May 27, 1941. E. TRAVERS 2,243,299

IRRIGATING APPLICATOR

Filed Oct. 8, 1940

Fig. 1.

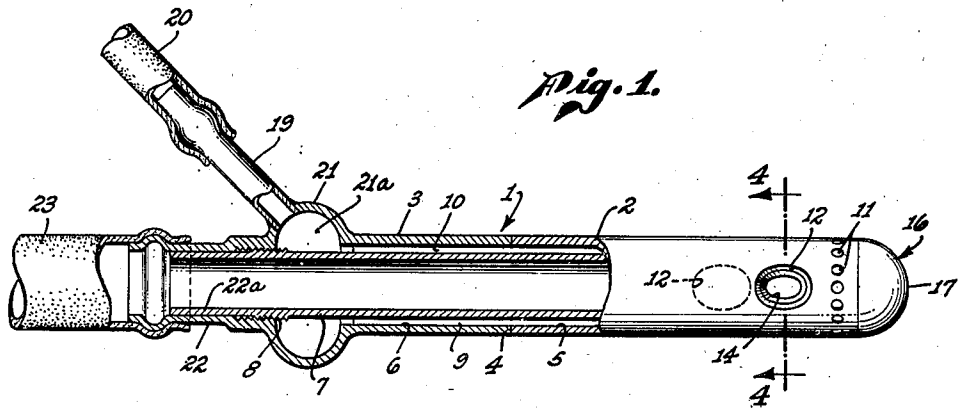


Fig. 2.

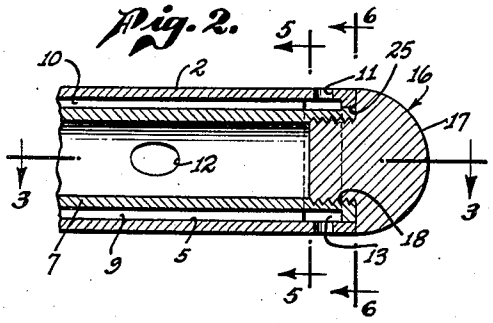
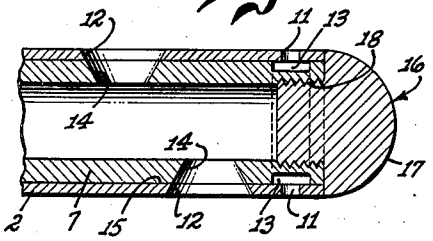


Fig. 3.



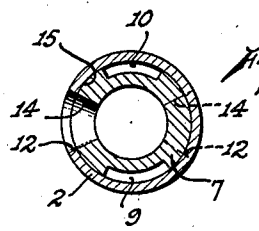


Fig. 4.

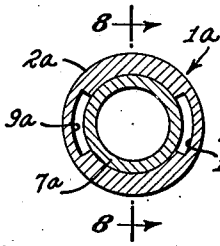


Fig. 7.

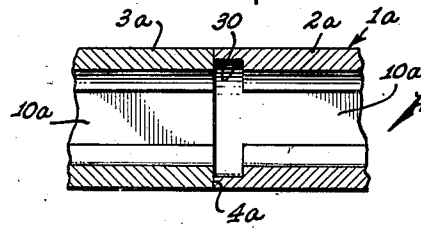


Fig. 8.

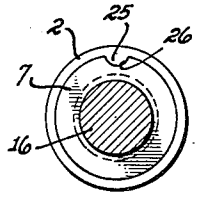


Fig. 6.

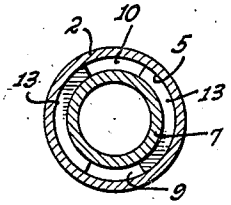


Fig. 5.

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IRRIGATING APPLICATOR

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Application October 8, 1940, Serial No. 360,211

7 Claims. (Cl. 128—240)

My invention relates to improvements in irrigating apparatus and pertains more particularly to a double flow irrigating applicator for insertion into the rectum, vagina, or other body orifice.

The principal object of the invention is to provide an applicator of the character described which may be readily dismantled for cleaning and sterilization and which may be readily reassembled.

Another object of the invention is to provide a double flow applicator of the character described with liquid supply and outlet channels which may be readily cleansed and maintained open and with liquid return openings and passages of large diameter.

A further object of the invention is to provide an applicator of the character described which is of rugged construction and is inexpensive to manufacture.

Further objects and advantages of the invention will either be specifically brought out in the ensuing description or will be apparent therefrom.

I have illustrated my invention in the accompanying drawing and referring thereto:

Fig. 1 is a partly sectional elevational view of a preferred embodiment of my applicator;

Fig. 2 is a longitudinal sectional detail showing the forward end thereof on enlarged scale;

Fig. 3 is a longitudinal section thereof taken on line 3—3 in Fig. 2;

Fig. 4 is a transverse section taken along line 4—4 in Fig. 1;

Fig. 5 is another transverse section taken along line 5—5 in Fig. 2;

Fig. 6 is a transverse section taken along line 6—6 in Fig. 2;

Fig. 7 is a transverse sectional view illustrating a modified form of construction; and

Fig. 8 is a longitudinal sectional view taken along line 8—8 in Fig. 7 with the inner barrel omitted for the purpose of clarity.

Referring to the drawing, the preferred form of my applicator is shown as comprising an outer barrel 1 having a smooth outer surface for insertion in a body cavity such as the rectum. The term "smooth" is meant to denote the absence of any harsh irregularities on the outer surface and includes a barrel having a cylindrical cross-section such as shown or an oval cross-section, or it may include a barrel having a longitudinal fluted surface provided the surface in contact with the body is curved. The barrel 1 is shown as comprising forward and rearward outer barrel members 2 and 3, respectively, which abut at 4 to provide a substantially liquid-tight joint. The outer barrel members are provided with axially alined cylindrical inner surfaces 5 and 6.

The applicator further comprises an inner barrel 7 which extends within the outer barrel and is longitudinally removable therefrom. The inner barrel is removably secured adjacent its rearward end as by means of external screw threads 8 to the rearward outer barrel 3. The outer surface of the inner barrel is adapted to contact the inner cylindrical surfaces 5 and 6 of the outer barrel 1 at a plurality of points to maintain the abutting outer barrel members 2 and 3 in alinement. The outer surface of the inner barrel member 7 is recessed longitudinally as at 9 and 10 to provide liquid supply channels extending between the inner and outer barrel members.

The forward barrel member 2 is provided with one or more liquid discharge openings 11 and with one or more liquid return openings 12. The longitudinally extending recesses 9 and 10 extend to a position beneath the liquid discharge openings 11. In order to discharge liquid through a plurality of openings 11 located at circumferentially spaced positions on the outer barrel, the outer surface of the inner barrel 7 is provided with an annular recess 13 which communicates with each of the openings 11 and establishes communication between the longitudinally extending recesses 9 and 10.

The inner barrel member 7 is further provided with one or more liquid return openings 14 which are adapted to aline with the liquid return openings 12 in the outer barrel to provide a liquid return passage communicating with the interior of the inner barrel. The outer surface of the inner barrel is in continuous contact with the inner surface of the forward outer barrel member around the liquid return passage as at 15.

It is to be pointed out that the outer surface of the inner barrel member 7 performs three functions: it serves to maintain the outer barrel members in alinement; it cooperates with the inner surfaces of the outer barrel members to provide a liquid supply channel; and it cooperates with the inner surface of the forward outer barrel member to provide a liquid return passage. To perform the first function, it is necessary only for the outer surface of the inner barrel member to contact the inner surfaces of the outer barrel members at a sufficient number of points to maintain them in alinement. Thus it is not necessary for the major portion of the surface of the inner

barrel member to contact the outer barrel members as shown. Thus, the outer surface of the inner barrel member may be rugose instead of smooth as shown. By changing the surface of the inner barrel in this manner, the longitudinally extending recesses 9 and 10 and the annular recess 13 may be omitted since the space shown between the projections on the outer surface of the inner barrel member will provide the necessary liquid supply channel communicating with the liquid discharge openings 11. It still will be necessary, however, for the outer surface of the inner barrel to be in continuous contact with the inner surface of the forward outer barrel around the return passage in order to prevent communication within the applicator between the liquid supply channel and the liquid return passage.

The applicator is further provided with a removable plug 16 having a smooth exterior surface 17 which preferably joins smoothly with the outer surface of the forward outer barrel member 2. The plug 16 is shown engaging the forward ends of the barrels 2 and 7 and closing the interior of the inner barrel. The plug 16 preferably threadedly engages the interior of the inner barrel member as at 18 and acts to hold the outer barrel members 2 and 3 in abutment at 4.

Means associated with the rearward outer barrel member 3 is provided for defining a liquid supply passage communicating with the liquid supply channel such as defined by the recesses 9 and 10. Such means may comprise a nipple 19 adapted for connection to a suitable liquid supply as through the agency of rubber tube 20. The nipple 19 is shown attached to the rearward outer barrel 3 and this barrel is preferably expanded at this position as indicated at 21 to provide an annular inlet chamber 21*a* which extends around the inner barrel member 7 and provides communication between the nipple 19 and the recesses 9 and 10. The expanded portion 21 also acts as a gauge or stop to limit the depth of insertion of the applicator into the body cavity.

Means is also provided for defining a liquid outlet passage communicating with the interior of the inner barrel member adjacent its rearward end. Such means may be provided by forming a rearward projection 22 on the rearward outer barrel member 3 which extends beyond the projecting portion 21 and the inner barrel member 7. This projection 22 provides a nipple by means of which the liquids returned through the interior of the inner barrel may be conveyed to a desired position such as a sewer through the agency of a suitable conduit such as a rubber tube 23. The rearward end of the inner barrel preferably extends rearwardly beyond the threads 8 and into the extension 22 as at 22*a* to provide a seal therebetween to prevent the leakage of liquid within the applicator between the inlet chamber 21 and the outlet passage.

As pointed out above, the applicator may be substantially completely dismantled for cleaning and sterilization. Assuming that it has been dismantled, it is preferably assembled as follows: The forward outer barrel member is slipped over the forward end of the inner barrel member and the openings 12 and 14 are placed in alinement; the plug 16 is screwed into the end of the inner barrel and brought into snug engagement therewith; the rearward end of the inner barrel is then inserted into the forward end of the rearward outer barrel and the threads 8 are screwed into the coacting threads on the interior of the rearward outer barrel until the plug 16 engages the forward end of the forward outer barrel and forces this barrel toward the rearward outer barrel and brings the outer barrels into abutment at 4.

In order to facilitate the aligning of the openings 12 and 14 when the device is assembled as above described, I prefer to provide the forward ends of the inner barrel and the forward outer barrel with cooperating means for engaging one another. Such means may comprise a radial projection 25 located on the inner surface of the forward outer barrel 2 and a cooperating recess 26 on the outer surface of the inner barrel 7 as shown in Fig. 6. Obviously, the recess may be provided in the outer barrel and the projection may be provided on the inner barrel.

It is understood that it is not necessary that the liquid supply channel be provided by recesses in the outer surface of the inner barrel member, as illustrated in Figs. 1 to 5. The recesses may be provided on the inner surfaces of the outer barrel members and the outer surface of the inner barrel member may be smooth. An example of such construction is illustrated in Figs. 7 and 8.

In these figures the outer barrel member is designated at 1*a* and comprises two sections 2*a* and 3*a* which abut at 4*a*. The outer barrel 1*a* is provided with a pair of longitudinal extending recesses 9*a* and 10*a* on its inner surface, corresponding to the recesses 9 and 10 on the outer surface of the inner barrel in Fig. 1. The applicator is further provided with an inner barrel 7*a* which has a cylindrical outer surface which is adapted to contact the inner surface of each of the sections of the barrel 1*a* at a pluraliity of points in order to maintain the sections in alinement.

In order to maintain communication between the liquid supply passages provided by the recesses in each of the outer barrel sections, irrespective of the relative rotative positions of the barrel sections, I have provided an annular recess 30 in the inner surface of the outer barrel member at the position of the joint 4*a*. Thus, if the applicator is assembled with the longitudinal recesses in adjacent sections out of alinement, the liquid may flow through one recess to the position of the joint 4*a* and thence through the annular recess 30 and into a recess in the adjacent outer section.

The relative lengths of the barrel members 2 and 3 may be varied considerably without departing from the present invention. I prefer, however, to have the rearward outer barrel 3 of sufficient length to place the forward end thereof and the joint 4 within the body recess when the device is in use, so that the contact of the body about the joint 4 tends to prevent the leakage of liquid through the joint. Furthermore, any leakage from this joint takes place within the patient's body.

The applicator may be fabricated from metal, molded plastic, or other material or combination of materials. It is preferable to keep the weight of the applicator at a minimum. In order to prevent burrs from forming on the external surface thereof, it is also preferable to slightly round the edges of the outer barrel members at the abutting joint 4 and to also slightly round the edges at the forward end of the forward outer barrel member 2.

Having now described and illustrated a particular form of my invention, I wish it to be understood that my invention is not to be limited to the specific form or arrangement of parts herein

described and shown, except insofar as such limitations are specified in the appended claims.

I claim:

1. In an irrigating applicator, the combination which comprises: an outer barrel having a smooth outer surface for insertion in a body cavity, said barrel comprising forward and rearward abutting barrel members; an inner barrel extending within and longitudinally removable from said outer barrel and secured adjacent its rearward end to said rearward outer barrel member, the outer surface of said inner barrel being adapted to contact the inner surfaces of both of said outer barrel members at a plurality of points lying on a common cylindrical surface to maintain said abutting barrel members in alinement, the forward barrel member having a liquid discharge opening and a liquid return opening, the outer surface of said inner barrel and the inner surface of said outer barrel cooperating to form a liquid supply channel extending between said last-mentioned barrels and communicating with said liquid discharge opening, said inner barrel being provided with a liquid return opening adapted to aline with the first-mentioned liquid return opening to provide a liquid return passage communicating with the interior of the inner barrel, the outer surface of said inner barrel being in continuous contact with the inner surface of said forward outer barrel member around said liquid return passage; means associated with said rearward outer barrel member defining a liquid supply passage communicating with said liquid supply channel; means defining a liquid outlet passage communicating with the interior of said inner barrel member adjacent its rearward end; and a removable plug having a smooth exterior surface and engaging the forward ends of said barrels and closing the interior of said inner barrel and holding said outer barrel members in abutment.

2. An applicator as set forth in claim 1, the forward end of the forward one of said outer barrel members and the forward end of said inner barrel member being provided with cooperating means for alining said liquid return openings, said means comprising a radially extending projection on one of said last-mentioned members and a cooperating recess in the other of said last-mentioned members.

3. An applicator as set forth in claim 1, the position of abutment of said outer barrel members being sufficiently near to said plug member so as to be located within a body cavity when the applicator is inserted in such a body cavity.

4. An applicator as set forth in claim 1, the inner surface of said outer barrel member having a recess to provide said liquid supply channel.

5. In an irrigating applicator, the combination which comprises: an outer barrel having a smooth outer surface for insertion in a body cavity, said barrel comprising forward and rearward abutting barrel members having axially alined cylindrical inner surfaces; an inner barrel extending within and longitudinally removable from said outer barrel and removably secured adjacent its rearward end to said rearward outer barrel member and having an outer surface adapted to contact each of said inner cylindrical surfaces at a plurality of points to maintain said abutting barrel members in alinement, the forward barrel member having a liquid discharge opening and a liquid return opening, the outer surface of said inner barrel member being recessed to provide a liquid supply channel extending between said outer barrel members and said inner barrel and communicating with said liquid discharge opening, said inner barrel member being provided with a liquid return opening adapted to aline with the first-mentioned liquid return opening to provide a liquid return passage communicating with the interior of the inner barrel, the outer surface of said inner barrel being in continuous contact with the inner surface of said forward outer barrel member around said liquid return passage; means associated with said rearward outer barrel member defining a liquid supply passage communicating with said liquid supply channel; means defining a liquid outlet passage communicating with the interior of said inner barrel member adjacent its rearward end; and a removable plug having a smooth exterior surface and engaging the forward ends of said barrels and closing the interior of said inner barrel and holding said outer barrel members in abutment.

6. An applicator as set forth in claim 5, the forward end of the forward one of said outer barrel members and the forward end of said inner barrel member being provided with cooperating means for alining said liquid return openings, said means comprising a radially extending projection on one of said last-mentioned members and a cooperating recess in the other of said last-mentioned members.

7. An applicator as set forth in claim 5, the position of abutment of said outer barrel members being sufficiently near to said plug member so as to be located within a body cavity when the applicator is inserted in such a body cavity.

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