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COLOSTOMY DEVICE

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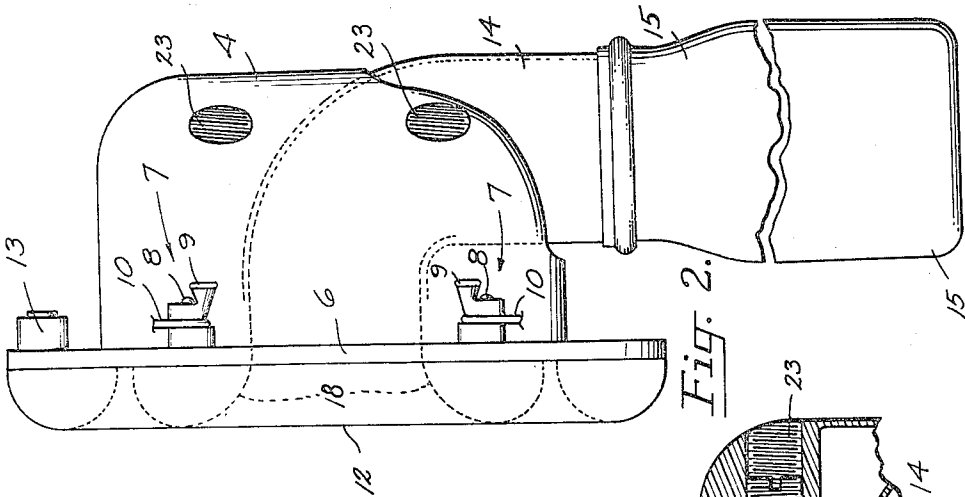


Fig. 2.

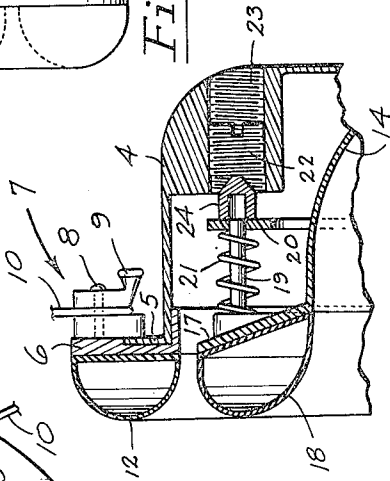


Fig. 3.

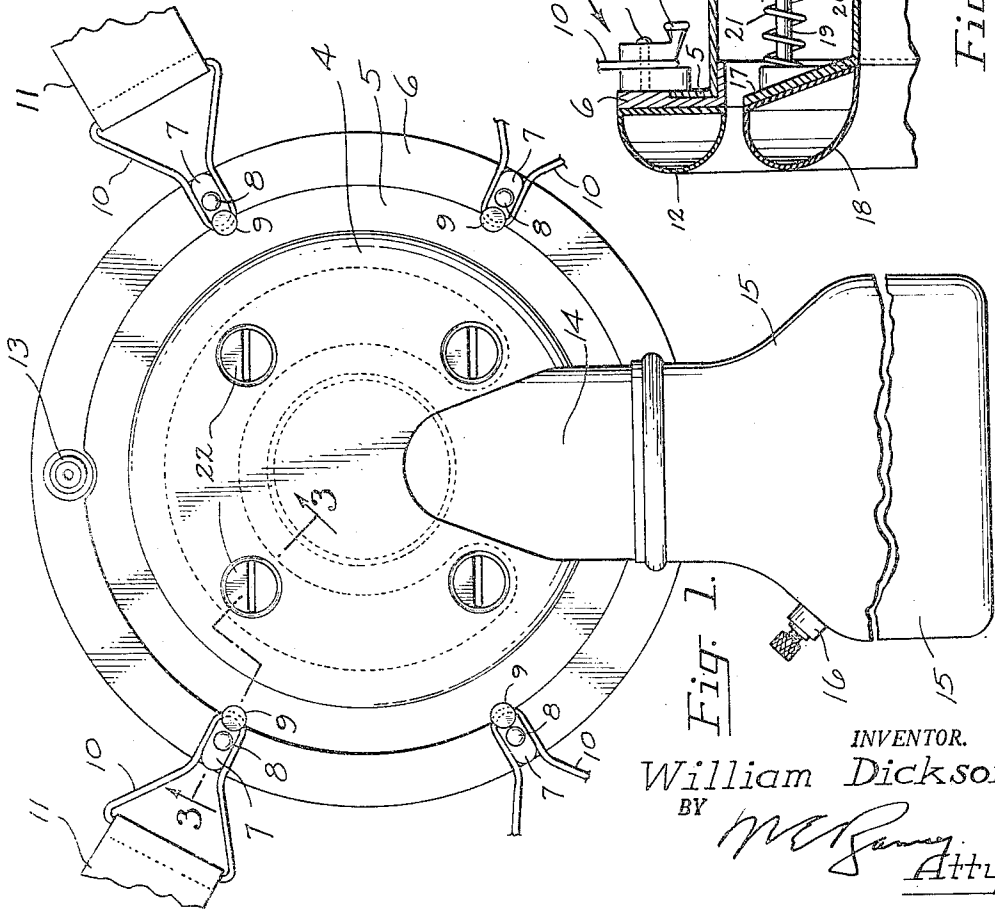


Fig. 1.

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COLOSTOMY DEVICE

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10 Claims. (Cl. 128—283)

This invention relates to a colostomy device for use in the postoperative care of a colostomy, an operation establishing an artificial opening for the colon.

One object of my invention is to provide a colostomy device with two concentric inflated members which are soft, yielding and flexible and which conform closely to the contour of the body of the patient to maintain a tight seal against leakage of either excrement or gas without, at the same time, cutting off the circulation of blood through the tissue surrounding the opening for the colon.

A further object of my invention is to provide a colostomy device with novel dual purpose fastening means firstly for detachably securing the parts of the device together and secondly for securing the entire device about the body of the patient so as to maintain a tight seal and to prevent inadvertent slippage during use.

A colostomy device is a surgical receptor for use after an operation has established an artificial opening for the colon. This opening conventionally is made through the abdominal wall. The colostomy device is worn so as to overlie the opening and collect the discharge from the colon since the patient no longer can control the drainage therefrom. With the instant invention, I provide a cylindrical body member in which is mounted a flexible spout having a receptor joined thereto to collect the discharge. The spout and body member carry concentric inflated seating or sealing members which are annular and thus fit against the body and provide a central opening for the colon discharge. In addition, the inner one of the annular inflated members is mounted upon a free floating type adjustment mechanism. This latter includes an adjustable spring and guide rod whereby the inner inflated member is held against the body of the patient, the spring force being adjustable to suit the desires of the patient and so that patients with different requirements can be fitted with one standard form of the device.

In connection with the above described adjustment mechanism, it will be appreciated by surgeons, physicians and others skilled in the art that each patient who must wear a colostomy device is an individual having individual body characteristics and requirements which effect the structural arrangement of the parts of the colostomy device. In view of these limiting factors, it heretofore has been difficult to market a single standard type of colostomy device and many thus were custom made. A device which was perfect in fit, size, and seal for one patient might be entirely unsatisfactory for another patient. This is a disadvantage to the patient because the cost of a custom made colostomy device is high. Thus, the instant invention provides and it is an important object of my invention to provide a single or standard type of colostomy device which is adjustable and adaptable so as to fit the requirements and needs of a large number of patients. This reduces the cost of the device by allowing mass production and allows the appropriate supply house to stock a number of the items thereby having them on hand when needed.

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In view of the difficulty experienced by many patients in the postoperative care of a colostomy, it is a further object of my invention to provide a colostomy device with novel dual purpose fastening means which prevent inadvertent slippage or displacement of the device while it is worn. At the same time, this feature of my invention is modified by a coating detachment mechanism whereby the entire device readily is disassembled when it must be emptied or cleaned. It is a further object of my invention to provide this structure in a standard item of manufacture acceptable in function and cost both to the physician and the patient.

Yet another object of my invention is to provide a colostomy device with novel articulated fastenings which permit the device to be held securely in place about the body by four clips rather than by a single band or belt as heretofore has been the practice. In function, I have found that this construction also provides a more positive and a more effective seal against leakage.

These and other objects and advantages of my invention will become apparent during consideration of the following detailed description, taken in conjunction with the accompanying drawings, wherein:

Fig. 1 is a face on view of the colostomy device as it appears when the four clips are used to secure the device in place upon the body of a patient;

Fig. 2 is a side view better illustrating the mounting of the flexible spout within the hollow cylindrical body member; and

Fig. 3 is a cross section detail, taken substantially on the line 3—3 of Fig. 1, showing the adjustable spring mechanism by which the spout is mounted for movement axially of the cylindrical body member and is biased with an adjustable force against the body of the patient.

The main structural element of the colostomy device preferably is formed of plastic and consists of a hollow cylindrical body member 4 having an open front mouth which is bound by a radial annular lip 5. A separate annular plate member 6 encircles the open mouth of the body member. In the assembled position of the parts illustrated in Fig. 3, the lip 5 rests against the rear face of this annular plate 6 and is held in place by means of four novel fastening devices now to be described.

As shown in Fig. 1, four identical fasteners 7 are spaced about the periphery of the annular plate member 6. Each of these fasteners is oblong in shape and is formed on two diameters so as to define a shoulder. Further, each is pivotally mounted upon a pin 8 so as to rotate freely with respect to the plate member 6. In addition, each fastener carries a sloping projection 9 (see Fig. 3) which is adapted to receive and to guide a clip 10 when that clip is slipped over the fastener and down upon the shoulder. The clip itself is noncircular in cross section and conforms to the noncircular shape of the fastener 7 so as to fit tightly thereabout against the shoulder in the manner shown in Figs. 1 and 3. When, for example, the body member 4 and the plate member 6 are to be assembled, each of the fasteners 7 is pivoted at right angles to the position shown in the drawings and the annular lip 5 is fitted against the back face of the plate. Thereinafter, each of the fasteners is rotated ninety degrees back to the position illustrated and a clip 10 is fitted over each of the sloping projections 9 and down about the body of the fastener against the shoulder. As will be evident, each clip is secured to a belt or the like 11 by means of which the colostomy device is secured about the body of the patient. Accordingly, the pull of the belts holds the fasteners against rotation. This fixes the various elements against movement and the fasteners thereafter cannot inadvertently become detached. So long as the clips 10 remain in place, the fasteners are positioned in an overlying relationship with the annular lip 5.

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Referring more particularly to Figs. 2 and 3, the front face of the plate member 6 carries an inflatable annular seating member 12. This seating member is made of rubber or an equivalent soft, pliable material and is glued or otherwise secured to the front face of the plate. An inflation valve 13 which pierces the plate 6 and projects from the rear face thereof as shown in Fig. 2 is utilized to inflate the seating member. By this construction, the air pressure within the inflatable member 12 can be regulated so as to fit comfortably against the body of the patient.

The second major structural element of my colostomy device is an elongated flexible spout member 14. In cooperation therewith, the shell like body 4 is provided with a radial rear opening which is slightly larger than the spout thereby allowing the spout to move axially a limited distance with respect to the cylindrical body member. The lower end of the spout 14 projects radially out through the aforementioned opening in the back of the body and has a receptor 15 detachably secured thereto. These parts preferably are joined with a bulge like rim providing a snap or a force fit. The receptor itself carries a conventional venting valve 16. It is the function of this valve to release trapped gases from the hollow interior of the receptor 15, this function being accomplished by rotating the knurled knob upon the valve as required.

Referring now to Fig. 3, it will be seen that the flexible spout 14 terminates in an annular disk 17 the front face of which carries a hollow inflated annular sealing member 18. This sealing member also is best formed of rubber and is arranged to lie concentrically within the annular seating member 12. I thus provide two pliable, soft and flexible ring like members as the only parts actually in contact with the body of the patient.

Four elongated guide rods 19 extend axially of the cylindrical body member from the rear face of the annular disk 17 (see Fig. 3). These rods jointly guide and accommodate a free floating annular ring 20. Movement of the ring upon the rods thus is accommodated in a direction axially of the cylindrical body member. In addition, a compression spring 21 encircles each rod 19 and is trapped intermediate the ring 20 and the projecting flat portion shown on the rear face of the disk 17. In cooperation therewith, four threaded plugs 22 are threaded in four threaded tunnels 23 extending axially of the cylindrical body 4. Where the annular ring 20 fits upon each guide rod 19, a hollow cap 24 is secured to the ring so as to bear upon an appropriate one of the plugs 22. By rotating the plugs 22, the spring tension intermediate the annular ring 20 and the annular disk 17 is adjusted. This allows the patient to preselect and to adjust the amount of pressure exerted upon the body by the hollow inflated sealing member 18. Furthermore, it allows the overall contour of the colostomy device to be adjusted to the contour of the abdomen of the particular patient fitted with the device. In this manner, one standard colostomy device can be fabricated, stocked and sold, the above structure allowing it to be adjusted so as to fit the individual requirements of different patients.

In use, the colostomy device is fitted to a patient having an artificial opening in the wall of the abdomen for the colon. The protruding end of the colon fits within the open mouth of the spout 14 bounded by the hollow inflated seating member 18. Discharge from the colon thus is directed down the spout into the receptor 15. Initially, the various elements are assembled by an appropriate manipulation of the fastener members 7 upon the pivot pins 8. When assembled, the belts 11 are employed to secure the colostomy device about the body of the patient. As previously noted, the noncircular configuration of the clips 10 with the fasteners 7 assures the retention of the various elements in an assembled condition because the bases of the fasteners overlie the plate 6 at four spaced points.

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The first time that the colostomy device is fitted to a patient, the air pressure within the annular seating member 12 is adjusted by utilizing the valve 13. Thereinafter, the position of the plugs 22 is adjusted so as to secure a correct seating of the inflated sealing member 18 against the body of the patient. Here it will be noted that these two adjustments are cooperative. That is, the air pressure in the member 12 and the spring tension bracing the member 18 both can be adjusted so as to secure a comfortable yet an efficient fit. In this manner, the artificial opening for the colon becomes surrounded by two concentric inflated sealing members of annular configuration which are flexible and soft. These coact to maintain a gas and fluid tight seal without cutting off the circulation of blood through the surrounding tissue. Should the pressure of the members 18 and 12 prove to be excessive, that pressure can be relieved simply by releasing air from the member 12 and backing off the threaded plugs 22. Conversely, should one or the other or both of the pressures be insufficient, the plugs can be moved inwardly thereby increasing the compression force of the springs 21 and/or the air pressure within the member 12 can be increased. Once the correct position of the various elements has been discovered for the particular patient, further adjustments seldom will be required.

Actual trial has shown that this colostomy device provides an effective and an adjustable seal upon the body of the patient. At the same time, this seal is effected by flexible inflated members which will yield and give so as precisely to fit the body body contours in comfort. After a period of use, the entire colostomy device readily is disassembled for cleaning simply by removing the clips 10 and rotating the fasteners 7. The receptor 15, on the other hand, may be emptied either by detaching the same from the spout 14 or by completely disassembling the various elements as when the parts are to be cleaned. By forming the parts of plastic, rubber and other materials resistant to corrosion, the patient is enabled to wear the colostomy device for an indefinite period of time without being required to purchase replacement parts. At the same time, the various adjustment mechanisms allow the mass production of a single standard size thereby decreasing the ultimate cost to the patient.

I claim:

1. In a colostomy device, a receptor construction including two adjustable concentric inflated sealing members of annular configuration adapted to fit against the body of the patient, the inner one of said sealing members being movable toward and away from the body of the patient and relative to the outer sealing member, and dual purpose fastener means spaced about the outer one of said sealing members detachably to secure the parts together and detachably to secure the colostomy device about the body of the patient.

2. In a colostomy device, a receptor construction including two concentric inflated sealing members of annular configuration adapted to fit against the body of the patient, the inner one of said sealing members being mounted for movement toward and away from the body of the patient, adjustable spring means bearing upon said inner sealing member to bias the same toward the body of the patient with a preselected bias force, and fastener means carried by one of said sealing members detachably for securing the colostomy device about the body of the patient.

3. In a colostomy device, a cylindrical receptor construction having two concentric inflated sealing members of annular configuration, the inner one of said sealing members being mounted for movement axially of the cylindrical receptor construction, adjustable spring bias means bearing upon said inner sealing member, and at least four fastener means spaced about the periphery of the outer one of said sealing members detachably to secure the parts of the colostomy device together, each of

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said fastener means being articulated for movement between a first position in which the various parts of the device are secured together and a second position allowing a ready disassembly of these parts for cleaning or emptying, and a detachable noncircular clip associated with each of said fasteners for holding its fastener in said first position while the colostomy device is in use.

4. A colostomy device, comprising a hollow cylindrical body member having an open mouth, an elongated flexible spout and receptor member carried by said hollow body member, a hollow inflated annular sealing member protruding from said spout member and arranged concentric with said body member open mouth, and adjustable means for biasing said spout and sealing member in a direction outwardly through the open mouth of said body member with a preselected force.

5. A colostomy device, comprising a hollow cylindrical body member having an open front mouth, an elongated flexible spout member mounted for movement within said hollow cylindrical body member, the front of said spout bounding a circular inlet opening concentric with said open mouth and carrying an annular disk member having a hollow inflated annular sealing member secured thereto, and plural adjustable spring means adjustably to bias said disk and sealing member in a direction outwardly through the open front mouth of said body member, each said adjustable spring means including a threaded plug member mounted within a threaded tunnel formed axially of said cylindrical body member.

6. In a colostomy device, a hollow cylindrical body member having an open front mouth encircled by an inflatable annular seating member, an elongated flexible spout member mounted for movement axially within said hollow cylindrical body member and projecting radially out therefrom adjacent the back of the body member, the front of said spout bounding a circular inlet opening and carrying an annular disk having a front and a rear face, a hollow inflated annular sealing member secured to the front face of said annular disk and arranged to lie concentrically within said annular seating member, and means adjustably to bias the sealing member toward the open mouth of said body member.

7. A colostomy device, comprising a hollow cylindrical body member having an open front mouth bounded by a radial annular lip, an annular plate member bounded by a front and a rear face and adapted to encircle the open mouth of said body member with said annular lip resting against said rear face, an inflatable annular seating member secured to the front face of said annular plate, an elongated flexible spout member mounted within said hollow cylindrical body member and carrying means detachably for securing a receptor thereto, the front of said spout bounding a circular inlet opening and carrying an annular disk, a hollow inflated annular sealing member secured to said annular disk and arranged to lie concentrically within said annular seating member, and adjustable spring means adjustably to bias said sealing member toward the open mouth of said body member.

8. In a colostomy device, a hollow cylindrical body member formed of noncorrosive material and carrying adjacent one end an integral radial annular lip, an annular plate member bounded by a front and a rear face and encircling said body member with said body member annular lip resting against said rear face, a spaced plurality of articulated fastening means carried by said plate member and movable so as to overlies spaced points along said plate for securing the plate and body member together, each of said fastening means including a fastener body member rotatably journaled upon the rear face

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of said annular plate and carrying a sloping projection leading to a stepped noncircular portion of the fastener body adapted to receive a mated noncircular clip, an inflatable annular seating member formed of rubber secured to the front face of said annular plate, an elongated flexible spout member mounted for movement axially within said hollow cylindrical body member and projecting radially out therefrom adjacent the back of the body member, the projecting portion of said spout carrying means detachably for securing a receptor thereto, and a hollow inflated annular sealing member formed of rubber secured to said spout member for movement therewith.

9. A colostomy device, comprising a hollow cylindrical body member having an open front mouth bounded by a radial annular lip, an annular plate member bounded by a front and a rear face and adapted to encircle the open mouth of said body member with said annular lip resting against said rear face, at least four spaced articulated fastening means carried by said plate member detachably to secure the plate and body member together, each of said fastening means including a fastener body member carrying a noncircular portion adapted to receive a mated noncircular clip, an inflatable annular seating member secured to the front face of said annular plate, an elongated flexible spout member mounted for movement axially within said hollow cylindrical body member and carrying means detachably for securing a receptor thereto, the front of said spout bounding a circular inlet opening and carrying an annular disk having a front and a rear face, a hollow inflated annular sealing member secured to the front face of said annular disk and arranged to lie concentrically within said annular seating member, and at least four adjustable spring means adjustably for biasing said disk and sealing member toward the open mouth of said body member, each said adjustable spring means including a threaded plug member adjustable axially of said cylindrical body member.

10. In a colostomy device having a hollow cylindrical body member with an open front mouth bounded by a radial annular lip, an annular plate member bounded by a front and a rear face and adapted to encircle the open mouth of said body member with said annular lip resting against said rear face, a spaced plurality of articulated fastening means carried by said plate member detachably to secure the plate and body member together, an inflatable annular seating member secured to the front face of said annular plate, an elongated flexible spout member mounted for movement axially within said hollow cylindrical body member and carrying a receptor, the front of said spout bounding a circular inlet opening and carrying an annular disk having a front and a rear face, a hollow inflated annular sealing member secured to the front face of said annular disk and arranged to lie concentrically within said annular seating member, a plurality of guide rods extending axially of said cylindrical body member from the rear face of said annular disk, a free floating annular ring encircling said spout and slidably mounted upon said guide rods for movement axially of said cylindrical body member, and plural adjustable spring means intermediate said disk and ring adjustably to bias the disk and sealing member toward the open mouth of said body member.

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