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Clayton

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[54] **COLON CATHETER**

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[21] Appl. No.: **218,925**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 115,610, Feb. 16, 1971.

[52] **U.S. Cl.** ..... **128/2 F,** 128/283, 128/246

[51] **Int. Cl.** **A61b 10/00**

[58] **Field of Search** ..... 128/2 F, 283, 246, 286, 128/344, 129, 239, 247, 349 B, 349 BV, 349 R, 348, 350, 351; 119/95

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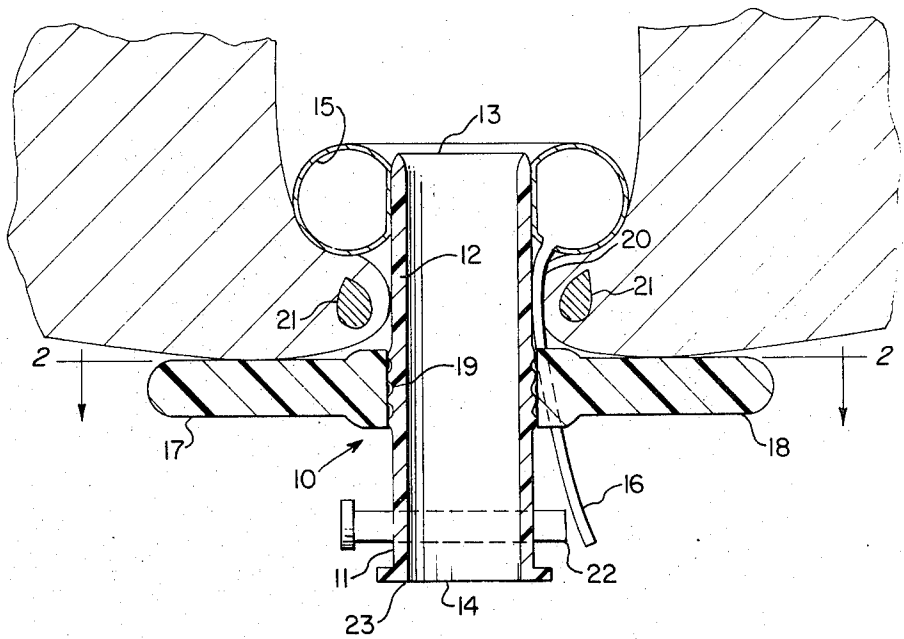
[57] **ABSTRACT**

A colon catheter for removing and collecting waste colon material through the anal canal. One end of a hollow tube is inserted into the anal canal and held therein by an expandable member and limiting elements outside of the anal opening against the perineum. An enclosed bag attached to the end of the tube to collect waste colon material may be made of plastic, may be clear and may be covered by an opaque bag having a viewing window and flaps to enclose the hollow tube after use. A side opening may be provided for introducing an enema solution. The entire colon catheter with the enclosed waste colon material is disposable as a unit.

26 Claims, 9 Drawing Figures



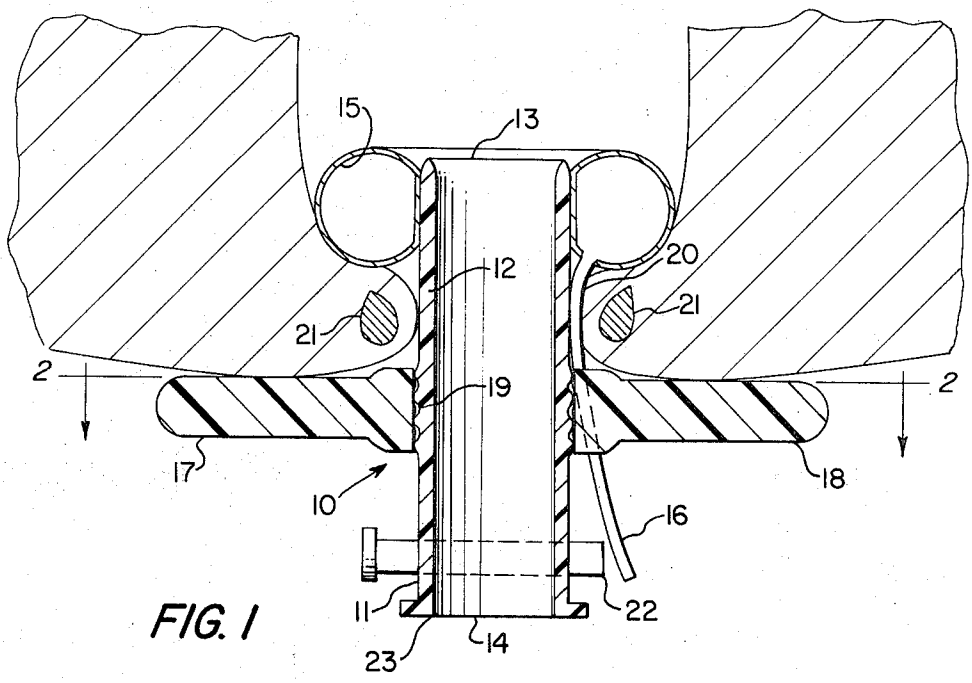


FIG. 1

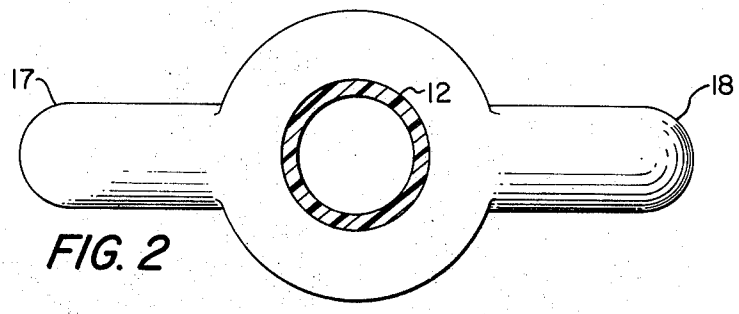


FIG. 2

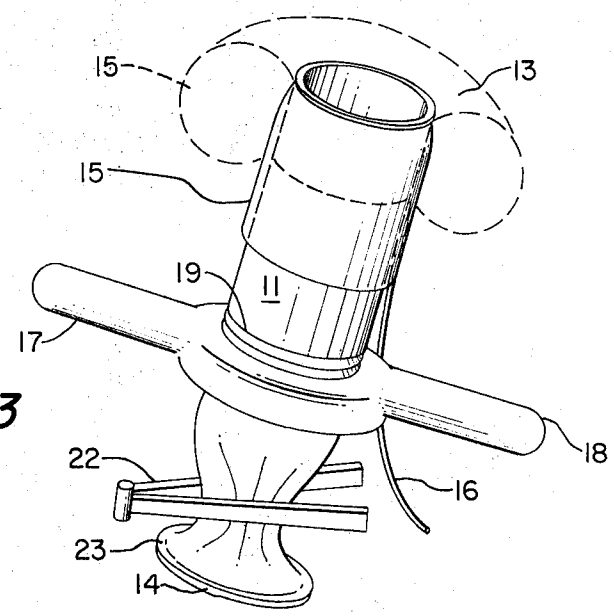


FIG. 3

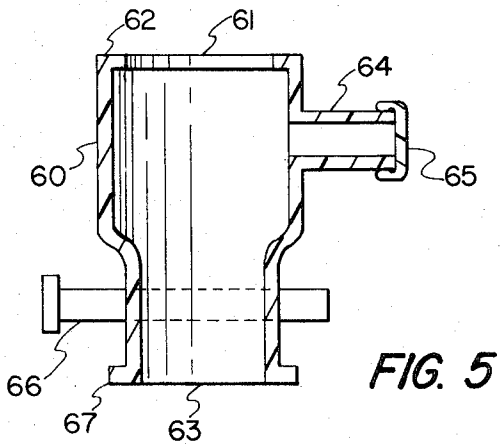


FIG. 5

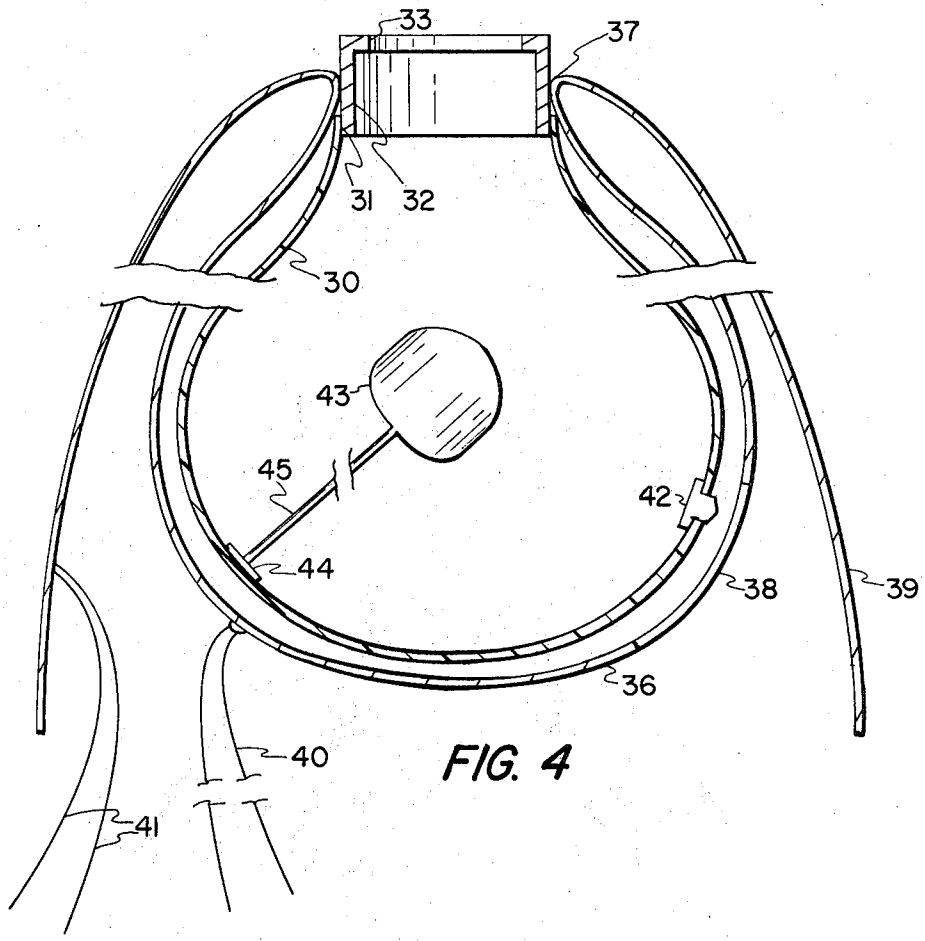


FIG. 4

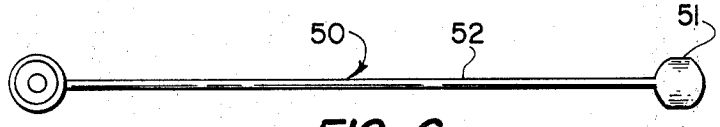
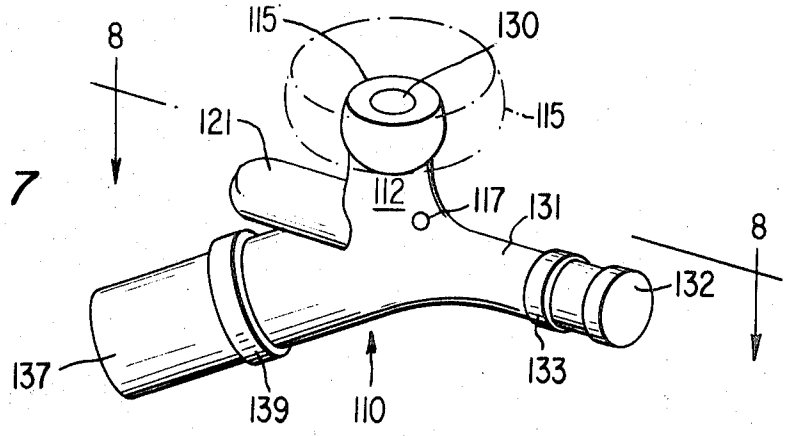


FIG. 6

FIG. 7



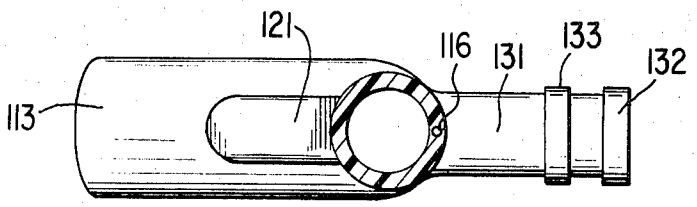


FIG. 8

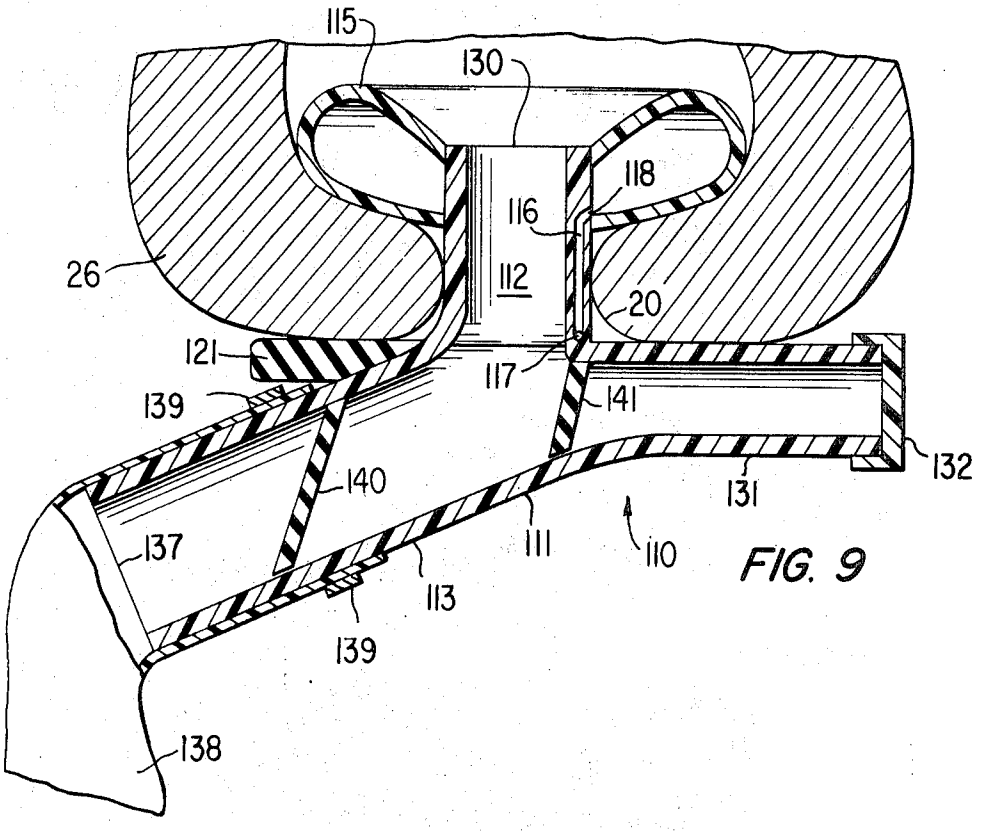


FIG. 9

COLON CATHETER

RELATED APPLICATION

This application is a continuation-in-part of my earlier copending application Ser. No. 115,610, filed Feb. 16, 1971, now abandoned.

BACKGROUND OF THE INVENTION

This invention relates to medical apparatus, and in particular it relates to a novel catheter for removing and collecting waste colon material through the anal canal.

Present procedures for cleaning the colon passage have been the same for literally hundreds of years. These include the use of laxatives to stimulate expulsion of solids, liquids or gases, enemas to soften and to stimulate expulsive activity by the colon and finally, maneuvering the patient onto an open receptacle such as a bed pan to collect materials expelled from the colon passage.

These procedures are to say the least very inconvenient, even for healthy persons. But for those not in a healthy state, there are more serious medical and sanitary difficulties.

Sometimes a patient cannot hold the anal canal open at all because of paralytic ileus which is the inability to complete the neuro-muscular action required to open the anal sphincter muscles, i.e. those muscles which control opening and closing of the anal canal. This is not infrequent occurrence following surgery. Inability to open the anal canal may occur at other times, particularly in the case of old persons, children and unconscious persons. Indeed, even healthy persons might involuntarily fight releasing the colon contents to avoid making unpleasant sounds, creating unpleasant odors or soiling the bed. In other cases, patients are able to open the anal canal but cannol hold it open long enough, sometimes one to three hours, to complete expulsion of the colon contents.

Another problem is that some patients, while able to hold the anal canal open are not capable of remaining in one position to expel the colon contents for a long enough period of time. A bed pan is extermely awkward and uncomfortable, and after a long period of time, pressure pain can develop and one can become numb, hence making expulsion that more difficult. In one known procedure for removing gas and liquid contents of the colon passage, gravity is used to facilitate movement of the material therethrough. In this case it is necessary to move the patient between different positions. But with the conventional bed pan, only one position is possible, supine. Another disadvantage of the known bed pan or toilet is that the erect position required to pass solid colon contents may make is impossible to expel gases from the colon.

In addition to the above, there are serious sanitary and cleanliness disadvantages to the conventional bed pan including soiled linen and objectionable odors and sounds. Further, the need to clean such soiled linens more frequently increases the hospital's costs.

In addition to the above, current procedures do not permit an opportunity for observing or testing the stool of the patient. At present, observation is only possible with a patient's cooperation. If the patient goes to the bathroom, disposes and flushes, there is no chance for observation of the stool. For example, it may be vital

to know of blood loss in the stool. A patient could go to the bathroom, expel the colon contents together with 2,000 cc. of blood, flush and no one would know— or be able to explain a sudden loss in blood pressure. Also, current procedures including the bed pan provide no opportunity for conducting certain laboratory tests which require collection of the entire stool as it is not practically possible to collect the entire stool with current techniques.

In the past, catheters have been developed such as the Foley tube for removing liquid materials from other parts of the body. Also, catheters have been developed for introducing into the anal canal liquids for enemas and the like. However, these known catheters are not suitable for use for removing and collecting solid and gas waste colon material through the anal canal. Thus, there exists a need for a new and improved catheter and system for facilitating removal and collection of waste colon material through the anal canal.

SUMMARY OF THE INVENTION

It is a purpose of the present invention to provide a new and improved catheter and system for removing and collecting waste colon materials through the anal canal, which catheter and system overcome the disadvantages of previously known procedures for removing waste colon material through the anal canal.

This purpose of the present invention is achieved by providing a new and improved colon catheter and a closed system in which the catheter is sealed in the anal canal and wherein the colon material passes through an enclosed passage to an enclosed receptacle.

According to the present invention, there is provided a colon catheter in the form of a hollow tube, the interior lumen of which is of sufficiently large cross-section and short enough for the passage of solid waste colon materials. At one end of the tube there is provided an expandable balloon element which is expanded after this first end of the tube has been placed into the anal canal past the anal sphincter muscles. The tube is held in place by cooperation between the expandable tube and positionable against the perineum. A means would normally be provided for closing off the tube between these limiting elements and the second or free end of the tube. Means are provided for attaching an enclosed receptacle to this second end of the tube to receive the colon material. In a simple arrangement, the receptacle which is preferably a plastic bag is simply clamped onto the end of the tube. In another arrangement, the bag may be attached to a stiff collar which may be formed as a snap ring to be snapped onto the end of the tube.

Means may also be provided for introducing an enema solution in the colon. In one arrangement, this may include an insert to be placed between the end of the tube and the bag, this insert including a side opening. In another arrangement, a side opening may be formed as a part of the tube itself. In either case, means would be provided for closing off this side opening.

In accordance with another feature of the invention, the bag, which would normally be of clear plastic, may be covered by an opaque bag having a viewing window for viewing the contents of the plastic bag. The arrangement may also include flaps for enclosing the main tube after use, an obturator formed within the plastic bag, means for tying the bag onto the leg of the user, a gas release bleed valve formed in the bag to re-

lieve collected gases, and/or clamps for closing off the main tube (or the tubular insert) by simply pinching the same as one would pinch a hose. In this case, however, the tube, while being sufficiently resilient and elastic to permit such pinching must be sufficiently stiff to maintain its shape in the anal canal opposing the inward force of the anal sphincter muscles. Such materials are known.

The present invention overcomes the numerous disadvantages of prior techniques in a most effective manner. First, as a solution to the cases in which patients either could not hold the anal canal open at all or could not hold it open for a sufficient length of time, the present invention is held in position such that it holds the anal sphincter muscles apart to open the anal canal without efforts by the patient. Thus, for those suffering from paralytic ileus, it provides for the first time an arrangement for permitting such persons to maintain the anal canal open to pass waste colon material. The colon catheter may be held in place as long as needed and the patient may assume any position. Thus, for those who in the past had to experience the significant discomfort of sitting for any length of time on a bed pan, they may now relax with the colon catheter inserted and assume any position comfortable for them including lying on their stomach. For a patient with a large collection of gases in the intestines, he may now lie on his stomach which is the best position to permit the escape of such gases through the anal canal.

To overcome the cleanliness and sanitary problems, with the present invention, colon material moves directly into an enclosed disposable plastic bag. Thus, objectionable noises, odors and soiling of the bed are eliminated. With the invention, the colon catheter itself, after being removed from the patient, may be totally enclosed whereby the entire unit including the bag with its contents and the used colon catheter can be enclosed and disposed of as a unit in a clean substantially odorless manner. Also important is the savings in material and labor costs associated with changing soiled bed linens.

The present invention also provides a medical advance in that it provides an opportunity for observation and testing of the stool. For patients who might not have been limited to a bed pan, this now provides an opportunity to assure collection and observation of all contents of the stool. Also, for conducting certain tests which require the total stool content, such total content is now available and it is in a condition susceptible for handling and testing.

Thus, it is an object of this invention to provide a new and improved catheter for removing and collecting colon material.

It is another object of this invention to provide a new and improved system for removing and collecting colon material.

It is another object of this invention to provide a disposable system for easily removing colon material.

It is another object of this invention to provide an arrangement for expelling the colon contents, which arrangement overcomes the disadvantages associated with previous techniques.

It is another object of this invention to provide an arrangement for removing the colon contents which assuees an opportunity to observe and/or test the stool.

It is another object of this invention to provide a new and improved catheter for removing waste colon material including a catheter inserted into the anal canal and a bag associated therewith for collecting the waste colon materials.

It is another object of this invention to provide an arrangement for removing and collecting waste colon material which eliminates the inconveniences and discomforts associated with previously used procedures.

It is another object of this invention to provide a colon catheter having a main hollow tube, the lumen of which is sufficiently short and of sufficiently large cross-section for removal of waste colon material and including an expandable member at one end, limiting elements positionable against the perineum for holding the catheter in place, and means at the free end for connecting this catheter to an enclosed container for collecting the colon material.

Other objects and other advantages of the invention will become apparent from the detailed description to follow, together with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

There follows a detailed description of a preferred embodiment of the invention to be read together with the accompanying drawings.

FIG. **1** is a cross-sectional view of the colon catheter in place in the anal canal.

FIG. **2** shows an element of FIG. **1** taken along line **2—2** of FIG. **1.**

FIG. **3** is a perspective view of the colon catheter of FIG. **1** removed from the anal canal.

FIG. **4** is a cross-sectional view of a receptacle to be used in conjunction with the colon catheter of FIGS. **1–3.**

FIG. **5** is a cross-sectional view of a tubular insert which may be used in conjunction with the catheter and the receptacle of FIGS. **1–4.**

FIG. **6** illustrates an obturator which may be used for inserting the colon catheter of FIGS. **1–3.**

FIG. **7** is a perspective view showing another embodiment of the invention.

FIG. **8** is a sectional view taken along line **8-8** of FIG. **7.**

FIG. **9** is a sectional vew through the embodiment of FIGS. **7** and **8** showing the device in use.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings, like elements are represented by like numerals throughout the several views.

FIG. **1** illustrates the colon catheter **10** in place in an anal canal **20.** Anal sphincter muscles **21** are also shown. The catheter includes a main hollow tube **11** having a lumen **12** extending therethrough from a first opening **13** to a second opening **14.** This main tube must be sufficiently stiff to retain its shape in place in the anal canal in opposition to the force of the sphincter muscles **21** tending to close the anal canal. At the same time, it must be sufficiently resilient such that is can be closed by a clamp **22** which simply pinches the tube like one would pinch a hose. Such materials are known. At the end of the tube **11** adjacent the first opening **13,** there is provided an annular balloon **15** of suitable elastic material such as Latex. This balloon may be a separate anulus attached by a suitable adhe-

sive to the outer wall of the tube **11** in which case it would include a separate external tube **16** for delivering air and removing air from the balloon **15.** Alternatively, the tube **16** can be formed into the wall of the tube **11.**

As is evident in FIG. **1,** the balloon **15** holds the end of the tube **11** adjacent the balloon **15** in the colon passage to seal the same. Intermediate its length, this tube has formed on the outside thereof limiting elements in the form of bars **17** and **18.** In this embodiment, these limiting elements are formed as a separate piece as shown in FIG. **2,** which piece is slid over the outside of the tube **11** onto a set of concentric circular ridges **19.** In using the device, after the balloon **15** has been expanded in place, the member with limiting elements **17** and **18** formed thereon is slid up the tube until it presses tightly against the perineum such that the balloon **15** seals the anal canal and the catheter is secured firmly in place to prevent leakage or accidental removal thereof. The ridges **19** are of sufficient height such that the member with limiting elements **17** and **18** will not slide down the tube in use.

Although the specific dimensions of the catheter will vary, to accommodate the average adult, the outside diameter of this tube **11** should be 19 millimeters although it may be as great as 35 millimeters for special uses. The inside diameter should be about 15 millimaters in order to accommodate the colon waste material. It may be somewhat smaller but should be no less then 10 millimeters. Thus, an optimum catheter would have an inside diameter of 15 millimeters, a thickness of 2 millimeters, and an outside diameter of 19 millimeters. Preferably, the length of the tube **11** is as short as possible. A minimum length is believed to be 5 centimeters and an optimum length would be 7 centimeters comprising approximately 5 centimeters between the limiting elements **17** and **18** and the first opening **13,** and approximately 2 centimeters between the limiting elements and the second opening **14.** The limiting elements themselves may be between 1 to 3 centimeters in length and an optimum would be approximately 2 centimeters.

FIG. **3** illustrates the catheter of FIGS. **1** and **2** removed from the patient. Although ideally the balloon **15,** in the relaxed condition, would be drawn tightly about the tube **11,** this is difficult to obtain in practice and not really necessary. It is equally practical to make the balloon **15** of a construction which droops as shown in solid lines **15** in FIG. **3** in the relaxed condition. The balloon can still be held very closely to the tube **11** during insertion of the device into the anal canal. The expanded position of balloon **15** is shown in dotted lines in FIG. **3.** Also, in FIG. **3** the member with limiting bars **17** and **18** has been moved downwardly slightly to expose a few ridges **19** and a clamp **22** is shown pinching the section of the tube **11** between the limiting elements and the second opening **14.**

It is a feature of the present invention that means are provided for collecting the waste colon material passing through the tube **11** and through the opening **14.** Although a bag may simply be attached to the end of the tube **11,** in a preferred arrangement the end of the tube is provided with an annular ring **23** adapted to receive a receptacle as shown in FIG. **4.**

Referring now to FIG. **4,** this receptacle may be a suitable plastic bag such as a polyethylene bag or the like **30** attached by a suitable adhesive at **31** to a stiff annular collar **32** having an inwardly projecting annular flange **33,** the entire element **32** being of a resilient material such that the flange **33** will snap over the annular lip **23,** thus acting as a snap ring and sealing against the tube **11** in a fluid tight manner. It is preferable that the bag **30** be transparent so that the stool can be observed. However, for aesthetics it is preferable to cover the bag. In the preferred embodiment, an opaque covering such as a paper bag **36** encloses the plastic bag **30** and is attached by a suitable adhesive **37** to the outside of the stiff collar **32.** A clear window **38** may be provided for viewing the contents of the bag **30** through the opaque covering **36.** Strings **40** may be attached to the bag **36** for tying the same to a leg of the user.

It is contemplated that the entire system including the catheter and the bag will be disposable. To facilitate such disposability, there may be provided a flap **39** attached. to the outside of the stiff collar **32** by a suitable adhesive. In the present embodiment, this collar **39** is shown as an extension of the paper bag **36.** After use, and with the tube **11** in place with its flange **23** within the flange **33** of collar **32,** the entire flip **39** can be drawn up and around the catheter **10** and closed by any suitable means such as strings **41** attached to the outside of flap **39.**

The bag **30** may also include a gas bleed valve **42** which may be similar to a conventional football valve for releasing gases from the bag **30.** The bag may also include an obturator **43** attached at **44** to the interior of the bag **30** for a purpose to be explained in greater detail below.

FIG. **5** illustrates an insert which may be provided between the flanges **23** and **33** for introducing an enema solution or the like to the colon. In this case, the insert member **60** would be formed of a stiff material like the stiff collar **32.** It includes a first opening **61** and a second opening **63.** A flange **62** is provided to encircle the lip **23** in the same manner as flange **33,** and the lip **67** is adapted to be encircled by the flange **33** in the same manner as lip **23.** The insert includes a side passage **64** with a suitable removable cover **65.** A clamp **66** similar to clamp **22** may be provided for closing off this insert between the side opening **64** and the second opening **63** so that when the insert is in place one may close off the insert **60** by clamp **66** thus permitting the enema solution to be delivered directly through the opening **64** and into the colon passage, after which the clamp **66** would be removed, permitting the waste material to move through the tube **11,** the insert **60,** and the stiff collar and into the bag **30.**

The device as shown in FIGS. **1** through **5** would operate as follows. Firstly, the expandable member **15** would be relaxed as shown in FIG. **3** and the elements **17** and **18** would be positioned low relative to the ridges **19** as shown in FIG. **3.** The tube would be opened (not closed by the clamp **22**) and an obturator would be placed through the tube **11** projecting through the opening **13** for facilitating introduction of the device into the anal canal. If it is desired to insert the tube **11** without the bag **30** attached thereto, a separate conventional obturator **50** (FIG. **6**) would be used having the usual rounded head **51** and an elongated rod **52.** After the end **13** and the balloon **15** have been placed into the anal canal beyond the sphincter muscles **21,** the obturator would be removed, the balloon **15** expanded by introducing air through tube **16** and then the limiting elements **17** and **18** would be

pushed up against the perineum to tightly hold the catheter in place. A conventional fixed volume safety cuff may be used for introducing air through the tube **16,** thus carefully controlling the volume of the introduced air.

The device could also be inserted with the bag **30** already attached to the tube **11,** either with or without the insert member **60.** In this case, the balloon **15** and the elements **17** and **18** would be as previously described. However, in this case one would grasp for the rod portion **45** and the base portion **44** of the obturator within the bag **30** by handling the same through the bags **36** and **30.** The rod portion **45** would be at least as long as the tube **11.** The obturator head **43** which is also rounded like the obturator head **51** would be pushed through the lumen with the head **43** projecting at the opening **13.** In this manner, the tube would be inserted after which the obturator **43** would be withdrawn. It would then simply remain in the bag **30** and would be disposed of along with the remainder of the apparatus after use. This provides the additional advantage of having a disposible readily available single use obturator for each application.

For convenience, the portion of the tube **11** between the limiting elements and the first opening **13** may be referred to conveniently as the first portion and the portion of tube **11** between the limiting elements and the second opening **14** may be referred to as the second portion.

FIGS. **7** through **9** illustrate another embodiment of the invention. In this embodiment the catheter **110** includes a first portion **112** and a second portion **113** defining a lumen between a first opening **130** and a second opening **137.** The inside and outside diameters and the length of the catheter **110** between the opening **130** and **137** would be the same as described above with respect to the embodiments of FIGS. **1** through **5.** The catheter tube **111** in this case may be of the same material as the catheter tube **11,** thus permitting the same to be closed by a suitable clamp **22,** or in the alternative, since valves are shown in this embodiment, the tube **111** may be of a somewhat stiffer material.

In this embodiment, there is shown a side tube **131** having a cap **132** formed as an integral part of the tube **111.** Suitable flap valves **140** and **141** are provided across the second portion **113** and the side opening **131,** respectively. In this embodiment, a limiting bar **121** extends to the side of the first portion **112** opposite from the side opening **131.** Hence, in this case the bar **121** and the side opening tube **131** constitute the limiting means.

In this embodiment, there is provided a suitable expandable member **115** similar to the expandable member **15** except that in this embodiment, there is illustrated the arrangement wherein the tube **116** is formed in the walls of tube **111,** opening into the member **115** at opening **118.** This enclosed tube **116** enters the atmosphere at opening **117,** at which it would be connected to a suitable supply tube.

This embodiment shows a suitable resilient ring **139** for holding a plastic bag **138** onto the end of the tube **111** and a suitable ring **133** for holding a hose or the like onto the end of tube **131** for receiving an enema solution or the like.

The embodiment of FIGS. **7** through **9** may be modified as follows. First, the bar **121** could be eliminated and the second portion **113** turned 90° relative to the first portion **112** whereby it could itself serve as one limiting means. In some cases the side tube **131** is not necessary and hence it can be constructed as a solid bar, thus still serving as the other limiting means. Also, the second portion **113** can be shortened considerably, such that it extends from the turn approximately 1 to 3 centimeters to its second opening **137.**

When the hollow tube **131** is used, the one-way valve **140** should be resilient enough to permit the passage thereof of colon material but stiff enough to prevent gases and liquids from returning therethrough into the colon. Also, the valve **140** should be sufficiently resilient so that an insertion obturator initially extending all the way from the opening **130** to the opening **137** can be pulled out through the valve **140** and out through the opening **137** after the catheter has been inserted.

The embodiments of FIGS. **7** through **9,** with or without the described modifications, would operate in substantially the same manner as described above with respect to the embodiment of FIGS. **1** through **6.** In this case, one would use the obturator used in FIG. **6,** inserting the rod portion **52** down through the opening **130** and then through the opening **137** with the rounded head portion **51** protruding through the opening **130.** In this case, and with the expandable member **115** relaxed, the first portion **112** would be inserted through the anal canal **20.** In this case, movement would be limited through engagement of the elements **131** and **121** and/or **113** against the perineum, after which the member **115** would be expended to seal the anal canal and retain the catheter in place. The plastic bag **138** would then be connected and held in place by a suitable elastic ring **139.** If desired, the embodiment of FIGS. **7** through **9** can be used to introduce an enema solution as follows. The operator would remove the cap **132** and place a cover over the opening **137** and then introduce through the tube **131** a suitable enema solution. After the appropriate amount had passed through the flap valve **141** and through the portion **112** into the colon, the cap **132** would be replaced after which the cap would be removed from opening **137** and the bag attached as described above, after which removal of waste material from the colon passage would commence in the usual manner.

Although the invention has been described above in considerable detail with respect to preferred embodiments thereof, it will be apparent that the invention is capable of numerous modifications and variations apparent to those skilled in the art without departing from the spirit and scope of the invention.

I claim:

1. A catheter for removing waste material from the colon through the anal opening comprising:

an elongated hollow tube having a first open end and a second open end, and a lumen through the tube from the first open end to the second open end being of circular cross-section having a diameter of at least **10**mm to facilitate the passage of solid waste colon material from the first end thereof to the second end thereof,

a pair of limiting elements attached to the outside of the said hollow tube between the first and second ends and extending outwardly in opposite directions from each other generally perpendicular to the axis of the tube to lie against the peinean force and aft of the anal opening,

said tube including a first portion between the first open end and the limiting elements which includes the first end and which is insertable into the anal opening, and a second portion from the limiting elements to the second open end, said first portion being of sufficiently stiff material to withstand the inward closing force of the anal sphincter muscles,

an annular expandable member fixed to and encircling the exterior of the first portion of the tube from said first end to a point along the exterior of the first portion of the tube and constructed to be expanded outwardly to surround the exterior of the tube at the said first end to seal off the anal canal such that waste material can escape from the colon only into the first open end of the hollow tube, and therethrough to the second open end, said expandable member, when expanded extending outwardly from the first open end transversely relative to the axis of the tube to assist in guiding waste colon material into the said first open end, passage means for delivering pressurized fluid to the annular member to expand it after it is positioned in the anal canal,

the spacing along the exterior of the tube between the limiting elements and the expandable member being such that after the first portion of the tube has been inserted into the anal opening, the anal canal is sealed between the limiting elements and the annular expandable member to retain the first portion of the hollow tube in place and seal the anal opening,

and means for connecting the second open end of the tube to an enclosed container such that waste colon material can flow from the colon through the first open end and through the lumen of the hollow tube directly into the enclosed container.

2. A catheter according to claim **1**, including a means for closing off the hollow second end of the tube.

3. A catheter according to claim **2**, said hollow tube being sufficiently flexible such that the walls thereof can be manually, elastically pinched towards each other to close the hollow tube, and said closing means including a clamp to close the tube at the second portion thereof.

4. A catheter according to claim **1**, said first and second tube portions being axially aligned to form one straight tube.

5. A catheter according to claim **4**, said tube having an outside diameter not greater than 35 mm.

6. A catheter according to claim **5**, said tube having an inside diameter of approximately **15** mm and an outside diameter of approximately 19 mm.

7. A catheter according to claim **1**, said limiting elements being a pair of solid resilient bars extending approximately 2 cm to opposite sides of the hollow tube.

8. A catheter according to claim **1**, said pair of limiting elements extending outwardly from a central part which surrounds the hollow tube, said limiting elements being adjustable along the length of the hollow tube.

9. A catheter according to claim **1**, including an enclosed bag for receiving and holding the waste colon material, and said connecting means comprising a means connecting this bag onto the second end of the hollow tube.

10. A catheter according to claim **9**, said connecting means including a stiff collar to which the opening of the bag is connected, and means for snapping this collar into a fluid sealed position on the second end of the tube.

11. A catheter according to claim **1**, including a tubular insert member having a first and second ends and a side opening into the tubular insert intermediate of its ends, the first end of this tubular insert connected in a fluid sealed manner to the second end of the hollow tube, an enclosed bag connected to the second end of this tubular insert in a fluid sealed manner, whereby waste colon material flowing through the hollow tube flows through the tubular insert and into the enclosed bag, and means for closing off this tubular insert between the side opening and the second end thereof, whereby the tubular insert can be closed off and an enema solution introduced through the side opening and through the hollow tube into the colon, and means for closing this side opening.

12. A catheter according to claim **1**, said second portion being formed at an angle relative to the first portion.

13. A catheter according to claim **12**, said second portion being turned approximately 90° relative to the first portion and constituting one of said limiting elements.

14. A catheter according to claim **12**, including a one-way valve in said hollow tube permitting material to flow only from the first portion to and through the second portion of the hollow tube.

15. A catheter according to claim **1**, wherein said hollow tube further includes a side opening for receiving means to be introduced into the colon passage, and means for selectively opening or closing this first opening.

16. A catheter according to claim **15**, wherein the side opening includes a tube in communication with the interior of the first portion of the hollow tube, and extending outwardly from the hollow tube to form one of said limiting elements.

17. A system for facilitating removal and collection of waste colon material from the human body comprising:

an elongated hollow tube having a first open end and a second open end, and a lumen through the tube from the first open end to the second open end being of circular cross-section having a diameter of at least 10mm to facilitate the passage of solid waste colon material from the first end thereof to the second end thereof,

a pair of limiting elements attached to the outside of the said hollow tube between the first and second ends and extending outwardly in opposite directions from each other generally perpendicular to the axis of the tube to lie against the perinean fore and aft of the anal opening,

said tube including a first portion between the first open end and the limiting elements which includes the first end and which is insertable into the anal opening and a second portion from the limiting elements to the second open end, said first portion being of sufficiently stiff material to withstand the inward closing force of the anal sphincter muscles,

an annular expandable member fixed to and encircling the exterior of the first portion of the tube

from said first end to a point along the exterior of the first portion of the tube and constructed to be expanded outwardly to surround the exterior of the tube at the said first end to seal off the anal canal such that waste material can escape from the colon only into the first open end of the hollow tube, and therethrough to the second open end, said expandable member, when expanded extending outwardly from the first open end transversely relative to the axis of the tube to assist in guiding waste colon material into the said first open end, passage means for delivering pressurized fluid to the annular member to expand it after it is positioned in the anal canal,

the spacing along the exterior of the tube between the limiting elements and the expandable member being such that after the first portion of the tube has been inserted into the anal opening, and anal canal is sealed between the limiting elements and the annular expandable member to retain the first portion of the hollow tube in place and seal the anal opening,

and an enclosed container connected in a fluid sealed manner to the second open end of the hollow tube to receive and hold waste colon material discharging through the second open end of the hollow tube.

18. The system of claim **17,** said container being a plastic bag.

19. The system of claim **18,** wherein the plastic bag is transparent, and including an opaque bag covering this plastic bag.

20. The system of claim **19,** including an opening in the opaque bag to see therethrough to observe the plastic bag.

21. The system of claim **18,** said opaque bag including a flap extending out from the part thereof connected to the hollow tube, said flap being sufficiently large to enclose the hollow tube, and means for holding the flap about the hollow tube.

22. The system of claim **18,** including a gas release valve in the bag.

23. The system of claim **18,** including means for attaching the bag to a leg of the user.

24. The system of claim **18,** including an insertion obturator attached to the inside of the plastic bag.

25. The system of claim **18,** including a stiff collar to which the opening of the bag is connected, and means for snapping this collar into a fluid sealed position onto the second end of the tube.

26. The system according to claim **25,** including a tubular insert member having a first and second ends and a side opening into the tubular insert intermediate of its ends, the first end of this tubular insert connected in a fluid sealed manner to the second end of the hollow tube, an enclosed bag connected to the second end of this tubular insert in a fluid sealed manner, whereby waste colon material flowing through the hollow tube flows through the tubular insert and into the enclosed bag, and means for closing off this tubular insert between the side opening and the second end thereof, whereby the tubular insert can be closed off and an enema solution introduced through the side opening and through the hollow tube into the colon, and means for closing this side opening.

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