United States Patent [19]

Brown

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[54] TUBULAR INSTRUMENT

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[52] **U.S. Cl.** **128/4**
[51] **Int. Cl.** **A61b 1/00**
[58] **Field of Search** 128/3, 4, 5, 6, 7, 8, 172

[56] **References Cited**

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[57] **ABSTRACT**

A tubular proctoscope or sigmoidoscope instrument for insertion into a body cavity, such as the rectum or sigmoid colon, with such instrument having a plurality of circumferentially spaced conduits disposed in or adjacent the wall of the tubular instrument so as not to obstruct the main passage therethrough. Some of the conduits are provided for discharging water or other fluids adjacent the tip of said instrument and others of the circumferentially spaced conduits have inlets adjacent the tip of the instrument and are connected to an aspiration device for removing fluid or fecal matter from such body cavity during examination and treatment with the instrument.

1 Claim, 3 Drawing Figures

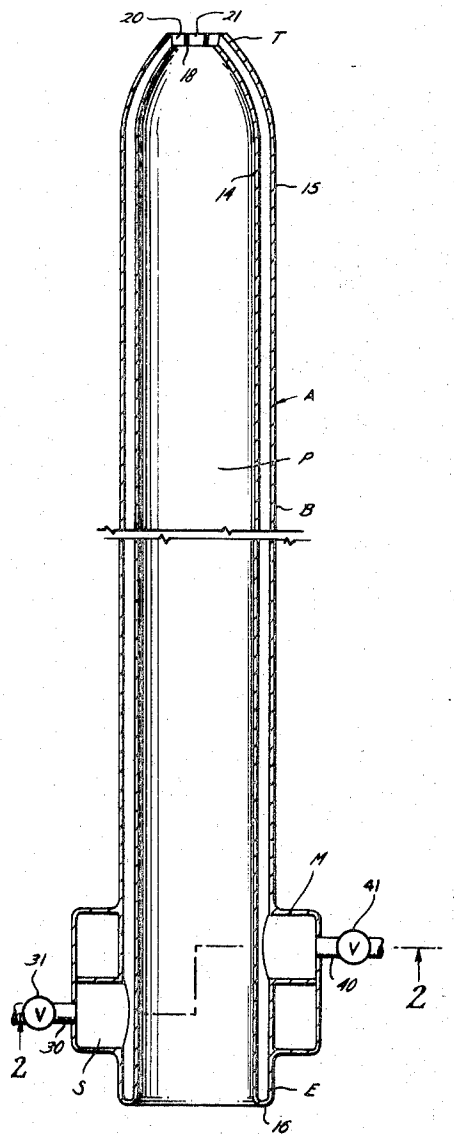


Fig. 1

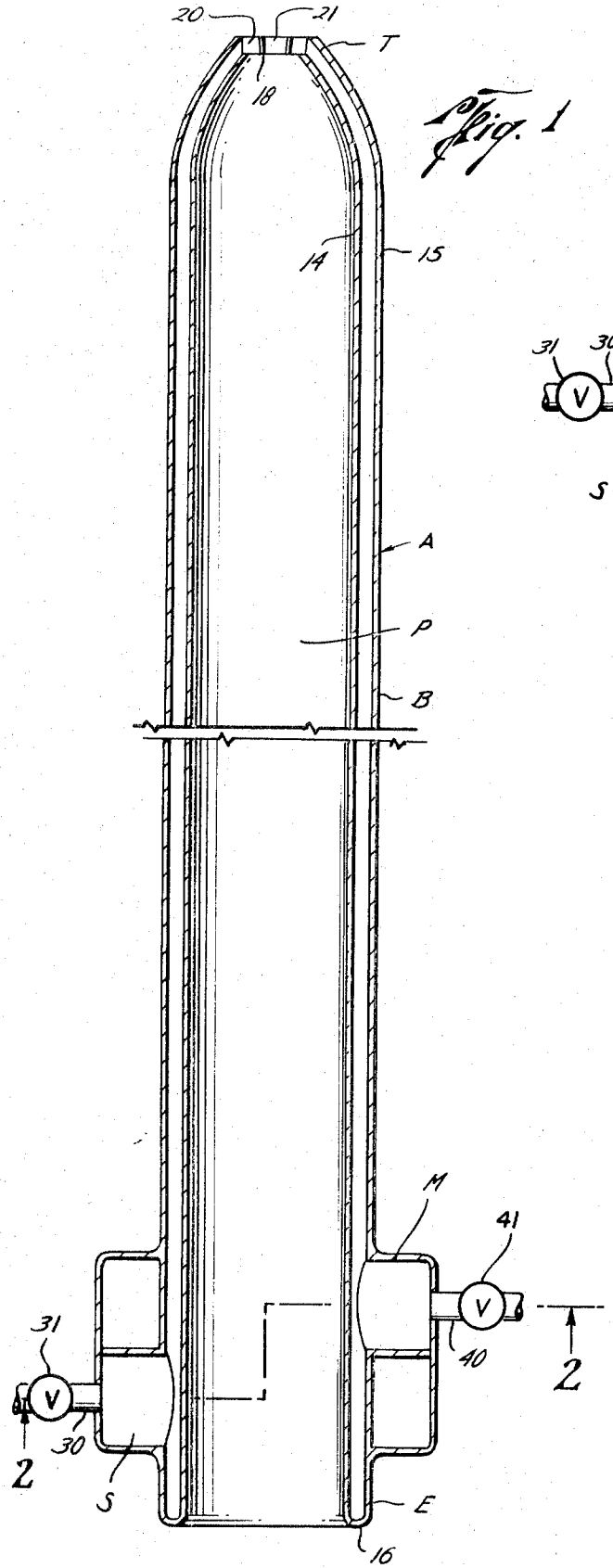


Fig. 2

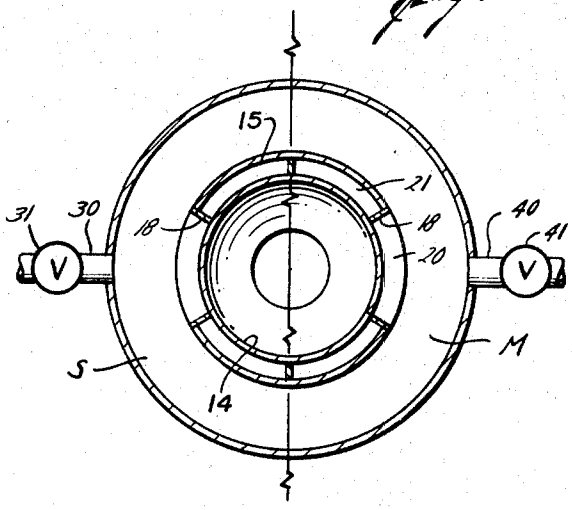
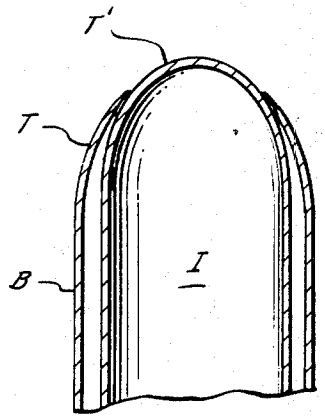


Fig. 3



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TUBULAR INSTRUMENT

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention pertains to instruments for examination and/or treatment of the rectum or sigmoid colon and particularly to an instrument having means for simultaneously injecting and removing fluid and other matter from the area adjacent the tip of the instrument to facilitate insertion and use thereof.

2. Description of the Prior Art

The proctoscope and sigmoidoscope instruments of the prior art generally comprise a combined outer tube of slightly larger diameter than an inner tube carried in the outer tube. A closed obturator tip on the forward end of the inner tube and adapted to project outwardly beyond the front end of the outer tube is used to facilitate insertion of the combined inner and outer tube instrument into a body cavity. Once in place, the inner tube and its tip are withdrawn leaving only the outer tube through which examination and/or treatment are conducted.

In these prior art devices, a suction tube or probe is provided which can be inserted through the main passage of the outer tube when it is in place to remove fluid or other matter from the body cavity so as to clear the site for examination or treatment however, when the suction tube is in the passage of the main or outer tube, it obstructs a view through such tube as well as hampers manipulation of other instruments required for treatment through such tube.

SUMMARY

The present invention provides a tubular instrument adapted to be inserted into a body cavity such as the rectum or sigmoid colon as a proctoscope or sigmoidoscope having a plurality of conduit means extending along the wall of the tubs so as not to obstruct a view through the instrument. Some of the conduits discharge water and/or other fluids from adjacent the tip of the tube to facilitate insertion of the tube into the body and other conduits simultaneously remove fluid and/or other matter therefrom.

It is also an object of the present invention to provide a new and improved tubular instrument suitable for use as a proctoscope or sigmoidoscope having means for injecting water or other suitable fluid and means for also removing the fluid and other matter from adjacent such instrument wherein said injection means and said suction means are connected to common suction and injection manifolds, each having independent control means whereby the instrument can simultaneously irrigate and aspirate the body cavity in which it is used or intermittently, as needed, or if desired, either alternately irrigating or aspirating the cavity.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a longitudinal view partly in section and partly in elevation showing the longitudinally extending tubular instrument of the present invention;

FIG. 2 is a transverse sectional view taken on line 2—2 of FIG. 1 showing the sidewall passages for conducting fluids through the tubular instrument of the present invention; and

FIG. 3 is a partial side view showing the rounded tip another embodiment of the instrument.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The apparatus of the present invention, designated generally A in FIG. 1 of the drawings, comprises a longitudinally extending outer tubular body B having an inner tubular body P extending there-through from a base portion or rear end E to a forward tip T. The FIG. 3 embodiment is shown with an inner tube or shaft I having a rounded or tapered forward tip T′ is positioned in the tubular body B with the tip T′ projecting out of the forward end T of such body B.

An injection manifold M connects a plurality of longitudinally extending conduits **20** which discharge air or other fluid adjacent the tip T and a suction manifold S connects a plurality of longitudinally extending conduits **20** which provides a suction adjacent to the tip T, as will be described in detail hereinafter. With the apparatus of the present invention water or other fluid can be injected into the rectum or sigmoid colon during insertion of the tubular instrument therein and, either simultaneously or intermittently the fluid can be withdrawn along with any matter which obstructs the passage of the tubular instrument. Once the instrument is in place at the desired location, the walls of the cavity adjacent the tip of the tube can be washed to clean them of any matter which would obscure or otherwise interfere with examination and treatment thereof. A suitable light may be inserted through the inner tubular passage P to facilitate visual examination of the tissue adjacent the open end or tip of the tube B.

Considering now the apparatus of the present invention in more detail, the longitudinally extending outer tubular member B comprises radially spaced inner and outer circumferentially extending walls **14** and **15**, respectively which are joined together adjacent their lower ends or base portion by means of a transverse extending wall **16**. A plurality of radially extending fins or separating members **18** connect the inner wall **14** to the outer wall **15** at circumferentially spaced points to provide a plurality of annular conduits **20** and **21** which are connected to the manifolds M and S, respectively. As best seen in FIG. 2 of the drawings the annular conduits **20** and **21** are alternately arranged around the tubular body B with the conduits **20** connected to the injection manifold M and the conduits **21** connected to the suction manifold S.

The suction manifold S is connected to a suitable source of suction pressure by means of a conduit **30** which is provided with a manual control valve **31** for opening or closing communication between the source of suction pressure and the suction manifold S.

Similarly, the injection manifold M is provided with a conductor pipe or tube **40** for conducting water or other fluid under pressure from a suitable source to the injection manifold M. A manual control valve **41** is provided in the conduit **40** for controlling the flow of fluid through the annular passages **20** for discharge adjacent the tip T.

In the preferred form of the present invention the outer tubular body B and the inner tubular body P are preferably formed of stainless steel or other suitable rigid material.

Shown in FIG. 3 of the drawings is an inner tube I of slightly smaller external diameter than the internal diameter of the tube P to permit easy insertion and removal of such inner tube I in the outer tube B. Such

inner tube I extends longitudinally of such tube P and projects outwardly from both the forward end T as well as the rear end or base E. Such forward end T' is rounded or tapered to provide a tip suitable for easy insertion into a body cavity with a minimum of pain and discomfort. As shown in FIG. **1** of the drawings, the inner member I is preferably a hollow tube, with a rounded tip, however, such member can be solid and formed of lightweight material, if desired and is provided with a rounded or curved tip T' thereon which projects longitudinally outwardly beyond the forward end of the outer tubular member B.

In the use of the tubular instrument of the present invention the inner tube is normally positioned inside of the tube P with the rounded tip **50** projecting longitudinally beyond to facilitate insertion of such instrument into a body cavity. After insertion the valve **44** can be open to provide fluid under gentle pressure or brought in in response to suction which is conducted through the longitudinally extending passages **20** and discharged out the front end of the tube B adjacent the tip T'.

The flow of pressurized fluid can be regulated so as to wash matter encountered in the body cavity out of the way of the instrument A, or, to facilitate its aspiration through the suction conduits **21**.

After being inserted to the desired depth of penetration the inner tube I or obturator is withdrawn to open the central tube P through the outer tube B to allow visual inspection and/or treatment of the walls of the rectum or sigmoid colon through such tube B. In the event additional washing of the area to be examined or treated is required the valve **44** is opened to discharge additional fluid from adjacent the tip T and the water and material which it washes or loosens is simultaneously or later aspirated through the suction conduits **21**. Also, if seepage accumulates near the site of examination the suction valve **31** can be opened to constantly drain the seepage away. After the examination or treatment is completed, the outer tube B is withdrawn from the body cavity in the usual manner.

The foregoing disclosure and description of the invention are illustrative and explanatory thereof, and various changes in the size, shape, and materials as well as in the details of the illustrated construction may be made without departing from the spirit of the invention.

I claim:

1. A tubular surgical instrument for insertion into a body cavity to facilitate viewing and surgical procedures therein comprising:

a pair of longitudinally extending coaxial tubular members being joined together at their rear ends and being arranged with the opposite end of the inner tubular member terminating adjacent the opposite end of the outer tubular member and with a central passage extending therethrough;

a plurality of radially extending ribs extending longitudinally between said pair of coaxial tubes forming a plurality of passages extending longitudinally of said tubular members with the forward ends of said passages being opened;

a first manifold being connected only to some of said passages and a second manifold being connected only to other said passages with said first and second manifold being positioned externally of said tubular member so as not to obstruct said central passage;

first valve means with said first manifold for controlling flow through the passages connected thereto; and

second valve means with said second manifold for controlling flow through the passages connected thereto whereby fluid may be simultaneously injected and withdrawn from the body cavity while permitting viewing therein through said central passage.

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