesive coating, by means of which it can be attached to the skin of a body in such a manner that the opening **18** encloses the colostomy opening.

On the front side of the adhesive flange **16** a connecting member **20** is arranged enclosing the opening **18**. The connecting member **20** is at its end facing the adhesive flange **16** provided with an outwardly extending carrying flange **22** secured to the adhesive flange **16** by welding or in another airtight manner.

The connecting member **20** comprises a tapered annular supporting member **24** protruding from the carrying flange **22**. The outside of this member shall be tapered in any case, whereas it is not strictly necessary that the inside thereof has the same taper as the outside. Thus the supporting member **24** may be thinner at the front edge than at the rear edge, and its inside may be cylindrical.

The supporting member **24** is provided at its front edge with a radial extending lock flange **26** preferably having a rounded forwardly facing outer edge **28**. The side face **30** of the locking flange **26** facing the carrying flange **22**, may either be arranged in a plane at right angles to the axis of the connecting member **20** or, more conveniently, as shown, on a conical surface forming an acute angle with the axis of the connecting member **20** and having its apex in front of the said member, in such a manner that the inside **30**, having a sharp angular transition **32** to the outside of the connecting member **24**, is undercut.

The retaining ring **14** of the bag **10** is provided with a radially extending connecting flange **34**, which by welding or in

another airtight manner is secured to the outside of the bag **10**. From the connecting flange **34** an axially extending engaging flange **36** is stretching into the bag **10**, which flange is, in any case on its inside **38**, tapered with the same conicity as the outside of the supporting member **24** of the connecting member **20** and having slightly smaller sectional dimensions than the said outside, so that the engaging flange **36**, when positioned on the connecting member **24** surrounding the same as shown in FIG. **3** fits tightly thereon.

The engaging flange **36** has a free end-portion **40** which is relatively short in the axial direction, and which is cylindrical on the inside. The end-face **42** of the end portion **40** is located on a conical surface, inclined outward and rearward, towards the connecting flange **34**, and has a slightly rounded transition to the inside of the end portion.

When the bag **10** is to be positioned on the annular connecting member **20**, which is preferably made of a mouldable material somewhat harder than the one used for the retaining ring **14**, for example a hard polyvinyl plastics, or a hard polypropylene plastics, for example the lower part of the retaining ring **14**, is first pushed over and inside of the lock flange **26** of the connecting member **20**, until the end portion **40** is brought into position behind the lock flange **26**. This pushing into position involves no difficulty, owing thereto that the axial length of the engaging flange **36**, measured from the outside of the connecting flange **34** to the extreme edge of the end portion **40**, is slightly, and only slightly, smaller than the axial distance between the carrying flange **22** of the connecting member **20** and the outer edge of the inside **30** of the lock flange **26**. When a steadily progressing pressure is exerted along the remaining circumference of the edge of the end portion **40**, the pressure being applied through the bag **10**, the final positioning of the retaining ring **14** in its entirety behind the lock flange **26**, will involve no difficulty owing to the resilience of the materials used. Immediately after having been pressed into position, the retaining ring **14** will be located with the outer side of its connecting flange **34** closely up to the carrying flange **22** of the connecting member **20** but, as a consequence of the squeezing effect of the engaging flange **36** on the annular supporting member **24**, the engaging flange **36** of the retaining ring **14** will by itself move slightly outwards along the outside of the annular member **24** until the end portion **40** is in close contact with the lock flange **26**. Due to the narrow contact zone of the said end portion **40**, owing to its conical shape, it will exert a relatively high surface pressure on the lock flange **26**, whereby the airtightness already secured by the tight fit of the engaging flange around the connecting member **24** will be further ensured, and at the same time a small annular interspace is provided between the rounded inner edge of the end portion **40** and the bottom of the sharp angular transition **32**, whereby a kind of labyrinth sealing develops. In this manner the tightness has become so effective that, even in the case of a relatively high overpressure developing in the bag **10**, and even in the case of the vent-valve **44** of the bag, closed with an odour filter, being so clogged that it permits no relief of the overpressure this way, no air, and consequently no foul air, can escape between the two members **14** and **20**.

The invention is not limited to the embodiment shown, and various changes and modifications may be made within the

scope of the invention as defined in the appended claims. Thus the lock flange **26** of the annular connecting member **20** may have a slight outward inclination on the inside, although this might involve a reduced safety in respect of the attachment of the bag if the user moves very vigorously. Further the engaging flange of the retaining ring **14** may be conical along its entire inner side.

It should be noted that the retaining ring **14** and, in turn, the bag **10** can easily be manually removed from the annular connecting member **20** by pulling, in the first instance, a part of the retaining ring out over the lock flange **26**, and thereafter the entire retaining ring can easily be pulled off. It will also be seen from the drawing that the retaining ring protects the connecting member from being fouled, and that the latter can easily be cleaned even if the adhesive flange **16** remains affixed to the body of a user.

I claim:

1. A colostomy appliance comprising an annular connecting member attached to an adhesive flange adapted to be attached to the body surrounding the colostomy opening, and a detachable bag having an opening provided with a retaining ring attached to the bag and adapted to engage the said connecting member, said connecting member, being made of a relatively hard and nevertheless resilient mouldable material and comprising a radially extending carrying flange airtight secured to said adhesive flange, an annular supporting member protruding axially from said carrying flange and having an outside tapered away from said carrying flange, and at the outer end of said supporting member an external, radially extending lock flange, said retaining ring likewise being made of a relatively hard and nevertheless resilient mouldable material and comprising a radially extending connecting flange airtight secured to the bag surrounding the opening thereof, and an axially extending annular engaging flange stretching into the bag and having an inside conform to the outside of said supporting member and so dimensioned that when engaging said supporting member it squeezes around the same, said engaging flange having an axial length measured from the outside of the part of said connecting flange next to said opening of said bag and to the inner edge of said engaging flange, slightly smaller than the minor axial distance between the outside of said carrying flange of said connecting member and said lock flange.

2. A colostomy appliance according to claim **1**, said retaining ring being made of a mouldable material more resilient than that used for said connecting member.

3. A colostomy appliance according to claim **1**, the side face of said lock flange facing said carrying flange forming an angle with the axis of said connecting member that does not exceed 90°.

4. A colostomy appliance according to claim **1**, said engaging flange being provided at its free end with a short end portion having an inside of a more axial orientation than the inside of the remaining part of said engaging flange.

5. A colostomy appliance according to claim **4**, said end portion being provided with a rounded inner edge.

6. A colostomy appliance according to claim **4**, the end face of said end portion having an outward and rearward inclination towards said connecting flange.