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J. R. ROSS

2,281,600

DILATOR

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FIG. 1.

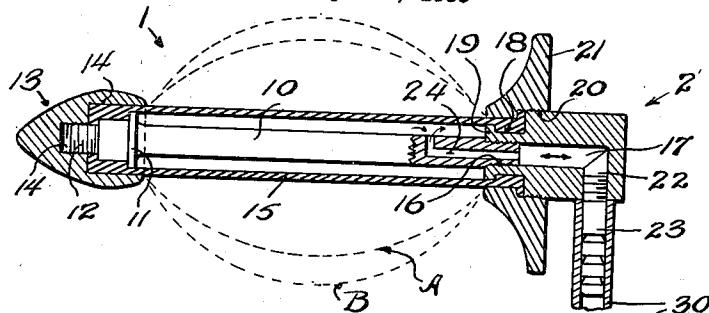


FIG. 3.

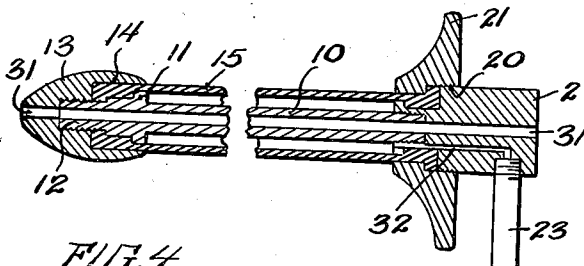


FIG. 4.

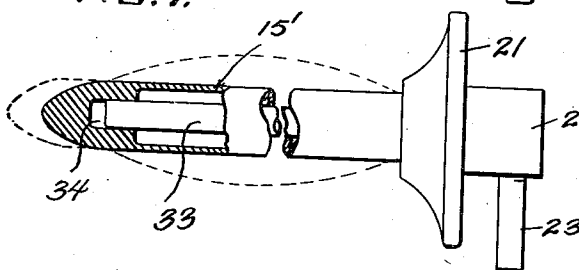
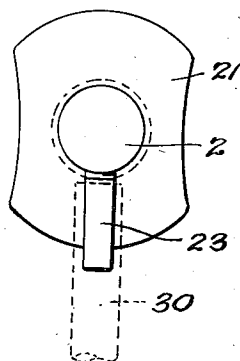
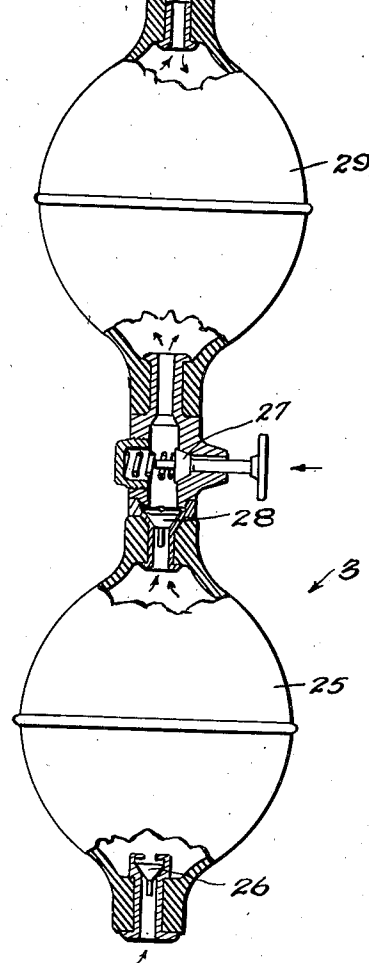


FIG. 2.



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UNITED STATES PATENT OFFICE

2,281,600

DILATOR

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Application September 2, 1939, Serial No. 293,285

4 Claims. (Cl. 128—344)

My present invention relates to dilators.

More particularly, my invention relates to a type of rectal dilators wherein the muscles of the rectum, and associated tissues, are dilated to a desired degree and, which tissues are, at the same time if desired, given a controlled massage.

Heretofore, it has been the practice in the treatment of many diseases of the rectum to resort to the use of various sizes of so-called rectal dilators which either are made in solid form or, of rigid construction with an opening provided therethrough for the escape of the rectal gases and fluids or, for the admission of oils, salves etc. The use of such dilators has not been satisfactory because of their construction and, because of the very sensitiveness of the tissues, at the time of treatment, to the use of hard rigid bodies.

Various attempts have also been made to perfect expandible dilators for similar uses but, because of the types and designs and the constructions resorted to, such dilators have, in the main, likewise failed to obtain the results desired.

Having the foregoing facts in mind, the present invention was designed to not only overcome these defects but to also, after the desired degree of inflation has been obtained, enable the user, or operator, to massage the tissues to a degree prescribed by the disease of the tissues under treatment.

Another object of my invention is the design of a combined dilator and massager of such simple construction and compact design as to permit of ready insertion into the anal canal and rectum; to obtain the desired degree of dilation; to massage the tissues if desired; and to permit of ready cleaning and sterilization after the device is withdrawn.

Having the foregoing objects and advantages in mind, together with the many additional advantages which will be readily apparent to those skilled in this art, I will now describe in detail a preferred form of my invention and, which is illustrated in the attached drawing, wherein:

Figure 1 is a longitudinal sectional view, partly in elevation;

Figure 2, an end view of the dilator head;

Figure 3, a longitudinal sectional view of a modified form of dilator; and,

Figure 4, a sectional view of another form of dilator head.

In Figures 1 and 2 of the drawing, I illustrate the dilator as comprising generally, a dilator head 1, a connecting block or member 2, and an inflation means 3. The dilator head 1, has as its main supporting member a cylindrical rod 10

which is provided at one end with a flange 11 and a screw threaded portion 12. A tip 13, which may be moulded of hard rubber, "Bakelite," or the like, is so shaped as to permit of ready insertion into the anus and rectum. The tip 13 has an internal bore 14 one portion of which is screw threaded for engagement with the screw threaded portion 12 of the rod 10, the other part of the bore being designed to encompass one end of an expansion tube 15, and to force the same into an air-tight joint with the flange 11. The other end of the rod 10 is likewise screw threaded into a bore 17 in the connection block 2.

The connection block 2 has a reduced portion 18 which terminates in a flange 19 for engagement with the inner end of the expansion tube 15, as will later be described. Screw threads 20 are provided upon the outer portion of the connection block for the reception of a rectal closing member 21, which may be made of any suitable material, such as hard rubber, "Bakelite," or the like. In the drawing I illustrate the bore 17 of the connecting block as extending through the major portion thereof where it communicates with a second bore 22 having a screw threaded portion for the reception of a pipe 23, but it is obvious that the bore 17 could be drilled completely through the block and the connection with the pipe 23 made at the rear if desired.

In the form illustrated in figures 1 and 3, the expansion tube 15 is provided with a thickened portion and a flange at each end which form a positive seal when the parts are assembled. As before pointed out, when the tip 13 is properly positioned, the outer end of the expansion tube 15 is clamped between the rod 10 and the tip, and tightly held thereby. At the rear end the tube 15 is securely clamped to the connection block by the rectal closing member 21.

The expansion tube 15 is arranged to be inflated after being projected into the rectal canal and, is therefore, made of a suitable material such as rubber, or the like. To cause inflation of the tube 15 a bore 24 is provided in the inner end of the rod 10 which communicates with the interior of the expansion tube at one end and with the bore 17 of the block 2 at the other.

A compression bulb 25, having an inlet valve 26 at one end, is connected to a bleeder valve 27 at the other end and, provides a practical and convenient means for inflating the tube 15. The bleeder valve 27 is of conventional construction and has an auxiliary check valve 28 which acts to prevent the flow of air when a second compres-

sion bulb 29 is used to create a pulsating movement in the expansion tube 15. The opposite end of the bulb 29 is connected to one end of a suitable length of rubber tubing 30 which is, in turn, connected to the pipe 23 mounted in the connector block 2.

In Figure 3 I illustrate a slightly modified form of dilator head wherein a bore 31 is provided and which extends through the tip 13, the rod 10, and the connector block 2. The object of this bore is to provide an outlet for the rectal gases which may be present at the time the dilator is inserted or, during the period of the treatment. In this form a second bore 32 is provided in the connector block 2 and which communicates with the interior of the expansion tube 15 at one end and, with the pipe 23 at the other end.

Figure 4 illustrates another modified form of dilator head and consists essentially of a supporting member 33, one end of which is mounted in the connector block as before, the other end being squared and arranged to project into a socket 34 of the expansion tube 15' for a sliding engagement therewith. The expansion tube 15', in the present case, is provided with a similarly thickened inner end for attachment with the connector block 2 and, at its outer end is moulded with an outer contour corresponding to the general shape of the tip 13, and has an inner thickened portion having the socket 34 therein.

The operation of my device is as follows:

Assuming that the dilator has been properly cleaned, the user inserts the tip 13 into the anus and then gently forces the dilator head into the rectum until the rectal closing member engages the anus and the surrounding tissues. The operator next compresses the bulb 25 which causes air to be injected into the expansion tube 15 and an inflation thereof to the required degree, as illustrated at A Figure 1. Various diseases require different treatment from other diseases and, where it is desirable to subject the rectal muscles and tissues to a prolonged dilation, the dilator head is permitted to remain in the rectum for the prescribed period. In such cases the degree of inflation may be varied at the will of the operator by manipulation of the bulb 25 and the bleeder valve 27, as will be understood. In still other cases it has been found advantageous to massage the muscles and associated parts and, in such cases the operator compresses the bulb 29 which causes an increase in the amount of pressure in the expansion tube 15, as illustrated at B, Figure 1, and which increased pressure is maintained until the pressure on the bulb 29 is released. Repeated manipulations of the bulb 29 causes the walls of the expansion tube to expand and contract respectively, thereby causing a gentle massaging action to be imparted to the tissues.

When the treatment is completed the bleeder valve 27 is opened which deflates the expansion tube 15, whereupon the device may be removed and cleaned.

In the case of the construction shown in Figure 4, the dilation of the muscles is similarly obtained but, when the massaging action is resorted to the movement of the tube 15' is different because of the construction of the outer end thereof. Here the movement is both vertical as well as horizontal due to the fact the air pressure causes the thickened end of the tube to move horizontally while at the same time the thinner walls of the tube expand vertically.

From the foregoing it will be seen that I have

illustrated and described a new and novel dilator and massager wherein a controlled dilation and massaging of the tissues is obtained. By reason of the novel construction shown injury to the muscles, glands etc. is avoided even in those cases where the tissues may be inflamed or diseased. While I have described the use of certain materials or, to a particular arrangement of associated parts, it is to be clearly understood that other materials may be used or, other arrangements of the parts resorted to, without departing from the spirit and scope of my invention.

It is also to be understood that while I have described and claimed my invention as being essentially a rectal dilator, it may be used, for example, as a dilator and massager for other canals or passages such as the vagina. Or, it may be considerably reduced in size and slightly modified for use in the urethra.

I claim:

1. A device for the dilation and massaging of the rectal muscles and glands comprising, a reinforcement member for insertion into the rectum, a connecting block carried at one end of said reinforcement member, an expandible tube having a closed end carried by said reinforcement member, a bore in said connecting block communicating at one end with a corresponding bore in said reinforcement member and with an inflation means at the other, and expandible and compressible means interposed between said block and said inflation means for causing a pulsatory and sliding movement in said expandible tube, said expandible tube having at its closed end an elongate bearing for a longitudinal sliding engagement at all times with the free end of said reinforcement member.

2. A device for the dilation and massaging of the rectal muscles and glands comprising, a reinforcement member having a bore therethrough an elongate bearing at one end and a screw-threaded portion at the other, a connecting block secured to the screw-threaded portion of said reinforcement member and having a bore therein communicating at one end to said bore in said reinforcement member and with an inflation means at the other, an inflation tube mounted upon said reinforcement member and having one end detachably secured to said connecting block and the other end closed and provided with an internal elongate bearing for longitudinal sliding engagement at all times with the free end of said reinforcement member, and expandible and compressible means interposed between said inflation means and said connecting block for causing an inflation of said expandible tube and a pulsatory and sliding movement therein.

3. A device of the class described comprising, a reinforcement member for insertion into the rectum, a removable expandible tube carried by said reinforcement member, a connecting block secured to one end of said reinforcement member, a bore in said block communicating at one end with the interior of said expandible tube and with an inflation means at the other, and expandible and compressible means interposed between said block and said inflation means for causing a pulsatory and sliding movement in said expandible tube, said expandible tube being secured at one end to said block and having its free end closed to provide at all times an elongate bearing for longitudinal sliding engagement with the free end of said reinforcement member.

4. A device of the class described comprising, a reinforcement member for insertion into the

rectum, a removable expansible tube carried by said reinforcement member, a connecting block secured to one end of said reinforcement member, a bore in said block communicating at one end with the interior of said expansible tube and with an inflation means at the other, a rectal closing member secured to said block, and expansible and compressible means for causing a

pulsatory and sliding movement in said tube interposed between said block and said inflation means, said expansible tube being secured at one end to said block and having its free end closed to provide at all times an elongate bearing for longitudinal sliding engagement with the free end of said reinforcement member.

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