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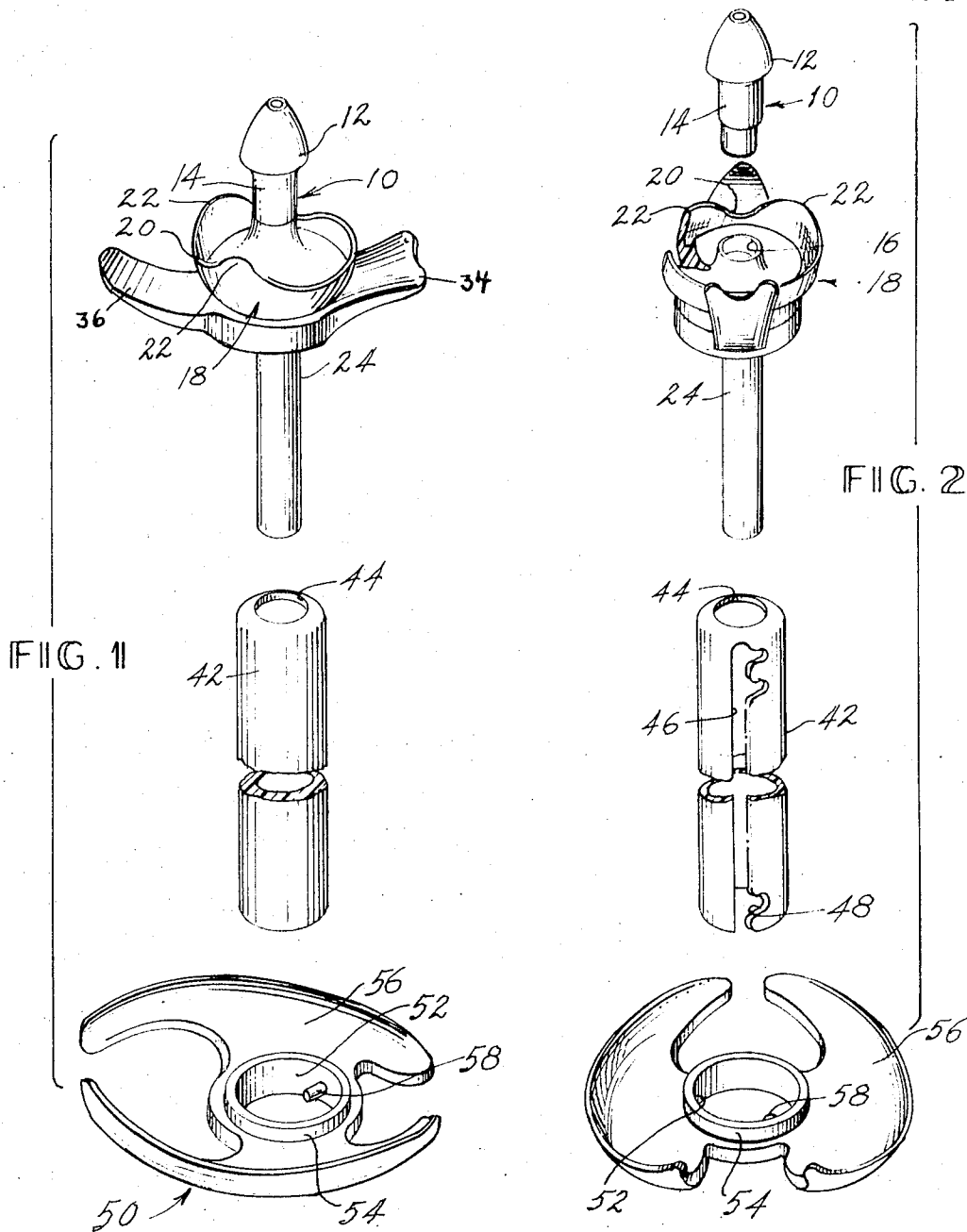
A. A. VASS ET AL

3,469,575

RECTAL NOZZLE ASSEMBLY

Filed Sept. 26, 1967

2 Sheets-Sheet 1



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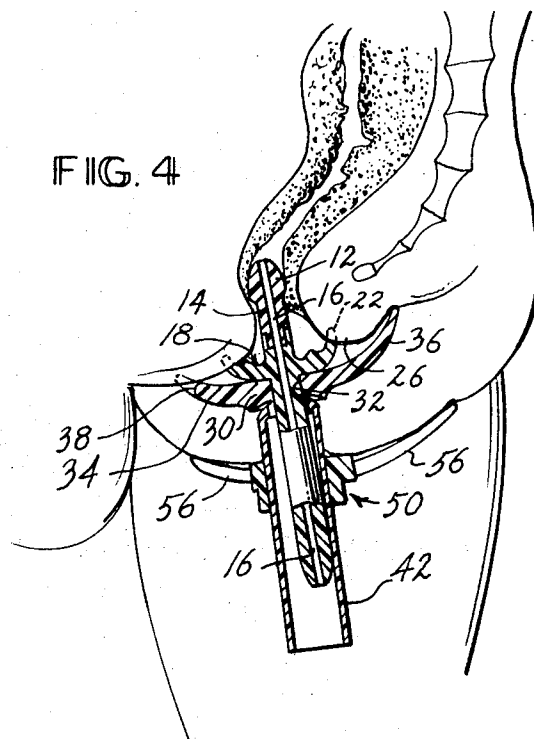
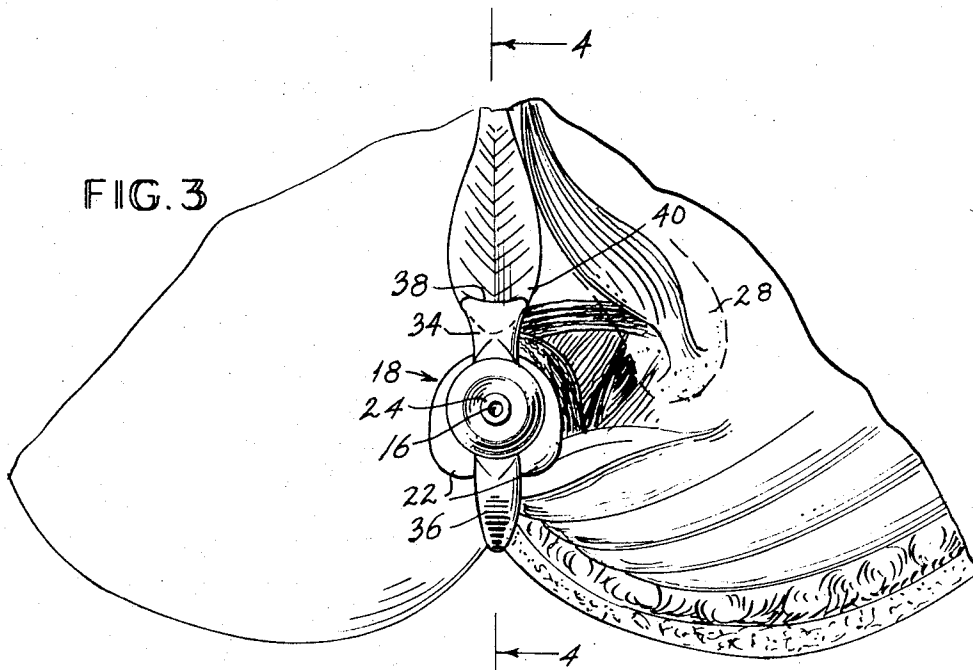
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RECTAL NOZZLE ASSEMBLY

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7 Claims

ABSTRACT OF THE DISCLOSURE

In a nozzle for administering fluid into the rectum, a tube having a head to fit snugly in the rectum opening and a cupped member on the tube, spaced from the head, pressable against the peri-anal area to create suction for holding the nozzle on the body, the wall of the cupped member enlarging posteriorly laterally and having an indentation at the center of the enlargement; the tube also provided with diametrically opposed curved projections arranged to overlie the peri-anal area surface anteriorly and posteriorly of the anal opening; the anteriorly extending projection having an indented end edge. Lateral tilting of the nozzle is prevented by a slotted sleeve fitting over the tube and an apertured plate adjustably interengaged with the sleeve.

The present invention relates to a nozzle assembly for administering fluid into the intestinal tract and is an improvement and extension of the invention described and claimed in the pending application of applicant Alexander A. Vass, Ser. No. 637,713, filed May 11, 1967, and our pending joint application, Ser. No. 646,106, filed June 14, 1967.

In the said applications there have been described and claimed rectal nozzle assemblies which include a member that serves to limit the movement of the nozzle head into the end of the intestinal tract and also serves to retain the nozzle head within the end of the intestinal tract, at least partially, by suction created between the member and the peri-anal surface. In the first of said pending applications, the suction is created by manual pressure. In the second of the above applications, mechanical air-evacuating means are provided for positively creating such suction. The present invention is directed to a nozzle assembly of generally improved characteristics over those of the said pending applications.

It is, thus, one of the objects of the present invention to provide a nozzle assembly, of the character described, having improved suction holding characteristics, relative to the nozzle of the first of the above applications; such suction created by manual pressure and without the mechanical vacuum-creating means of the second of the above pending applications.

It is another object of the present invention to provide a nozzle assembly, of the character described, which may be tightly and securely held against the body and which will impinge with a minimum of pressure against the fleshy portion of the muscle and tendon surrounding the anus and avoid impingement against the bone structure surrounding it, to thereby make possible the tight holding of the nozzle in position with a maximum of suction and a minimum of pain to the patient.

It is a further object of the present invention to provide a nozzle assembly, of the character described, which will inhibit both the lateral tilting of the portion thereof interiorly of the anus, when inserted therein, as well as the tilting thereof up or down, to thereby substantially entirely eliminate the possibility of creating spaces for the backflow of any fluid from the intestinal tract.

The foregoing and other objects and advantages of the nozzle assembly of the present invention will become

more readily apparent to those skilled in the art from the embodiment thereof shown in the accompanying drawing, and from the description following. It is to be understood, however, that such embodiment is shown by way of illustration only, to make the principles and practice of the invention more readily comprehensible and without any intent of limiting the invention to the specific details therein shown.

In the drawings:

FIG. 1 is an exploded, perspective view of one embodiment of the rectal nozzle of the present invention;

FIG. 2 is a similar view of the same, rotated at an angle of 90° to FIG. 1; partly broken away to illustrate details of shape and construction;

FIG. 3 is a plan view showing the nozzle in situ on the body; and

FIG. 4 is a section taken substantially on line 4—4 of FIG. 3.

In the use of a rectal nozzle of the character to which the present invention relates, in which only the head of a nozzle is inserted into the anal opening of the intestinal tract or just inwardly thereof into the rectum, and in which the nozzle is held in place against displacement from the anus, at least in part, by a vacuum formed between a suction member provided on the nozzle tube that is pressed against the surface of the peri-anal area, it has been found that if sufficient pressure is applied on the suction member to obtain adequate vacuum or suction to hold the nozzle in place, such pressure will cause pain, sometimes severe, in the area contacted by the suction member; namely, to certain of the muscles and tendons surrounding the rectum, as well as to the area overlying the pelvic bone structure surrounding the rectum. The present invention resides in providing such nozzle with a suction member that will not greatly impinge on the body parts around the rectum, so that it may tightly press in place when placed against the peri-anal area, to thereby more completely evacuate the air between it and the body surface and thus attain stronger and more lasting suction for more firmly and durably maintaining the nozzle in place, with its head within the rectal opening, while causing a minimum of pain and discomfort.

Referring now in greater detail to the accompanying drawings, the nozzle of the invention is shown to comprise an inner end portion, generally designated as 10, including a head section, 12, which may be of any suitable shape and thickness to fit snugly within the anus or within the rectum immediately inwardly of the anus, and a neck section, 14, of reduced thickness, extending outwardly from the head 10. A passageway, 16, extends longitudinally through the head 10 and neck 14; which passageway may, itself, form the fluid conduit of the nozzle or may fit frictionally around a tube that will constitute such fluid conduit; the instant drawings showing the passageway 16 as itself constituting the fluid conduit.

Held in close proximity and tightly against the inner end of the neck section 14 is a cupped suction member, generally designated as 18, whose concave surface faces in the direction of the head 10. The sides of the cup-shaped suction member 18 widen and extend posteriorly-laterally to provide an enlarged portion at one end, to form a deeper suction cavity at that end, and with a curved indentation or recess, 20, at the center of such enlargement forming lobes, 22. The suction member 18 may be formed with a tubular extension, 24, on its outer side; the passageway 16 continuing through both of them; the extension 24 serving for connecting to a source of fluid.

The nozzle head is inserted into the rectum in such position that the enlarged portion of suction member 18 will extend posteriorly so that the recess or indentation

20 will straddle the center coccygeal ligament, 26 (FIG. 3) and the lobes 22 will press into the area to each side thereof into the space between the rectum and the tuber ischiadicum, 28 (FIG. 3). It will be apparent that by this conformation of the suction member 18 pressure may be applied to force the peri-anal surface into the cavity of the suction member 18 to obtain maximum vacuum between them, without inflicting any pain on the coccygeal ligament or on the tissues lying between the surface and the tuber ischiadicum and on the bones themselves.

Means may be provided for inhibiting the tilting of the inserted nozzle head in an anterior-posterior direction, to thereby inhibit the formation of gaps between the nozzle head and rectum wall through which leakage of fluids from the rectum may take place. Such means may comprise a preferably circular body, 30, having a central opening, 32, by which it may be fitted and frictionally held over the extension 24 of the suction member 18 against such suction member. The body 30 is formed with a pair of diametrically opposed extensions; namely, a slightly arcuately-curved shorter extension, 34, and a longer, preferably more deeply curved extension, 36. The body 30 is fixed on the suction member extension 24 in a manner that its longer extension 36 lies opposite the recess 20; the shorter extension 34 extending in the diametrically opposed direction. The latter extension is formed with a curved indentation, 38, in its outer edge. By this arrangement of the body 30, and its extensions 34 and 36, relative to the suction member 18, the shorter extension 34 will extend in an anterior direction, with the indentation 38 in its edge overlying the bulbo spongiosus muscle, to accommodate the bulge of such muscle within the curved indentation and not painfully impinge against it. The longer extension 36 will extend posteriorly, to curve around the coccygeal bone without pressing excessively thereon. It will be clear that the two extensions 34 and 36 of the body 30 will inhibit the rocking of the nozzle in an anterior-posterior direction by contacting the anterior-posterior areas of the peri-anal surface without painfully pressing against any part of such surface.

The nozzle assembly of the present invention may also comprise removable, adjustable means for inhibiting the tilting of the nozzle, when in situ, in a lateral direction, to thereby further prevent the formation of gaps between the nozzle head and the rectum interior through which leakage may take place and also prevent any diminution of the suction between the cupped member 18 and the peri-anal body surface due to such tilting, and may also serve to further secure the nozzle in place against displacement from the rectum. Such means may also be adjustable to fit different shapes of the body portions to each side of the peri-anal surface that frequently vary in prominence relative to said surface.

One embodiment of such tilt-preventing means illustrated in the drawing is shown to comprise a tubular sleeve, 42, of greater diameter than tubular extension 24, whose opening, 44, at one end, is slightly constricted to a diameter equal approximately to the diameter of the tubular extension 24. The sleeve 42 is formed with a slit, 46, extending longitudinally of its wall and opening into the other end of the sleeve. The marginal portion of one edge of the slit 46 is provided with circumferentially-extending detent notches, 48. Such tilt-preventing means further comprise a plate, generally designated as 50, having a central opening, 52, preferably defined by a flange, 54, extending, preferably, to both sides of the plate, and of a diameter to fit relatively snugly but freely over the sleeve 42. The plate may comprise preferably slightly dished wing portions, 56, on opposed sides of the opening 52. A pin, 58, is set into the edge of the opening 52.

In use, the sleeve 42 is slid over the tubular body extension 24 by its opening 44 until the end rests against the body. The plate is then slid over the sleeve 42 by its opening 52, with the pin 58 disposed in the slit until the

wing portions 56 come substantially into contact with the underlying body portions, at which point the plate is slightly rotated to have the pin 58 engage in the adjacent detent notch 48. The plate may then be secured in place on the body in any desired manner, as, for instance, by strips of adhesive, in the manner described in the copending application Ser. No. 637,713. Preferably, however, it may be held in place by the crotch strip of a catamenial belt (not shown, as it does not constitute part of this invention), which may be provided with an opening through which the projecting portion of the sleeve 42 may fit; such cross strip engaging over the central portion of the plate 50 to hold the assembly firmly in place and secured on the body. It may here be stated that the means for inhibiting the lateral tilting of the nozzle may be omitted, and such cross strip may be fitted directly over the extension 24 and engaged against the body, in a manner that will be readily understood.

It may here also be stated that while the nozzle assembly may be molded in one piece, the same may be formed in several parts which may be friction-fitted together. Thus, the head 10 and neck 12 may be formed in one piece; the cupped member 18 and extension 24 formed as a second piece, and the body 30, with its projections 34 and 36 formed as a third piece, as more clearly seen in FIG. 2 of the drawings.

This completes the description of the nozzle assembly of the present invention and the manner in which it may be formed. It will be readily apparent that such nozzle may be used to provide maximum safety against displacement and leakage, that it may be secured in place with a minimum of pain and discomfort to the patient, and that its use affords great convenience and assurance of proper function to the operator.

It will also be apparent that numerous modifications and variations may be made in the rectal nozzle assembly of the present invention by anyone skilled in the art, in accordance with the principles of the invention herein above set forth, without the exercise of any inventive ingenuity. We desire, therefore, to be protected for any and all such variations and modifications that may be made within the spirit of the invention and scope of the claims hereto appended.

What we claim is:

1. A nozzle assembly for administering fluid into the intestinal tract per anum, comprising a nozzle including a tubular body having a head at one end adapted to fit snugly into the opening of the rectum and a cupped member including a circular wall surrounding said body inwardly of said head and spaced therefrom with the concave side of said member facing said head, the head facing edge of said wall having a contour corresponding to the contour of the body region surrounding the rectum and including a posterior lateral enlargement having a curved central indentation defining lobe-like wall-formations to each side thereof, said indentation being adapted to straddle the ano-coccygeal ligament and said lobes being adapted to be disposed within the area between the rectum and the tuber ischiadicum.

2. The nozzle assembly of claim 1, including means for inhibiting the tilting of the nozzle in an anterior-posterior direction when its head is in situ within the rectum, said means comprising diametrically opposed projecting elements extending from said tubular body adapted to overlie the anterior and posterior portions of the peri-anal area.

3. The nozzle assembly of claim 2, wherein said projecting elements are curved and wherein said projecting element adapted to overlie said anterior area is relatively shorter and of lesser curvature and is formed with an arcuate indentation in its end edge adapted to straddle the bulbo spongiosis muscle and said posteriorly-extending element is relatively greater length and curvature and adapted to overlie and fit around the coccygeal bone,

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4. The nozzle assembly of claim 2, wherein said posterior overlying element overlies said indentation in the wall of said cupped member.

5. The nozzle assembly of claim 2, wherein said cupped member is formed with a tubular extension and said projecting elements are connected to each other by a center portion having an opening and said tubular extension is fitted into said opening.

6. The structure of claim 2, in combination with separable, adjustable means for inhibiting lateral tilting of said nozzle when in situ, said means comprising a sleeve adapted to fit around said tubular body and abut said cupped member and a plate having a central opening adapted to be fitted by said opening over said sleeve, said plate having laterally-extending portions adapted to overlie the body to each side of the peri-anal area, and means adjustably interengaging said plate with said sleeve.

7. The nozzle assembly of claim 6, wherein said ad-

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justable interengaging means comprise a longitudinally-extending slot formed in the wall of said sleeve and opening into one edge thereof, said sleeve having detent indentations formed in the marginal portions of one edge of said slot, said plate having a projecting pin within said central opening thereof, said pin adapted to be passed through said slot and to be engaged in a selected one of said detent indentations.

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