

[54] **SYSTEM AND APPARATUS FOR
LAVAGING THE LOWER INTESTINAL
TRACT**

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[58] Field of Search **128/227, 230, 229,**
128/224-226, 248, 240

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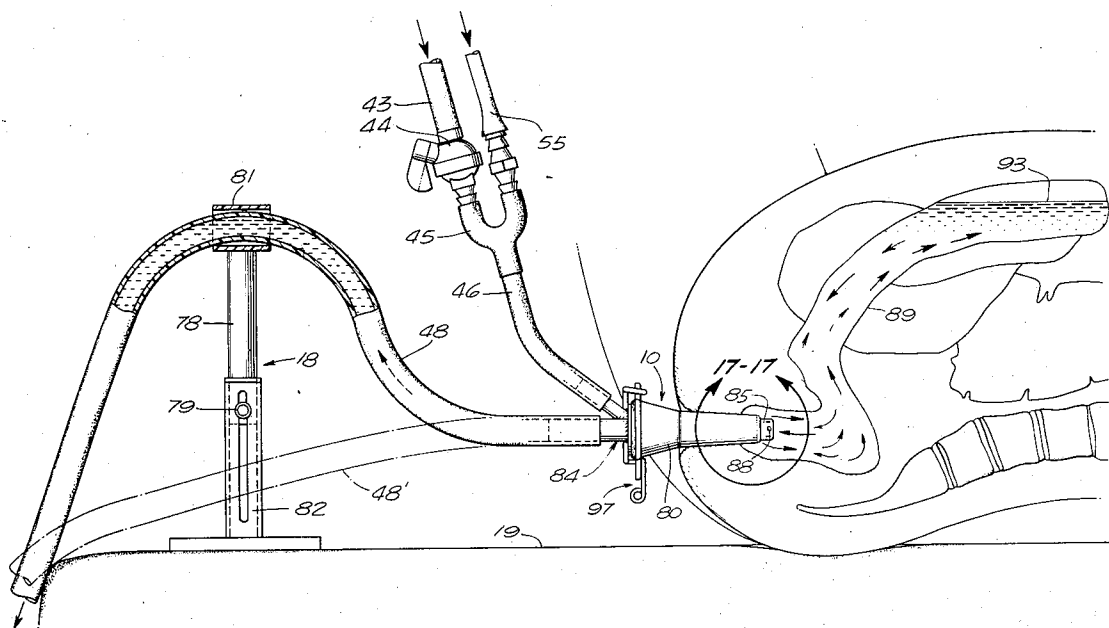
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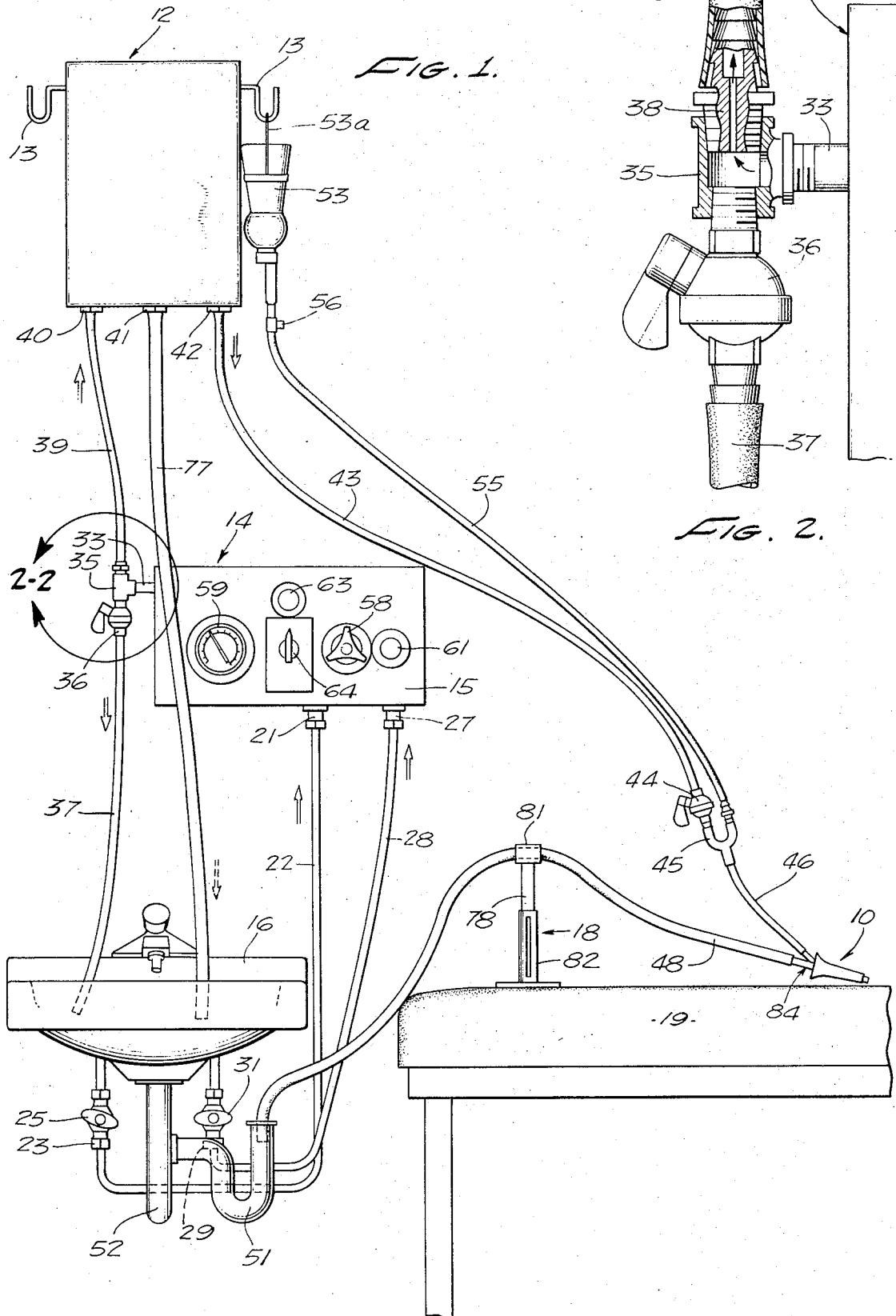
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[57] **ABSTRACT**

A system is disclosed which provides for lavaging the lower intestinal tract of a patient by the use of an instrument that is adapted to be inserted into the anal canal of a patient. The instrument is provided with an inlet passageway and an outlet passageway. Auxiliary apparatus is provided for controlling the supply of water flowing by way of inlet tubing into the inlet passageway of the instrument so that the water is introduced into the lower intestine with a negligible amount of force in order to insure the safety and comfort of the patient. Furthermore, discharge tubing on the outlet passageway of the instrument is held at a predetermined height by a water-level-regulator so that the inflowing water can be retained to penetrate the lower intestine at a desired height.

17 Claims, 17 Drawing Figures





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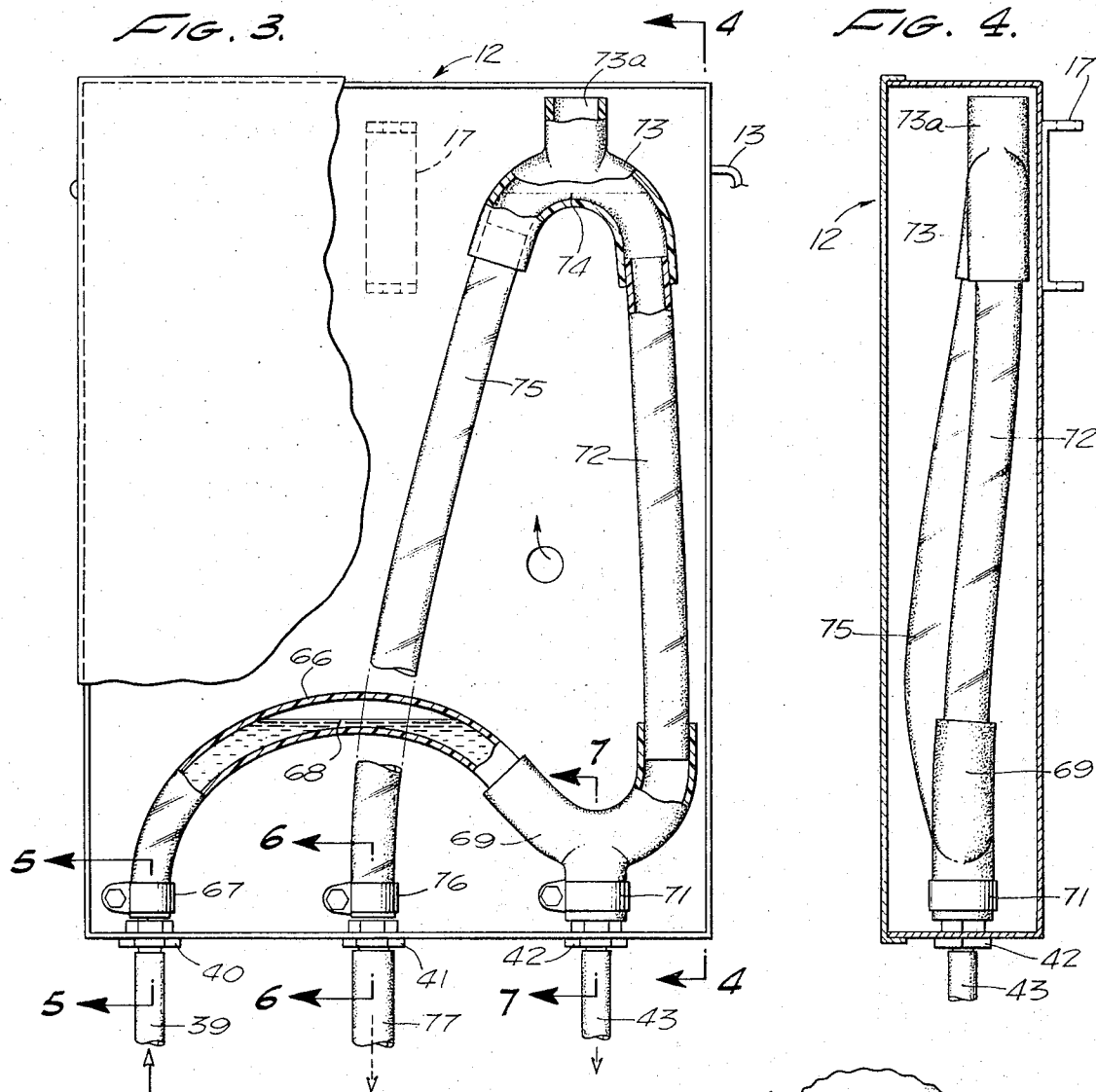
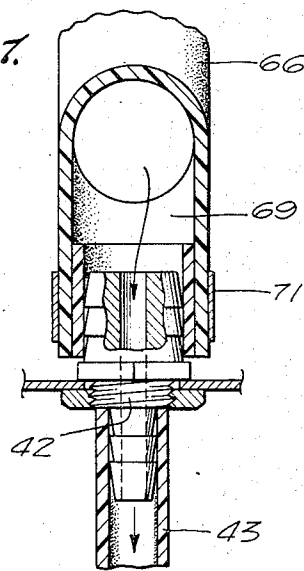
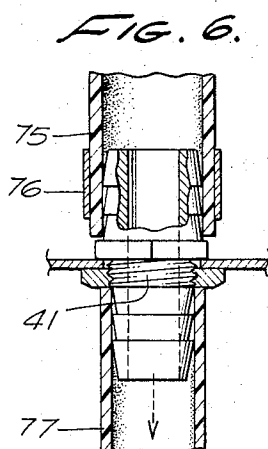
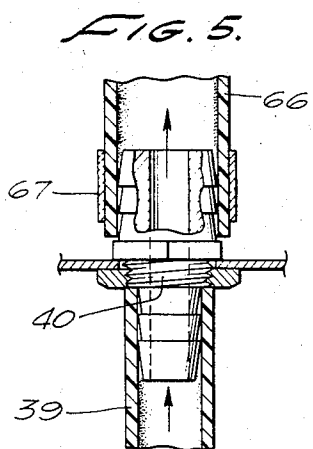
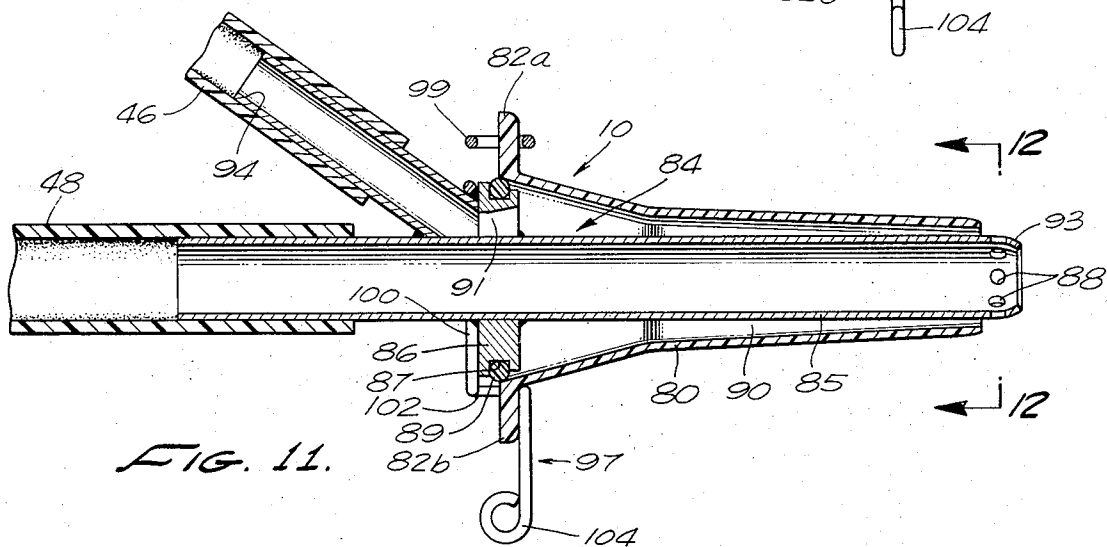
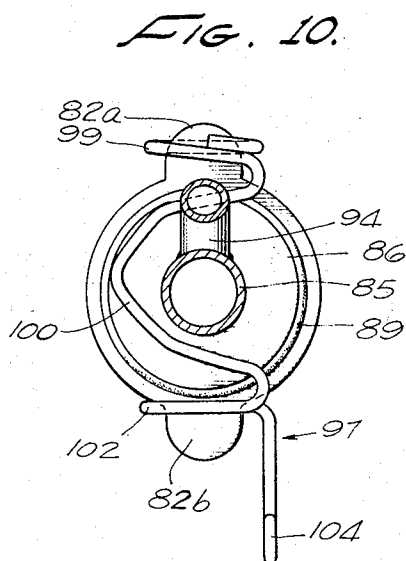
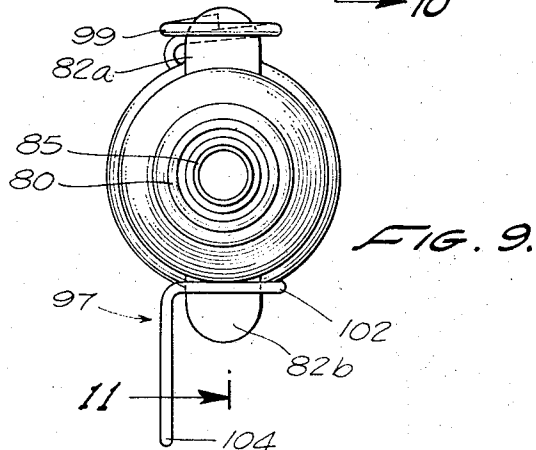
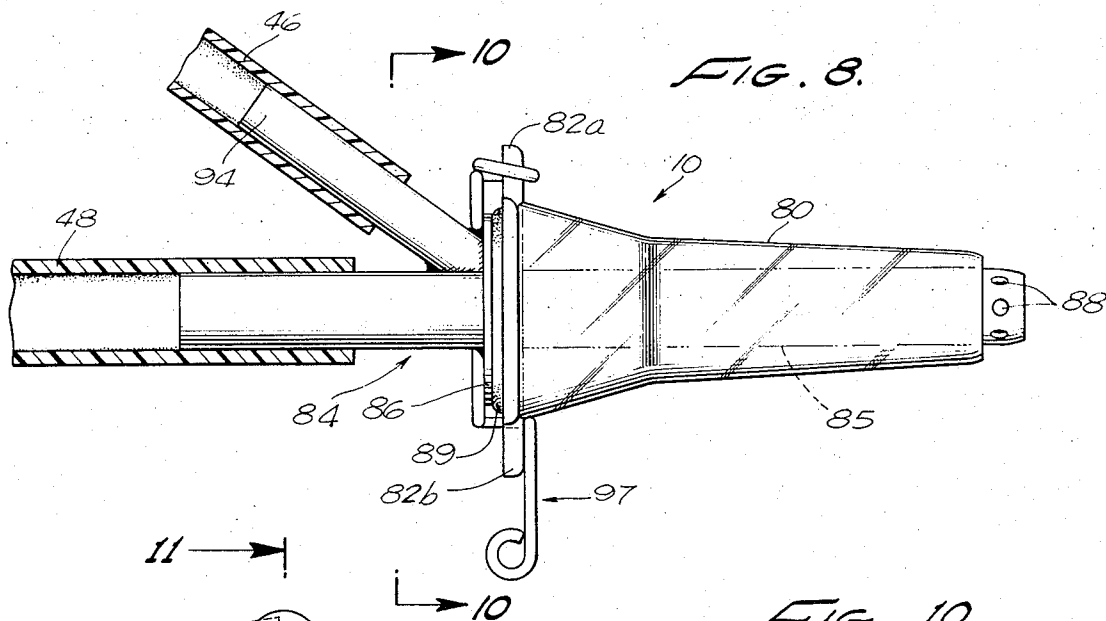
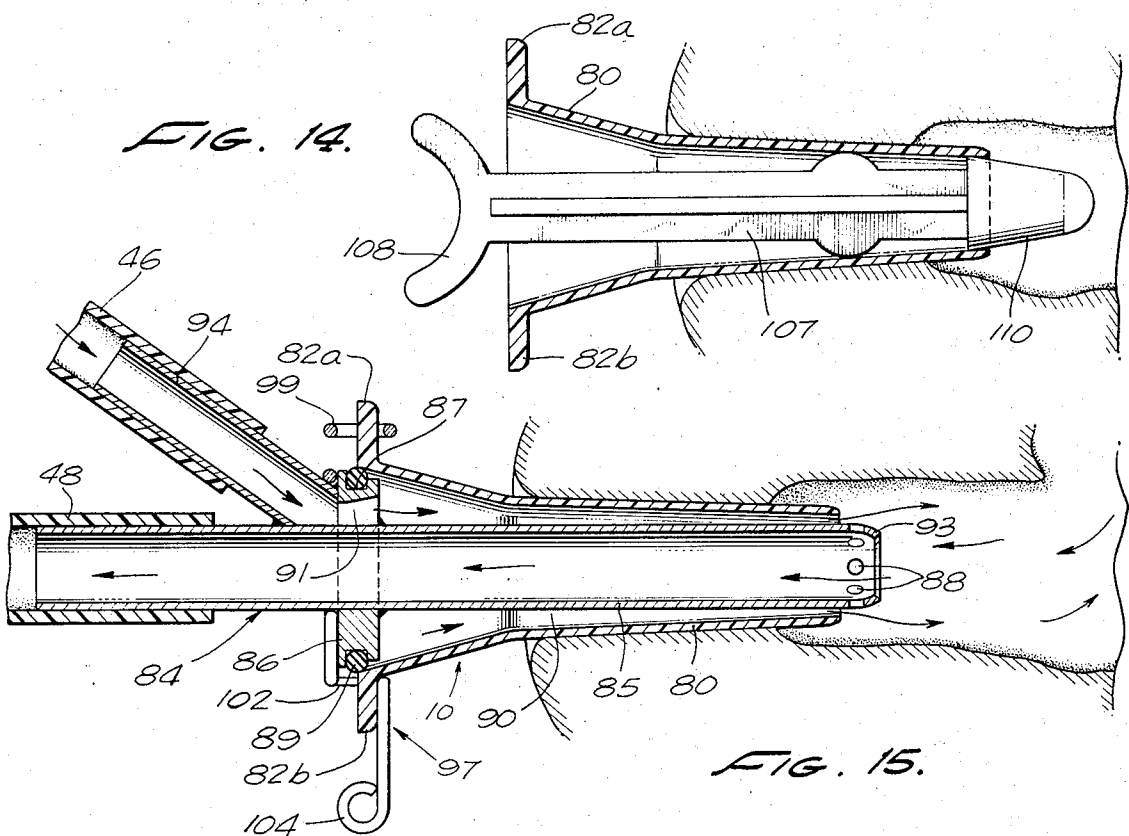
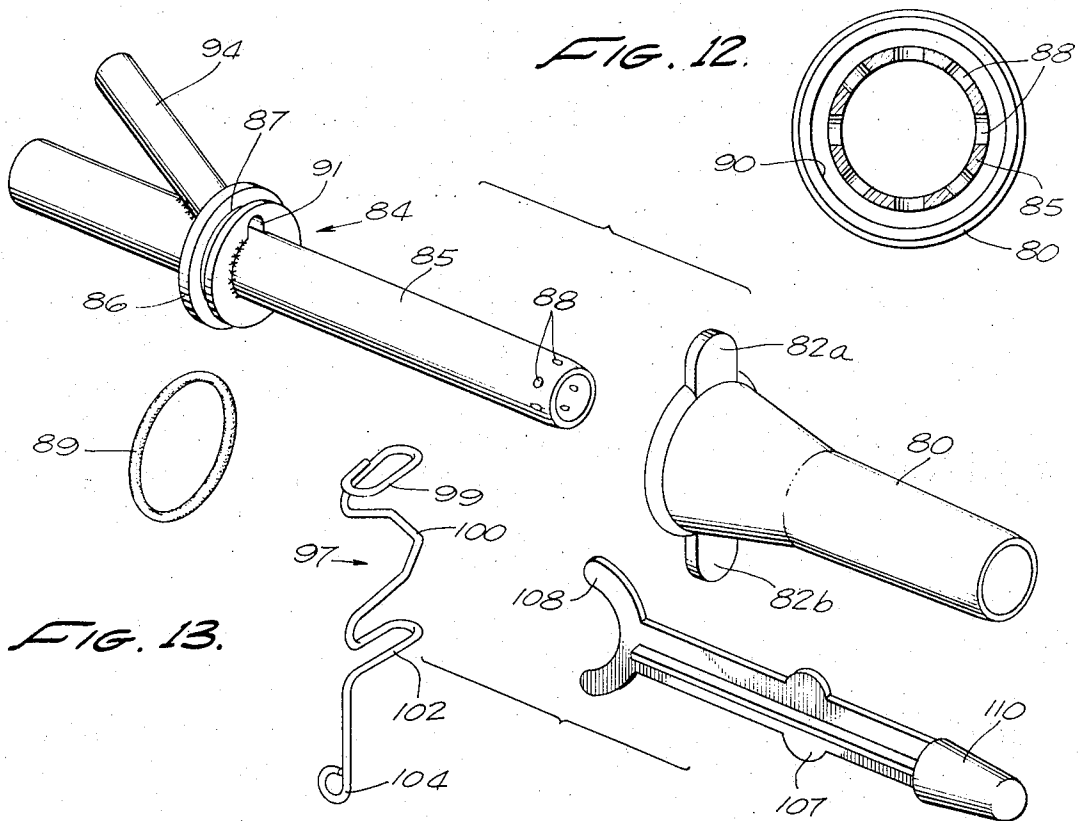
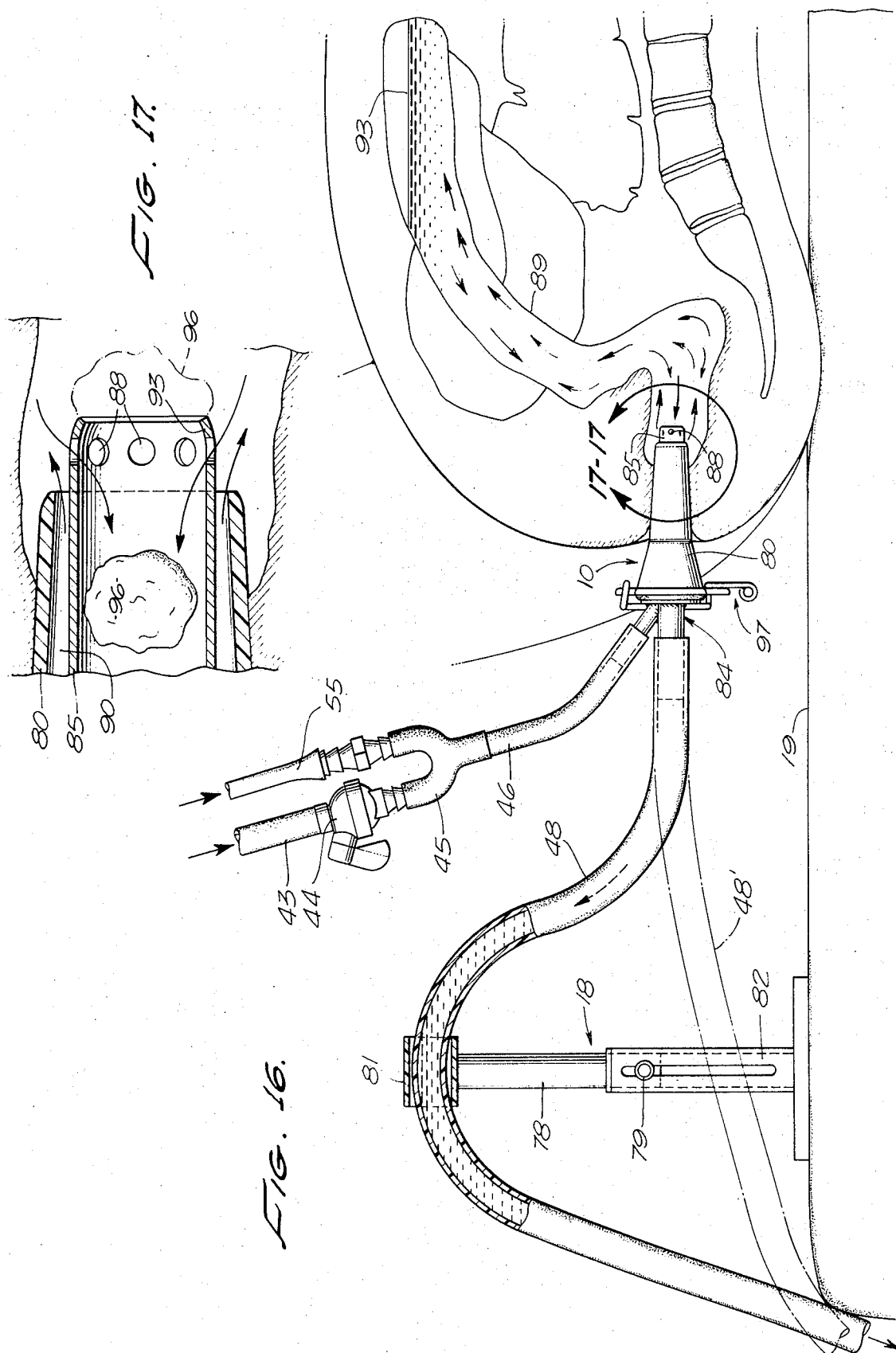


FIG. 1.









SYSTEM AND APPARATUS FOR LAVAGING THE LOWER INTESTINAL TRACT

This invention relates to medical equipment and more particularly to a novel system and apparatus for use as an aid in intestinal hygiene.

In the interest in the health and well being of a person there are times when the medical profession finds it is advisable to provide for assisting the cleansing of the lower intestinal tract by the injection of water into the anal canal of a patient. According to the usual practice, only the water from a single container is introduced in this manner into the body of the patient at any one time after being retained in the body for a short period of time, the water is then permitted to be discharged. Although such a treatment may be used for mild cases of disorders of the bowels, in severe cases a more thorough cleansing action is required to be effective.

Briefly, the system and method of the present invention includes an instrument which is adapted to be inserted in the anal canal and provides separate passageways into and out of the lower intestinal tract. A regulator is provided for controlling the temperature and rate of flow of water to a control means which provides for gently introducing the water into an inlet tube connected to the instrument. The water flows through the instrument at a steady rate if there is no obstruction to the flow otherwise the flow is diverted in the control means to a bypass tube leading to a drain. A water-level-regulator is provided for elevating a discharge tube connected to the instrument for the purpose of enabling the incoming water to fill the lower intestinal tract to a desired level.

More particularly, the instrument included in the system and method of the present invention comprises a generally elongated cylindrical speculum and a tubular insertion member provided with a central passageway. The size of the insertion member is such that when it is assembled within the speculum an annular passageway is formed between the interior wall of the speculum and the outer wall of the insertion member. Accordingly, when the instrument is positioned in the anal canal of a patient a steady flow of water can be introduced by way of the annular passageway into the lower intestinal tract wherein it mixes with the fecal accumulation therein causing it to be fluidized and then discharged out of the body by way of the central passageway of the instrument. Such an arrangement for lavaging the lower intestinal tract is very effective since the continuous flow of water can be safely and painlessly continued over a period of time as required without any risk of causing or aggravating any damage to the intestine.

Accordingly, one of the objects of the present invention is to provide a novel system and method for use in the lavaging and cleansing of the lower intestinal tract of a patient.

Another object of the invention is to provide a novel instrument for use by the medical profession which enables a steady stream of water to be passed into and fluidized matter to be passed out of the anal canal of a patient for the purpose of lavaging and cleansing the lower intestinal tract.

Another object of the invention is to provide for controlling the level to which a steady flow of water being introduced into the anal canal of the patient by way of an instrument can penetrate the ascending portion of the intestinal tract by controlling the height of a portion

of the length of a discharge tube attached to the outlet passageway of the instrument.

Another object of the invention is to provide for controlling a flow of water being introduced into the body of a patient by way of the anal canal such that the water enters the lower intestinal tract with a minimum of pressure and is immediately diverted into a bypass tube to a drain in response to any increase in resistance in the flow through the instrument thereby avoiding any possibility of harm or discomfort to the patient.

The foregoing objects and advantages of the present invention will become more readily apparent to those skilled in the art from the embodiment shown in the accompanying drawings and the following description. It is to be understood, however, that such embodiment is shown by way of illustration only to make the principle and practice of the invention more readily comprehensible and without intent of limiting the invention to the specific details therein shown.

THE DRAWINGS

FIG. 1 shows the overall lower intestine lavaging system of the present invention.

FIG. 2 shows a partly cross-sectional enlarged view of a tee fitting located within arrows 2—2 of the system of FIG. 1;

FIG. 3 is a view of a control cabinet for the system of FIG. 1 with a substantial portion of the front cover broken away to show the arrangement of the tubing enclosed therein;

FIG. 4 is a side view of the control cabinet as taken along lines 4—4 of FIG. 3;

FIG. 5 shows a cross-section of an inlet fitting for the control cabinet as taken along lines 5—5 of FIG. 3;

FIG. 6 shows a cross-section of an overflow outlet fitting for the control cabinet as taken along lines 6—6 of FIG. 3;

FIG. 7 shows a cross-section of an outlet fitting for the control cabinet as taken along lines 7—7 of FIG. 3;

FIG. 8 is a side view of a lavaging instrument for use in the system of the present invention;

FIG. 9 is an end view of the instrument shown in FIG. 8;

FIG. 10 is a view of the opposite end of the instrument as taken along lines 10—10 of FIG. 8;

FIG. 11 is a cross-sectional view of the instrument as taken along lines 11—11 of FIG. 9;

FIG. 12 is a cross-sectional view of the instrument as taken along lines 12—12 of FIG. 11;

FIG. 13 is an exploded perspective view of the components comprising the instrument shown in FIG. 8 together with an obdurator;

FIG. 14 is a view showing the obdurator assembled within the speculum of the instrument for enabling the latter to be positioned for use in the lower intestinal tract of the body;

FIG. 15 is a view similar to FIG. 14 showing the instrument positioned for use in the lower intestinal tract of the body;

FIG. 16 is a view illustrating the lavaging operation of the instrument while it is positioned in the lower intestinal tract of the body; and

FIG. 17 is an enlarged view illustrating the operation of the inner end of the instrument in discharging matter from the lower intestinal tract of the body.

FIG. 1 of the drawings shows the overall lower intestine lavaging system of the present invention as in-

stalled in a room. The equipment for the system includes a medical instrument 10 which is adapted to be inserted in the anal canal of a patient together with auxiliary apparatus and tubing required to supply water to the instrument 10 and to discharge water and fluidized matter passing out through the instrument.

The auxiliary apparatus of the equipment includes a control cabinet 12 which controls the force with which water flows into the instrument 10, a regulator 14 which controls the temperature and volume of the water supplied to the control cabinet 12, and a water-level-regulator 18 which controls the height to which the water entering the body by way of the instrument 10 is able to penetrate the ascending portion of the lower intestinal tract of the patient.

The equipment is installed in a room provided with a sink 16 and a table 19 on which the patient lies in a supine position to receive the intestinal lavaging treatment. The regulator 14 is mounted on the wall of the room above the sink 16 so that the knobs on the panel 15 thereof are readily available for manipulation by the operator of the equipment. The regulator 14 has a hot water inlet fitting 21 which is connected by a hose 22 to the hot water outlet 23 located beneath the sink 16 and a cold water inlet fitting 27 which is connected by a hose 28 to the cold water outlet 29 located beneath the sink 16. A hot water valve 25 and a cold water valve 31 are provided on their respective water outlets 23 and 29. The water is fed from the outlet 33 of the regulator 14 to a tee fitting 35. The lower outlet of the tee fitting 35 is connected by a valve 36 to a $\frac{3}{8}$ inch diameter bleeder hose 37 whose lower end is positioned in the basin of the sink 16.

As shown in FIG. 2, the upper outlet of the tee fitting 35 is provided with a nozzle 38 which is connected by a $\frac{3}{8}$ inch diameter flexible plastic tubing 39 to an inlet fitting 40 attached to the bottom wall of the control cabinet 12. The control cabinet is provided with a bracket 17 on the upper back wall thereof by which it is mounted above the regulator 14 and at a distance of approximately 42 inches from the top of the table 19. The water entering the control cabinet 12 from the regulator 14 is fed through an outlet fitting 42 attached to the bottom wall of the control cabinet 12 to a $\frac{1}{4}$ inch diameter flexible plastic tubing 43 which is connected by way of a valve 44 to one branch of a Y connector 45. The lower end of the stem of Y connector 45 is connected by a short length of $\frac{1}{4}$ inch diameter flexible plastic tubing 46 to the inlet of instrument 10 (FIG. 8) which is to be used for lavaging the lower intestine of a patient lying on the table 19. It should be noted that the control box 12 is provided with a hook 13 on either side thereof on which a gravity container 53 may be hung by a hanger 53a. The lower end of the container 53 is connected by a drip tube 55 to the other branch of the Y connector 45. A valve 56 in the drip tube 55 controls the passing of medication from the container 53 through the drip tube 55, the Y connector 45 and the tubing 46 leading into the instrument 10.

A flexible plastic discharge tubing 48 having a diameter of $\frac{9}{16}$ inch is connected to the outlet of the instrument 10. The terminal end of the discharge tubing 48 is loosely inserted into the opening of the vertically disposed portion of a trap 51 which is connected to the drain 52 of the sink 16. The trap 51 is located below the top of the table 19 and open to the atmosphere. An intermediate portion of the continuous length of dis-

charge tubing 48 is held at a predetermined height relative to the table 19 by passing through a holder 81 on the upper end of an adjustable post 78 of a water-level-regulator 18 supported on the top of table 19. The purpose of the water-level-regulator 18 is to regulate the height of the water level reached in the lower intestinal tract of the patient so as to enable the water introduced by way of instrument 10 to penetrate into the ascending portion of the colon in order to saturate old impacted matter therein and convert it to a more readily ejectable fluid state. It should be understood that the water-level-regulator 18 enables the inflow of water to reach into the entire large bowel without need for pressurizing the water.

The water entering the control cabinet 12 is regulated by the knobs on the regulator panel 15. A knob 58 provides for mixing the portion of hot and cold water received by the regulator 14 through its inlet fittings 21 and 27 so that a thermometer gage 59 indicates the desired temperature of the water being supplied by way of control cabinet 12 to the instrument 10. In a typical application the temperature of the water would preferably be set to 95 degrees Fahrenheit. A volume control knob 61 on the panel 15 is adjusted to provide for a water flow of approximately one-half gallon per minute through the instrument 10. An on-off knob 63 operates a valve which controls the flow of water out of the regulator 14 in accordance with the settings of knobs 58 and 61. The regulator 14 maintains a constant delivery temperature and flow rate despite supply line fluctuations. Inasmuch as it is advisable for the safety and comfort of the patient to always have an operator remain within hearing distance of the patient during the lavaging operation, a timer 64 may be set to ring a bell to alert the operator at the end of a preselected period of time.

In a typical installation the water being supplied from beneath the sink 16 to the regulator 14 may be at a pressure of 50 pounds per square inch, for example. The present lavaging system provides for the water flowing into the instrument 10 to be at a minimum pressure, on the order of only a few ounces of water weight, for the safety and comfort of the patient. Accordingly, as shown in FIG. 2, the water pressure of the water flowing out of the regulator 14 is lowered on passing through the restriction of nozzle 38 connected to the tee fitting 35 such that it is supplied by tubing 39 to the inlet fitting 40 of the control cabinet 12 at substantially atmospheric pressure.

The operation of the control cabinet 12 and the arrangement of the tubing therein will next be described in connection with FIGS. 3 to 7. The purpose of the control cabinet 12 is to supply a continuous flow of water at a relatively safe pressure to the instrument 10 for the purpose of lavaging the lower intestine without causing any discomfort to the patient due to pressure or velocity of the flow. Thus, upon entering the inlet fitting 40 of the control cabinet 12, the incoming water, which is at substantially atmospheric pressure, flows into a flexible plastic tube 66 (FIG. 3) having its entrance end connected by a stainless steel band clamp 67 to the upper end of the inlet fitting 40. The intermediate portion of tube 66 is curved upwardly and its downwardly turned exit end is connected to one branch of a Y connector 69 whose lower stem end is secured by a clamp 71 to the upper end of the outlet fitting 42 of the control cabinet 12. The other branch of the Y

connector 69 is connected to a vertically disposed $\frac{3}{4}$ inch diameter plastic tube 72, the upper end of which is connected to a branch of an inverted Y connector 73 disposed within the upper portion of the cabinet 12. It should be noted that the inverted Y connector 73 has the upwardly oriented opening 73a in its stem exposed to the atmospheric pressure. The other branch of the Y connector 73 is connected by a plastic tube 75 to a bypass outlet fitting 41 attached to the bottom wall of the control cabinet 12. The lower end of the bypass tube 75 is secured to the upper end of the fitting 41 by a clamp 76. The lower end of the fitting 41 is provided with a $\frac{1}{2}$ inch diameter drain hose 77 which extends down into the basin of the sink 16. As previously described, the tubing 43 connects the outlet fitting 42 of the control cabinet 12 to one branch of the Y connector 45, the lower end of which is connected by the inlet tubing 46 to the instrument 10.

The controlling of the water flow by the control cabinet 12 commences when the valve 36 on the tee fitting 35 on the output of the regulator 14 is closed in which event the water will be shut off in the bleeder hose 37 and will proceed up through tubing 39 into the control cabinet 12. Thus, the water inflow by way of inlet fitting 40 into the control cabinet 12 fills the upwardly curved tube 66. Since the incoming water has had its pressure dissipated upon passing through the nozzle 38 in the tee fitting 35 it is substantially at atmospheric pressure. Thus when the water in the curved tube 66 reaches the level of overflow at point 68 it, in effect, spills over into the Y connector 69 and through the outlet fitting 42 into the outlet tubing 43. Thus the force of water applied at the entrance of the instrument 10 which is positioned in the lower intestinal tract of the patient is approximately equal to the weight of the water in the 42 inch length of $\frac{1}{4}$ inch diameter tubing 43 which is on the order of 4 ounces of water.

In the event that the working pressure resistance to the water flow into the instrument 10 increases above the four ounce pressure, the water flowing through tube 66 into the Y connector 69 from the inlet fitting 40 is diverted from flowing into the tubing 43 and instead flows into the $\frac{3}{4}$ inch diameter vertical tube 72 wherein the water builds up to a pressure of approximately 6 ounces of water if the resistance to flow through outlet fitting 42 is not relieved. The water overflow in tube 72 upon reaching the peak resistance point 74 flows over and out of the exit branch of the Y connector 73 to pass freely through bypass tube 75, the bypass outlet fitting 41, the drain hose 77, and thence to the drain in the sink 16. This bypass flow into hose 77 continues until such time as the resistance of the water flow in the path through outlet fitting 42 is reduced to enable the water to again flow through the instrument 10.

Referring next to FIGS. 8 to 13, the instrument 10 of the present invention will be described. The instrument comprises a thin walled speculum 30 having a substantially frusto-conical surface. The speculum is preferably formed of plastic material. The larger diameter proximal end of the speculum 80 is provided with radially extending tabs 82a and 82b on diametrically opposed sides thereof.

A stainless steel insertion member 84 is adapted to be positioned within the speculum 80. The member 84 comprises a tubular body 85 with a large diameter flange 86 that is attached to the tubular body 85 a sub-

stantial distance back from the distal end thereof, as best shown in FIG. 13. The flange 86 is formed with a groove 87 about the outer periphery thereof in which a rubber gasket 89 is securely held. An opening 91 is provided through the flange 86 adjacent the outer surface of the tubular body 85. An angularly disposed side inlet tube 94 has its end welded to the outer flat surface of the flange 86 and in such a manner that the opening of the inlet tube 94 is aligned with the opening 91 in the flange. The distal end portion of the insertion member 84 is formed with radially spaced circular openings 88.

The size of the cylindrical speculum 80 is such that when the tubular body 85 of the insertion member 84 is centrally positioned therein an annular passageway 90 (FIG. 11) is provided between the outer wall of the tubular body 85 thereof and the inner wall of the speculum 80. The tubular body 85 is axially inserted into the speculum 80 until the gasket 89 on the outer edge of its flange 86 is seated within the circular proximal end of the speculum 80 to provide a sealed engaging surface. When so positioned, the end portion of the tubular body 85 of the insertion member 84 which is provided with the openings 88 extends beyond the end of the speculum 80.

A wire fastener 97 is provided for clamping the circular end-wall 86 of the insertion member 84 with its gasket 89 in sealing engagement against the proximal end of the speculum 80. As shown in FIGS. 10 and 13, the wire fastener 97 is formed with a closed loop 99 on one end thereof which fits over one of the tabs 82a on the speculum 80. The wire compressing fastener 97 is then formed with a portion 100 which lies against the outer surface of the flange 86 and is bent to be positioned about the tubular body 85 and the angularly disposed inlet tube 94. The wire forming fastener 97 then continues on to form an open loop 192 which fits over the other tab 82b on the proximal end of the speculum 80. The remaining end portion of the wire forming fastener 97 is then bent radially outwardly to form a handle 104 which can be used to position the fastener 97 so that its open loop 102 is fitted onto the tab 82b. Rotating of the insertion member 84 within the speculum 80 until the inlet tube 94 on the flange 86 contacts the inside edge of the open loop 102 of the fastener 97 provides for locking the speculum 80 and the insertion member together with a tight fit. The wire fastener 97 is thus used to assure the sealing of the insertion member 84 on the end of the speculum 80 so as to prevent the leakage of the water being introduced by inlet tube 94 into the annular passageway 90 of the instrument 10.

In use, the distal end of the speculum 80 is inserted into the rectal canal of the patient lying on the table 19. In order to decrease the discomfort and possible pain of the patient, and to avoid possible damaging of the interior walls of the intestinal tract, it is preferably to use an obturator 107 in combination with the speculum 80, as shown in FIG. 14, to facilitate the inserting of the distal end of the speculum 80 into the body of the patient. The obturator 107 is provided on its end with a tapered, round, exterior portion 110 which is adapted for insertion from the proximal end of the speculum 80 through the hollow interior to extend through the distal end thereof.

After the assembly comprising speculum 80 with the obturator 107 is inserted into the body of the patient, the obturator 107 is then removed from the speculum by use of the handle 108 on its proximal end and the

insertion member 84 inserted in its place within the speculum 80 as shown in FIG. 15. The member 84 is then clamped in position within the speculum 80 by means of the wire fastener 97 engaging the tabs 82a and 82b as previously described. With the instrument 10 in position on the body, the discharge tubing 48 is then connected to the proximal end of the tubular body 85 and the inlet tubing 46 is then connected to the angular inlet tubing 94 of the insertion member 84. The valve 44 is then opened to permit the supply water provided by the control cabinet 12 to enter as a continuous stream through the annular passageway 90 of the speculum 80 surrounding the tubular body 85 of the insertion member 84 and into the lower intestinal tract of the patient wherein the water loosens and mixes with fecal accumulation therein and is then discharged out through the center of the tubular body 85 of the insertion member 84 and by way of the discharge tubing 48 into the drain 51 below sink 16.

Referring to FIGS. 16 and 17, the openings 88 on the end portion of the tubular body 85 assure that the fluidized matter in the intestinal tract can be readily discharged therefrom even though the open distal end of the tubular body 85 may be clogged by discharge matter. Thus in the event that the end of the tubular body 85 should become plugged with discharge matter 96 during the lavaging operation, the openings 88 provide pressure relief by allowing inflowing water to pass out of the instrument 10 ahead of the point of obstruction on the end of the tubular body 85 thereof. The openings 88 thus prevent the build up of water in the lower intestine insuring patient comfort. As illustrated by the detail showing in FIG. 17, the inwardly curved, reduced diameter distal end 93 of the tubular body 85 serves to cut the saturated fecal matter 96 to smaller diameter for easy passage out once it enters the tubular body 85. Furthermore, the smooth outer surface on the end 93 of the tubular body 85 eases the insertion of the tubular body 85 into the anal canal and the withdrawal therefrom by way of the speculum 80.

In the operation of the equipment after the instrument 10 has been inserted into the body of the patient, and the instrument 10 has been hooked up to the inlet tubing 46 and the discharge tubing 48, the equipment is then ready to be placed in operation. Initially the bleeder hose valve 36 is opened to the drain and the valve 44 controlling the flow of water to the instrument 10 is closed. The valves 25 and 31 beneath the sink 16 are then opened to supply the water to the regulator 14. Following this the mixture control knob 58 is then adjusted until the temperature gage 59 indicates that the desired temperature of the water is available. The volume control knob 61 is then adjusted to provide the desired volume of flow which has been determined to be desirable for the lavaging operation. Such a volume flow is typically one-half gallon per minute. After the knobs 58 and 61 have been adjusted, the on-off knob 63 is then set to the "on" position and the bleeder valve 36 is closed causing the water to flow through tubing 39 into the control cabinet 12 wherein it essentially spills out of the curved tube 66 into the outlet tubing 43. However, since the valve 44 is still closed the restriction causes the water flowing into the control cabinet 12 to rise into the vertical tube 72 and spill into the bypass tube 75 and the drain hose 77 to the drain in the sink 16. Because of the importance of operating the system of the present invention so that the water flow-

ing into the instrument 10 is at atmospheric pressure except for the few ounces of weight of the water in the tubing connecting the control cabinet 12 to the instrument 10, the control cabinet 12 should be installed and maintained in a plumb position and preferably closed at all times to assure that no one can tamper with its operation.

In order to start the lavaging operation the timer on the regulator panel 15 is set for a desired length of time and the valve 44 is opened to enable the water to start flowing through the instrument 10 into the lower intestinal tract of the patient as shown in FIG. 16. The water continues to flow into the intestinal tract of the patient at a steady rate. If at any time the inlet flow of water meets too high a resistance it builds up in the vertical tube 72 of the control cabinet 12 and is drained out of the system by way of hose 77, otherwise it continues to flow into the intestinal tract by way of the instrument 10. In any event the force of the water flowing into the instrument 10 is never more than 6 ounces of water weight.

The means for regulating the water flow such that the water will reach a desired level in the large intestine is by use of the water-level-regulator 18. If the water-level-regulator is not used and the discharge tubing 48 is in the lowered position indicated by 48' in FIG. 16, the inflow of water does not build up in the lower intestine of the patient since it can immediately discharge out through the tubing 48' into the drain 52. Thus, in order to retain the water in the body, the operator sets the adjustable post 78 relative to the stand 82 of the water-level-regulator 18 and secures the post 78 in position by tightening screw 79. As shown in FIG. 16, the holder 81 on the upper end of post 78 of the regulator 18 supports the discharge tubing 48 at the same height as the abdomen of the patient lying on the table 19. Thus the water-level-regulator 18 is used to elevate the discharge tubing 48 so that the water flowing into the intestine 89 will gradually build up to the level at which the discharge tubing 48 is held without causing any undue pressure on the intestine of the patient. When the water within the intestinal tract reaches the same level 93 at which the water-level-regulator 18 supports the discharge tubing 48, as shown in FIG. 16, the internal and external pressures are equalized resulting in the water flowing out of the instrument 10 equaling the water flowing into the instrument. Thus, the water can build up in the intestine to saturate the waste matter enabling it to become fluidized so that it can be easily evacuated as a result of the natural peristaltic action of the bowel. The fluidized matter is thus passed out of the instrument 10, through to the elevated portion of the discharge tube 48 and down the terminal portion of the discharge tube to the drain. Occasionally the continuous passage of the fluidized matter out through the instrument may be momentarily interrupted. When this occurs the inertia of the flow down through the terminal portion of the discharge tube 48 creates a syphoning action at the outlet of the instrument 10 which helps to relieve the momentary blockage of the flow.

After the system has been in operation for the desired time and full saturation and fluidization of the matter in the lower intestine has been attained, the discharge tubing 48 is lowered to position 48' as shown in FIG. 16 to assist in the flushing action. It should be understood that the system of the present invention does not induce bowel movements in a patient being treated but

only provides a lavaging action which is designed to remove the obstruction to the natural bowel movements.

It should now be clearly understood from the above description that with the use of the present system a steady flow of substantially unpressurized water can be safely administered into and discharged from the body of a patient for a period of time of as much as half an hour or more as needed to lavage and cleanse the lower intestinal tract without causing a large amount of discomfort to the patient. Furthermore, the water is used as a solvent only and the system of the present invention does not rely on or use any water pressure to effect the lavaging operation. It should be noted that by use of the valve 56 the gravity flow container 53 can be controlled by the operator to administer drip medication to the patient before, during, or after the lavaging treatment, as medically prescribed.

From the above description it will be apparent that there is provided a system of the character described possessing the particular features of advantage before enumerated as desirable but which obviously is susceptible of modification in its form, proportions, detailed construction and arrangement of parts without departing from the principles involved or sacrificing any of its advantages.

While in order to comply with the statute the invention has been described in language more or less specific as to structural features, it is to be understood that the invention is not limited to the specific features shown but that the means and construction herein disclosed comprise a preferred form of putting the invention into effect and the invention is therefore claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

What is claimed is:

1. A system for lavaging the lower intestinal track comprising apparatus including:

a thin walled speculum having substantially frusto-conical inner and outer wall surfaces with tabs at the larger end,

a removable obturator for extending through and from the smaller end of the speculum that is removable from the speculum after insertion of the speculum in the anal canal,

a hollow tubular insert member having an outside diameter less than the inside diameter of said speculum and positioned within said speculum after anal insertion of the speculum so as to form an annular passageway and a central passageway through said instrument,

said annular passageway having an inlet means to provide for a flow of water into the lower intestinal tract,

said central passageway providing the outlet for discharge from the lower intestinal tract, and

fastener means engaging said insert member and said tabs for attaching said insert member to said speculum and maintaining said insert member at a predetermined fixed position relative to said speculum.

2. The invention in accordance with claim 1 wherein one end portion of the wall of the tubular insert member extends beyond the end of said speculum and is provided with bypass openings.

3. The invention in accordance with claim 1 wherein said speculum has a circular base opening, said tubular insert member is provided with a flange having an opening therethrough, and a sealing gas-

ket secured about the periphery of said flange, and said fastener means clamps said tubular insert member in said speculum with the sealing gasket in contact with the circular base opening of the speculum so as to provide a water tight fit and with the opening in said flange aligned with the annular passageway through the instrument.

4. The invention in accordance with claim 3 wherein wherein said fastener means includes a wire fastener provided with a pair of spaced loops,

said fastener means providing for clamping said flange against the circular base opening of said speculum by engaging said tabs with said loops.

5. The invention in accordance with claim 1 wherein said tubular insert member includes a tubular body, a flange attached to the tubular body, said flange having an opening therethrough, and an angularly disposed input tube secured to said flange in line with said opening.

6. A system according to claim 1 wherein the hollow interior of the insert member serves as the central passageway providing the outlet for discharge with one end of the insert member being connected to a drain and the other end portion of the insert member having a smooth outer surface which extends beyond the end of the speculum.

7. A system according to claim 1 wherein the hollow interior of the insert member serves as the central passageway providing the outlet for discharge with one end of the insert member connected to a drain and the other end portion of the insert member having a reduced diameter end opening and perforations in the peripheral wall, said other end portion extending beyond the end of the speculum so that discharge liquid can pass through the perforations in the event of blockage of the reduced diameter end opening.

8. A system according to claim 1 wherein the insert member is of metal and is provided with a flange member attached to a central portion of said insert member in a liquid tight manner, an inlet tube permanently secured to the walls of said flange member and said insert member, there being an aperture in said flange member at the location of said inlet tube thereby to connect the inlet tube to said annular passageway, and sealing means around the periphery of said flange member for providing a liquid tight connection with the inner wall of said speculum.

9. A system for lavaging the lower intestinal tract comprising:

an instrument including

a thin walled speculum having a substantially frusto-conical surface, and

a tubular insert member having an outside diameter less than the inside diameter of said speculum and positioned within the speculum so as to form an annular passageway and a central passageway through said instrument, said annular passageway providing the inlet for a flow of water into the lower intestinal tract, and said central passageway providing the outlet for discharge from the lower intestinal tract;

a length of input tube connected to the annular passageway of said instrument, the entrance end of the input tube being at a predetermined elevation above said instrument; and

control means for controlling the supply water being fed into the input tube so that the force with which

the water enters the instrument is equal to the weight of the water in the input tube, said control means including:

- a Y connector having its stem connected to the inlet tube of the instrument,
- an incoming tube connecting the output of a water temperature regulator to one branch of the Y connector,
- an inverted Y connector having its stem open to the atmosphere,
- a vertical tube connecting the other branch of the Y connector to one branch of the inverted Y connector, and
- a by-pass tube connecting the other branch of the inverted Y connector to a drain.

10. In a system for lavaging the lower intestinal tract, an instrument comprising:

- a thin walled speculum having substantially frusto-conical inner and outer wall surfaces with tabs at the end having the larger diameter;
- a removable obturator for extending through and from the smaller end of the speculum that is removable from the speculum after insertion of the speculum in the anal canal;
- a hollow tubular insert member having an outside diameter smaller than the inside diameter of the speculum and positioned within said speculum after anal insertion of the speculum so as to form an annular passageway and a central passageway through the instrument;
- a flange member sealingly secured to said tubular insert member and having means for sealingly engaging the inner wall surface of the speculum at said large diameter end;
- fastener means engaging said flange member and said tabs for attaching said tubular insert member to said speculum and maintaining said insert member at a predetermined fixed position relative to said speculum.

11. The system according to claim 10 further including an inlet tube permanently secured to the walls of said flange member and said insert member, there being an aperture in said flange member at the location of said inlet tube thereby to connect the inlet tube to said annular passageway.

12. A system according to claim 10 wherein the hollow interior of the insert member serves as the central passageway providing the outlet for discharge with one end of the insert member being connected to a drain and the other end portion of the insert member having a smooth outer surface which extends beyond the end of the speculum.

13. A system according to claim 10 wherein the hollow interior of the insert member serves as the central passageway providing the outlet for discharge with one end of the insert member connected to a drain and the other end portion of the insert member having a reduced diameter end opening and perforations in the peripheral wall, said other end portion extending beyond the end of the speculum so that discharge liquid can pass through the perforations in the event of blockage of the reduced diameter end opening.

14. A system for lavaging the lower intestinal tract comprising:

- a supply of continuously flowing fluid at a controlled pressure;

an open drain for continuously receiving discharge fluid;

an insert member comprising a hollow metal tube, a flange sealingly secured to surround a central portion of the insert member, and an inlet tube attached to the walls of said flange and said metal tube, there being an aperture in said flange at the juncture of the inlet tube and the flange;

means connecting the inlet tube to said fluid supply; means connecting one end of the hollow metal tube to said drain;

a hollow speculum adapted for insertion into the anal canal having an inside opening larger than the exterior dimensions of said hollow metal pipe;

a sealing member positioned around the periphery of said flange; and

fastener means for attaching said insert member to said speculum after the speculum has been inserted into said anal canal to provide a passageway for the inlet flow of fluid defined by the outer surface of said hollow metal tube and the inner surface of said speculum.

15. The system of claim 14 wherein the other end of said hollow metal tube has an end portion which extends into the anal canal beyond the end of the speculum, said end portion having a reduced diameter end opening and perforations in the peripheral wall in the end portion extending beyond the end of the speculum to allow discharge fluid to pass through the perforations in the event of blockage of the reduced diameter end opening.

16. In a method for lavaging the lower intestinal tract comprising:

providing a supply of continuously flowing fluid at a controlled pressure to an inlet pipe;

providing an insert member comprising a hollow tube having a flange sealingly secured to surround a central portion thereof, there being an aperture in said flange, and said inlet pipe is attached to said flange at said aperture;

inserting a speculum having a hollow interior and an obturator into an anal canal;

removing the obturator;

thereafter inserting said insert member into said speculum and attaching said insert member in a fluid tight manner to said speculum so that one end of said hollow tube extends into the anal canal to provide a central discharge channel and the inlet pipe is connected to the anal canal by the passageway between the outside walls of said hollow tube and the inside walls of said speculum; and

connecting the other end of said hollow tube to a drain.

17. In a method for lavaging the lower intestinal tract comprising:

providing a supply of continuously flowing fluid to an inlet pipe having a pressure controlled not to exceed a predetermined value;

providing an insert member of a metal material comprising a hollow tube having a flange sealingly secured to surround a central portion thereof, there being an aperture in said flange, and said inlet pipe is attached to said flange at said aperture;

providing a thin walled speculum of a plastic material having substantially frusto-conical inner and outer wall surfaces with tabs at the end having the larger diameter, and an obturator;

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inserting said speculum and obturator into an anal canal;
 removing the obturator from the speculum while the speculum remains in the anal canal;
 thereafter inserting said insert member into said speculum to be in a fluid tight relationship with the inner walls of said speculum so that one end of said hollow tube extends beyond the end of the speculum into the anal canal to provide a central discharge channel and the inlet pipe is connected to

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the anal canal by the passageway between the outside walls of said hollow tube and the inside walls of said speculum;
 connecting the other end of said hollow tube to a drain; and
 securing said insert member to said speculum by attaching a fastener which engages said flange to the tabs on said speculum.

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