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DEVICE FOR ADMINISTERING A FLUID INTO THE INTESTINAL TRACT

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Fig. 4

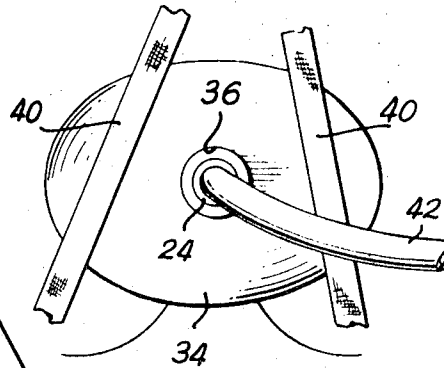


Fig. 1

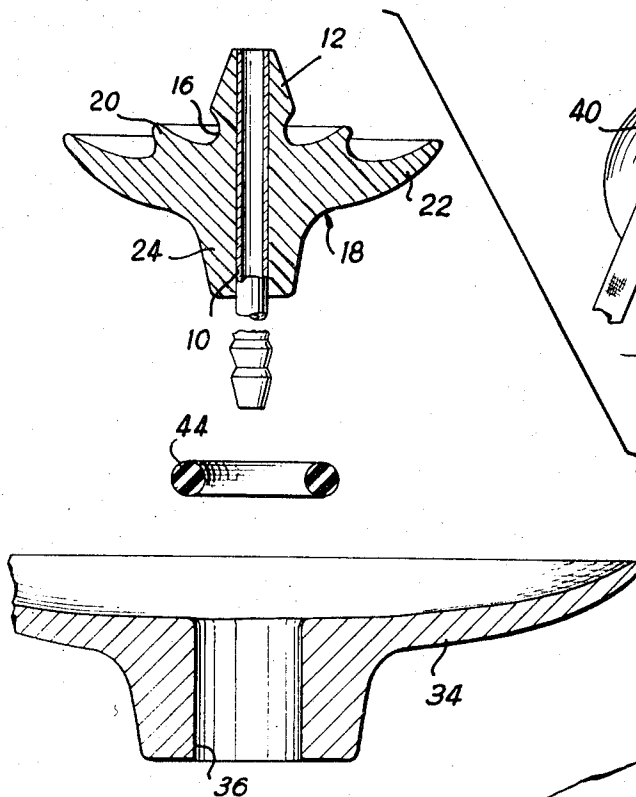


Fig. 2

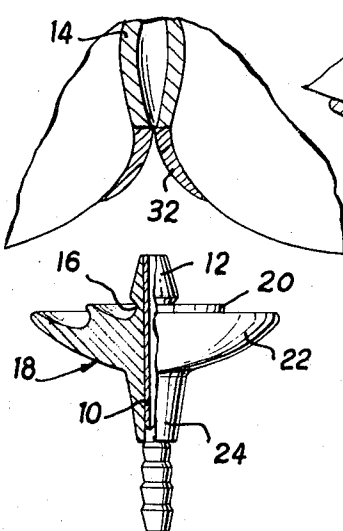
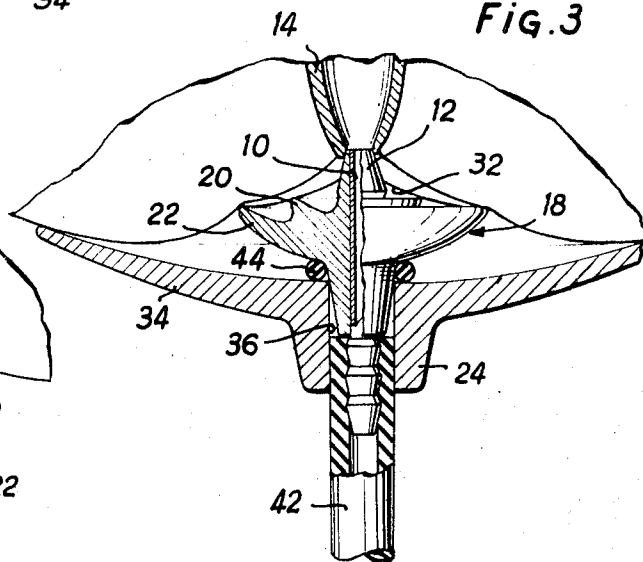


Fig. 3



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DEVICE FOR ADMINISTERING A FLUID INTO THE INTESTINAL TRACT

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8 Claims

ABSTRACT OF THE DISCLOSURE

A device for administering a fluid into the intestinal tract, consisting of a nozzle having a tapered head whose end portion will fit into an anus and its inner portion overlie its edges; a base outwardly of the head portion and connected thereto, to contact the sides of a cleft between buttocks over the annus, to inhibit penetration of the head into the anus, and a retaining plate removably fitted over the nozzle to bear against the said base and extending over the buttocks to each side of the cleft, whereagainst such retaining plate ends are securable.

The present invention relates to a device for use in the practice of X-ray procedure; particularly in the procedure of taking X-rays of the intestinal tract; and, more specifically, to a device for use in the administering of liquid barium suspension, per rectum, into the intestinal tract preparatory to taking X-rays of the latter.

In the procedure of conducting an X-ray examination of the intestinal tract, in order to provide opacity to render details of the walls of the tract visible on the X-ray plate, a water suspension of barium is injected into the intestinal tract, to render its interior opaque to the rays. This procedure requires that the barium liquid be injected throughout the intestinal tract. It is accomplished by the insertion into the rectum of a tubular nozzle connected by tube to a source of the barium liquid, which is generally administered under pressure to ensure sufficient penetration into the tract.

The penetration of the barium liquid into the intestinal tract causes great discomfort and even pain to the patient and many patients find it difficult to retain the liquid within the intestinal tract and tend to reject both nozzle and liquid therefrom with the consequent mess and waste of time. In an effort to avoid such undesirable consequences, it is generally the practice to utilize a long tubular nozzle which is inserted deep into the tract. This latter practice, besides increasing the discomfort and the possible pain, presents great risk and danger of damaging the interior walls of the end of the tract, especially by aggravating existing faults or defects in the lining of the tract, such as ulcerations or fistulas. This practice also presents a risk of rupturing the walls of the lower intestinal tract, with resulting peritonitis, and possible death.

Attempts have been made to avoid the discharge of the nozzle and the fluid from the intestinal tract by attaching to the portion of the nozzle thrust into the tract a deflated balloon which is then inflated, so as to prevent its discharge through the restricted anal opening. While such procedure may be effected to retain the nozzle and fluid within the tract, it, however, greatly enhances the danger of damage to the wall of the tract; particularly the bursting of its wall, especially where the lower intestinal wall has been or has become friable through a pre-existing condition or by reason of age. Further, the inflated balloon generally fills the lower intestinal tract portion, to thereby prevent the barium fluid from getting thereto and prevent that tract portion from becoming opaque to X-rays. The inflated

balloon tends to depress and flatten certain defects that might exist on the tract wall, such polyps, rendering them invisible on the X-ray plates.

The present invention is directed to the provision of a device for use in the administration of barium into the intestinal tract or rectum, which will avoid and eliminate all of the foregoing shortcomings of the prior art devices.

It is, thus, one primary object of the present invention to provide a device, of the character described, in which the discharge nozzle for the barium liquid need not be inserted past the anal opening into the intestinal tract, to thereby eliminate all of the discomfort, pain and risk to health and even life occasioned in the present practice by the insertion of a long and relatively thick nozzle deep into the tract.

It is a second primary object of the present invention to provide a device, of the character described, which, even though not inserted into the intestinal tract, will nevertheless, be held firmly and in leakproof arrangement against the opening into the tract, with a minimum risk of displacement, to thereby render the procedure safe, sure and rapid.

It is a further object of the present invention to provide a device, of the character described, which may be readily adjusted for use on patients having variations in body shape.

It is a still further object of the present invention to provide a device, of the character described, which is of relatively simple construction, relatively economical to produce, and simple, easy and convenient to use.

The foregoing and other objects and advantages of the device 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 intent of limiting the invention to the specific details therein shown.

In the drawings:

FIG. 1 is an exploded vertical sectional view, partly broken away, of one embodiment of a device of the present invention;

FIG. 2 is a more or less diagrammatic exploded view, on a reduced scale, and partly in section, of a device of the present invention, in readiness for use on the body;

FIG. 3 is a more or less diagrammatic view, similar to that of FIG. 2, showing the device positioned on the body, ready for use; and

FIG. 4 is a plan view showing a device with one form of means for securing it on the body, in readiness for use.

Generally stated, the device of the present invention comprises a nozzle section consisting of a tube, 10, having at one end either integrally formed therewith, or fitted thereover a tapered head, 12, adapted to have its thinner end fitted within the anus 14, of the body and its inner, thicker end overlapping the edges thereof. The head 12 is spaced by a neck portion, 16, to a preferably integral base portion, generally designated as 18, which is adapted to contact the buttocks approximately on the sides of the cleft between them when the head 12 is disposed within the anus, to prevent deeper penetration into and distention of the anus. Preferably, the base 18 may comprise concentric, stepped, circular slightly cupped portions 20 and 22, with the inner portion 20 closest to head 12, being of lesser diameter than the outer portion 22. The outer base portion 22 may be formed with a collar or sleeve, 24, extending outwardly therefrom, in the direction of the other end of the tube or passage 10. As will be seen from FIG.

3 of the drawing, when the head 12 of the nozzle is inserted into the anus, 14, the stepped base portions 20 and 22 abut and press into the sides of the buttocks to each side of the cleft, 32, between them, to thereby inhibit excessive penetration of the head 12 into the interior of the rectum.

It has also been found that, with the proper spacing of the cupped base portions 20 and 22 from the head 12 and from one another, and with the proper dimensions of such base portions, so that a degree of pressure on such base portions is required to permit insertion of the nozzle head 12 into the anus 14, there is a tendency of the sides of the cleft 32 to become flattened as a result of such pressure, and of the edges of the cupped base portions 20 and 22 to press into the buttocks flesh, to bulge the latter into the cups of the base portions, to thereby create a degree of suction that serves, in a measure, to retain the nozzle in place with its head tightly held in the anus.

Further and separate means may be provided for use with the nozzle 12, to insure its maintenance in the position described above, to thereby, when in use, assure the sealing of the anus to prevent leakage therefrom or the loosening or displacement of the head 12 from the anus. Such means may comprise a preferably slightly cupped retaining plate, 34, of any desired, suitable shape, having a central opening, 36, which is adapted to fit over the collar or sleeve, 24, with the edges thereof on its cupped side abutting the outer fall of the outer base portion 22. The plate 34 may be varied in shape but is of a length to have end portions there to overlie each of the buttocks to each side of the cleft 32 between them.

In use, the retaining plate 34 is fitted over the collar 24 and the head 12 of the nozzle inserted into the anus. The plate 34 is then secured in place against the buttocks as by portions of adhesive tape 40 secured to the outer face of the plate and overlapping the same, to be secured to the buttocks and maintain the plate 34 in position on the buttocks, with the edges of its opening 36 pressing against the adjacent surface of the base portion 22.

The other end of the nozzle tube 10, may be connected by the flexible tube, 42, to a source of barium liquid (not shown) either before or after the placement and attachment of the nozzle in place.

If desired, other means may be provided for maintaining plate 34 in place, such as, for instance, straps or tapes secured to its ends, that may be tied or secured around the body. Also, means may be provided for compensating for different shapes of the body, such as, for instance, different depth of the cleft between the buttocks. One such means is illustrated in FIGS. 1 and 3 of the drawings, and consists of spacing collars or washers 44 that may be interposed between the plate 34 and the outer surface of base portion 22 to transmit the pressure of the plate against the base portion and to provide for use on persons having deeper clefts, 32. Other means for the same purpose will readily suggest themselves to anyone skilled in the art.

This completes the description of the device of the present invention and the manner of its use. It will be readily apparent that the device of the present invention provides a convenient, comfortable and leakproof means for administering barium liquid into the intestinal tract; that the device of the present invention because, it does not penetrate into the tract, avoids excessive pain and discomfort and any risk of causing or aggravating any damage to the intestinal tract; that the device is firmly held in place against displacement; and that it is simple and easy to use.

It will be further apparent that numerous variations and modifications may be made in the device of the present invention by anyone skilled in the art, in accordance with the principles of the invention hereinabove set forth and without the exercise of any inventive ingenuity.

What I claim is:

1. A device for the administering of a fluid into the intestinal tract, including a nozzle comprising a tube having an enlarged tapered head at one end, said head tapering from a smaller outer end towards a larger inner end and adapted to fit snugly within the anus, means on said nozzle, spaced from the inner end of said head, engageable against the body area adjacent said anus to inhibit movement of said head inwardly into the intestinal tract through said anus, said body engageable means comprising a pair of circumferential enlargements on said tube spaced from the inner end of said head and from one another longitudinally of said tube, said enlargements being of a size and shape adapted to engage the facing buttock sides forming the cleft adjacent said anus, when said head is inserted into said anus, said pair of enlargements comprising a pair of outwardly cupped, substantially concentric, spaced discs, with the disc closest to said head being of a diameter less than that of the other of said discs, said cup shaped discs having their concave side facing towards said head.

2. The device of claim 1, including means associated with said nozzle adapted to be releasably engaged on said body, and means on said nozzle, engageable by said associated means for maintaining said head within said anus, when said head is inserted therewithin and said associated means is engaged on said body.

3. The device of claim 1, wherein said discs and said head are integrally formed of one-piece construction.

4. The device of claim 2, wherein said enlargement of greater diameter comprises said means engageable by said associated means.

5. The device of claim 2, wherein means are provided for varying the distance between said head and the point of engagement of said associated means with said nozzle.

6. The device of claim 2, wherein said associated means comprises a plate having an opening formed therein and said enlargement is formed with an extension, said plate engageable by said opening over said extension and of a size to overlie and engage against the buttocks to each side of said cleft when fitted over said extension.

7. The device of claim 6, wherein said tube extends through said enlargement and said extension forms a sleeve about said tube.

8. The device of claim 7, wherein said associated means comprises a plate having an opening formed therein and adapted to be fitted by said opening over said sleeve, and means, comprising a spacing ring, is disposed over said sleeve, intermediate said enlargement and said plate, said ring engageable by the marginal edge portions of said plate opening and held against said enlargement, when said plate is fitted over said sleeve and is engaged on said buttocks.

References Cited

UNITED STATES PATENTS

908,573	1/1909	Kaysan	128—245
909,093	1/1909	Kaysan	128—245
1,604,518	10/1926	Kallmeyer	128—241
212,177	2/1879	Berger	128—245
1,178,898	4/1916	Young	128—241
2,630,805	3/1953	Brehm	128—242
2,689,567	9/1954	Welch	128—283

FOREIGN PATENTS

12,026	1907	Great Britain.
444,819	5/1927	Germany.

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