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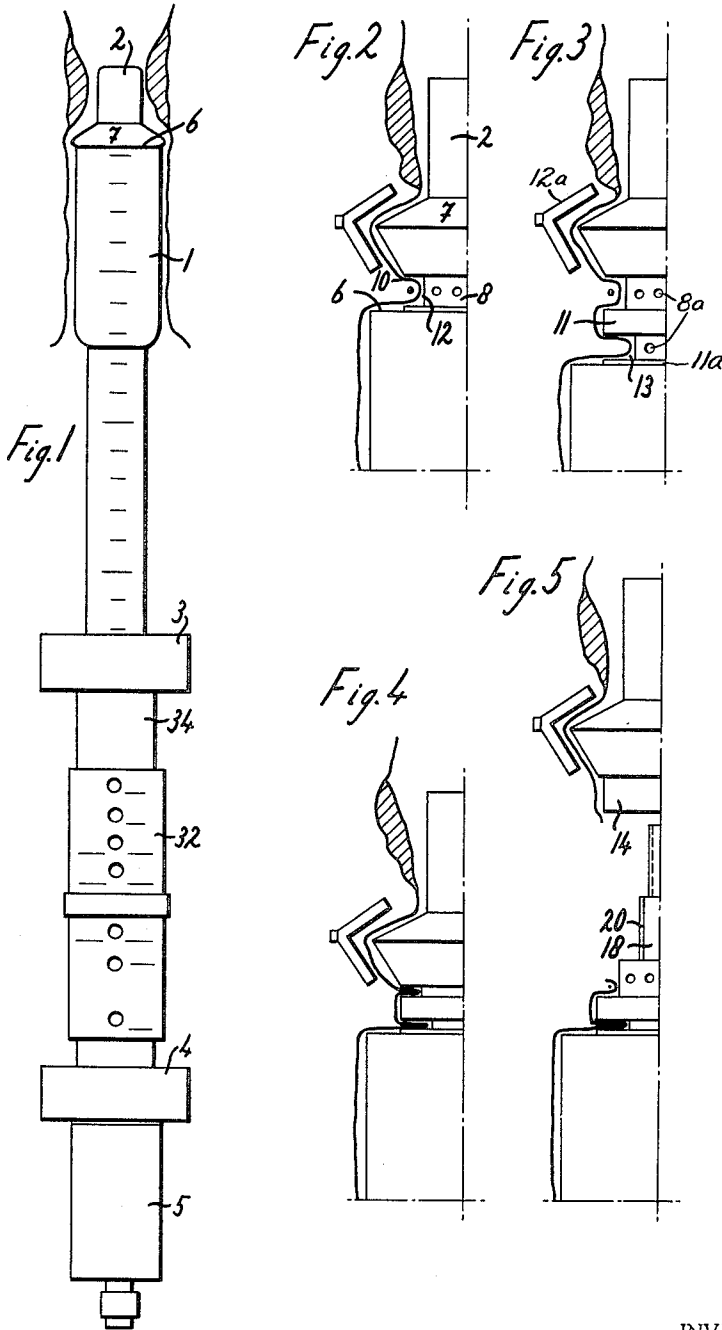
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3,168,096

SURGICAL RESECTION INSTRUMENT AND ACCESSORY

Filed Dec. 5, 1961

4 Sheets-Sheet 1



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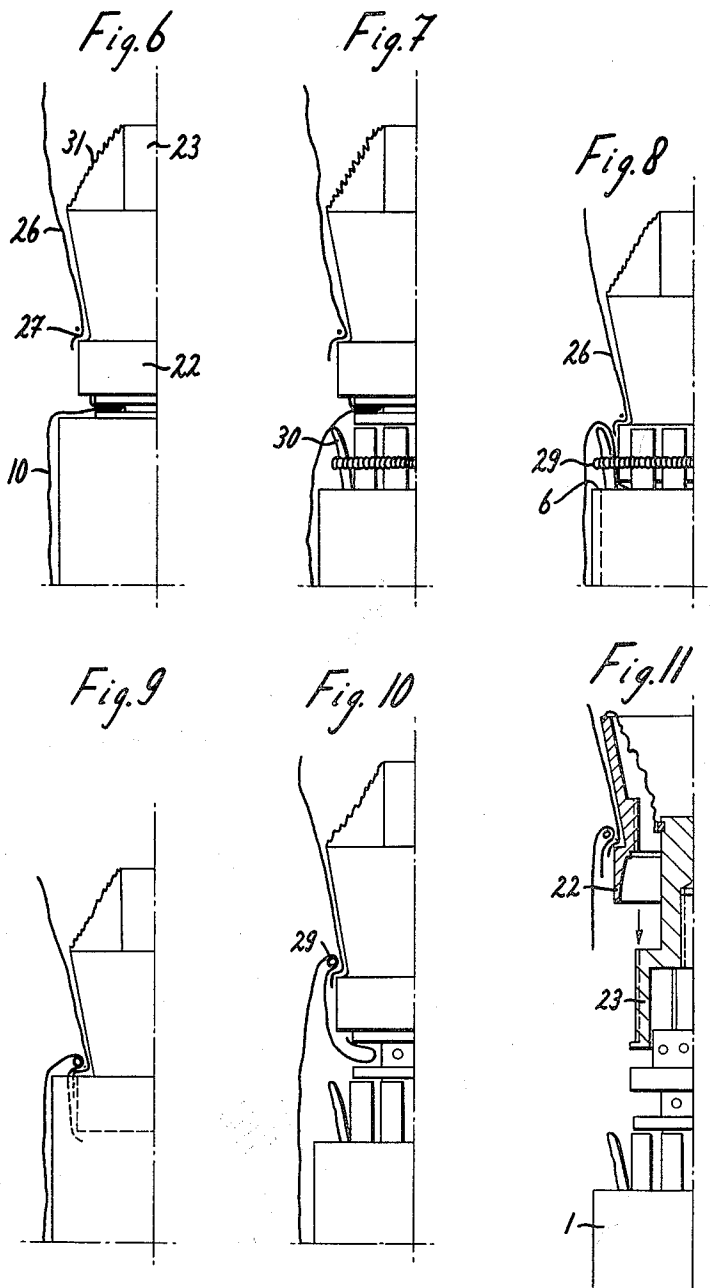
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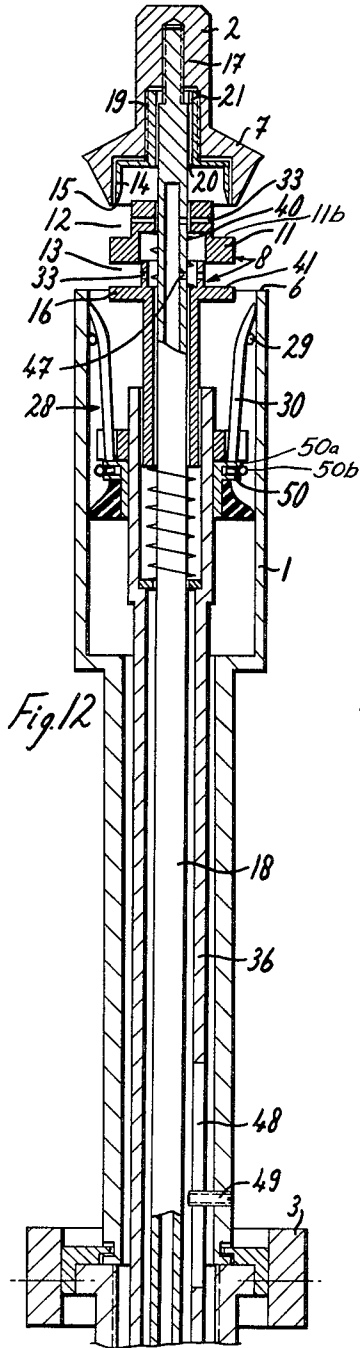


Fig. 12

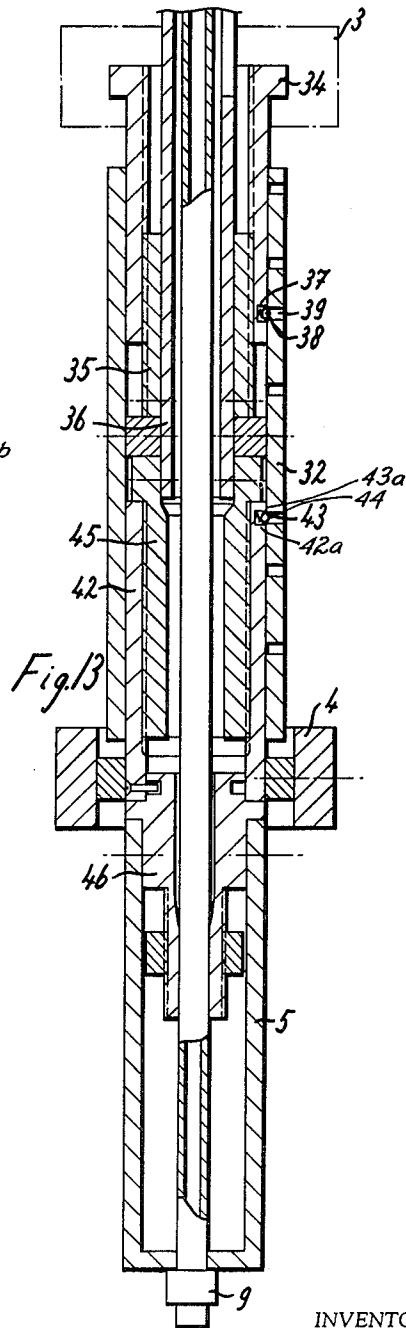


Fig. 13

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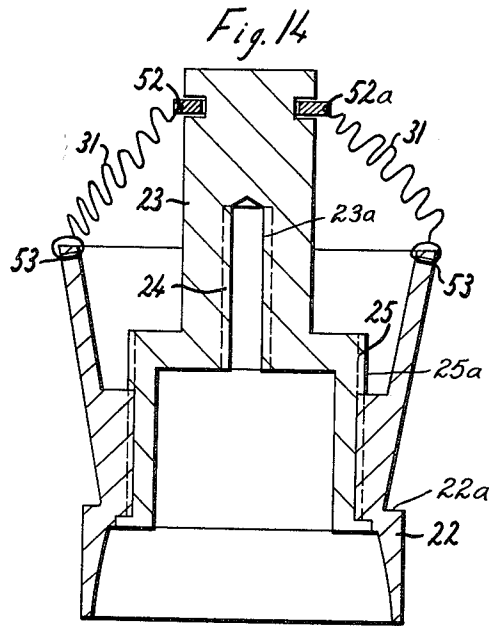
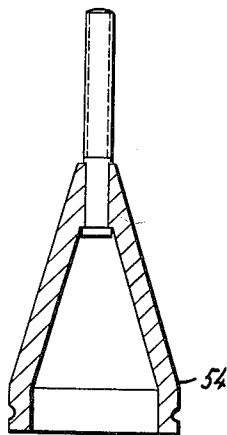


Fig. 15



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SURGICAL RESECTION INSTRUMENT AND ACCESSORY

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Claims priority, application Netherlands Dec. 9, 1960
5 Claims. (Cl. 128—334)

The invention relates to an instrument with accessory 10 which is to be used in the resection for carcinoma recti and for other deviations of the rectum and the rectosigmoid, caused by disease of the human body.

The more common treatment of carcinoma recti or of the rectosigmoid consists of a total removal of the entire 15 rectum together with its sphincter or closing muscle. Consequently, the patient is afflicted with a permanent anus preternaturalis, which is considered a great disadvantage. In the pertinent literature, the opinion lately prevails that less mutilating operations are indicated and that operations 20 sparing the sphincter should be preferred.

When in the resection, i.e., the cutting, the remaining 25 rectal tube is short, e.g., 4-6 cm. long, the application of a terminal anastomosis and, hence, the recombination of the remaining rectal tube with the neighboring intestinal part, is extremely difficult with the aid of the known surgical equipment, if not entirely impossible. An anastomosis is extremely difficult to accomplish in the narrow and difficultly accessible pelvis, especially in the case of 30 obese patients.

Even though the remaining rectal tube can be reached with the finger, space does not permit the execution of the manipulations required for an anastomosis.

It therefore is an object of the invention to provide a 35 novel instrument with an accessory which facilitates the application of a good anastomosis even in the difficult instances named above. The new instrument relies on an inversion of the usually narrower colon descendens or of the sigmoid, respectively, into the usually wider lumen of the rectum. This inversion is fixed by means of a ring 40 made of a plastic having a definite profile, which clamps the inverted parts and is enveloped by an annular tension spring. This spring preferably is made of a corrosion-proof metal.

A device is known which effects a combination of two 45 parts of an intestine. Thereby, a plastic cap, consisting of two parts, is inserted in each open end of the two intestinal parts to be combined, and their free ends are laced, or constricted over the parts of the cap. Then the intestinal walls are pushed against each other, so that a so-called "end-to-end" anastomosis is effected. A resection cannot be carried out with this known device at places which are difficultly accessible. For a resection with the instrument according to the invention, at least approxi- 50 mately 5 cm. of the caudal rectal tube must remain while the instrument, up to approximately 5 cm. below the tumor, is sacrificed.

According to the invention, the instrument consists primarily of a tubular apparatus and of a number of parts 60 which are movable in the direction of the axis of the tube and are, in part, disconnectable. The instrument is, in part, inserted in the anum while another part remains outside. The main tube of the instrument is to be inserted in the anus and is closed by a head which is disconnectably attached to a central shaft traversing the instrument and is movable back and forth on the main tube. 65 When the head is farthest from the free edge of the main tube, a narrower tube part, provided with air suction openings, emerges from said main tube. This narrower tube has a bulge on its outside, so that when a vacuum is created within this tube part by proper vacuum means, 70

2

the rectal wall enveloping this part of the instrument over and under said bulge is laced together, or constricted, and lies against the narrower tube part. These constrictions can be compressed by the head of the instrument and are 5 brought back into approximately their initial position. Inside the head, a knife is disposed, which, upon moving in the direction of the bulge of the narrow tube part, the latter, then serving as a dissecting table, is capable of cutting completely through that part of the constricted 10 rectal tube which lies between the cutting edge of the knife and the frontal surface of said bulge. Thereby the periphery of the cutting circle of the knife is larger than that of the narrowest place of the constriction of the rectum over the bulge. During and after the cutting, the lacing or con- 15 striction remains clamped under the bulge between its underside and an annular part of the instrument, and after the cutting movement, the head with its knife can be disconnected from the central shaft of the instrument. To the end of this shaft, an accessory then is connected, which is disposed in the open end of the intestine to be combined 20 with the remaining rectal tube. Simultaneously, an expandable part is present within the main tube and enveloping the narrower tube part which remains entirely within the main tube during the action just described. This expandable part has an annular spring near its free edge, which spring, by a further adjustment of the main tube, 25 extends to the bulge over the free edge of the main tube and there can expand in such a manner that, when the bulge and the free edge of the main tube again are brought toward each other, the annular spring is stripped off the 30 expandable part and carries the wall of the rectum with it in the direction of an upper lacing of the intestinal part to be connected and around a part disposed in that intestinal part, thus effecting an invagination and an anasto- 35 mosis.

Albeit no protection is claimed for the operation itself, a summary description thereof is deemed necessary to clarify the action of the novel instrument and of the accessories. Details of certain surgical measures are omitted 40 as not essential to the description of the action of the instrument according to the invention.

The patient is prepared, prior to the operation, with 45 laxatives, clysmac, intestinal antiseptics, vitamins, etc., for several days, and, if required, receives blood transfusions. The patient is given narcosis and is placed on the operating table with legs spread in the position according to Trendelenburg. A catheter is inserted in his bladder, and a medianal cut is administered in the lower abdomen, if necessary, up to the navel. After opening of the abdominal 50 cavity, the liver and the regional lymph glands are inspected and the extent of the tumor determined. When it has been established that a resection is feasible, the cut of the peritoneum parietale is carried out at the root of the mesosigmoid, and the isolation of the two ureters up to the bladder. The tumor then is detached from its environment, and the haemorrhoidales superior is cut at the 55 root. Then, the colon descendens or the oral loop of the sigmoid, respectively, is cut between clamps, the distal stump is covered with an iodine-saturated gauze, and a plastic ring is tied into the distal stump. After this cutting, the caudal intestinal part is secured with a circular clamp, and the diseased tissue is detached. The rectal part below the tumor is cleaned at a length of approximately 60 5 cm. and freed from fat and fibers, which is required for the success of the ensuing invagination and for a good anastomosis.

After this preparation, the instrument according to the invention is introduced in the anus. The instrument and its accessory, as well as its use and function, now 70 will be explained further with reference to the accompanying drawings, which represent a preferred embodi-

ment of the invention. However, it should be understood that these are given merely by way of explanation, not of limitation, and that numerous changes may be made in the details without departing from the spirit and the scope of the invention as hereinafter claimed.

In the drawings,

FIG. 1 is an elevation of the instrument according to the invention, whose front (upper) end has partially been inserted in the anus, while the instrument is in closed position.

FIG. 2 to FIG. 11, inclusive, show schematically different positions of the instrument during its operation, whereby solely the upper part of the instrument has been shown in an enlarged scale and only the cut through the left half has been drawn completely.

FIG. 12 shows the upper part of the instrument, almost in its natural size.

FIG. 13 shows the lower part of the instrument, also almost in natural size.

FIG. 14 shows the accessory.

FIG. 15 shows a cut through a so-called presenting rod.

Referring now to these drawings:

The main tube 1 is entered, through the stretched anus, in the rectum until head 2, with its leading edge, reaches the vicinity of the tumor, whereby a cone 7, described below, may enter the tumor to a slight extent. The instrument then is advanced with head 2 in the position shown in FIG. 1, and the careful pushing movements in the still closed intestine can be followed through the opened abdominal cavity. The main tube preferably is calibrated, as indicated in FIG. 1, so that the distance of the tumor to the rima dentata ani can be read, thus determining whether a resection can be carried out. The actions described above and those to follow are accomplished partly by the surgeon and partly by an assistant operating the instrument according to the invention.

The portion of the instrument remaining outside the anus is provided with serving rings 3 and 4 which serve to adjust head 2 relative to tube 1 and with a rotatable handle 5. The different reference numerals are given only in a part of the figures.

As is shown in the drawings, head 2 rests against the free edge 6 of main tube 1, when the instrument is in closed position. For reasons discussed below, head 2 preferably is provided with an obtuse part to which a bulge 7 connects which is principally conical in two opposite directions. When the instrument is operated, head 2 can be adjusted in axial direction so that a notch or groove forms between the lower side of bulge 7 and the free edge of main tube 1. With this adjustment, a narrower tube part 8 protrudes beyond the free edge 6. Tube part 8 is provided with air suction openings 8a. When air is sucked out of tube part 8 by means of a hose connected at 9, the rectal wall 10 comes to rest at 12, with lacing or constriction, against tube part 8. The manner in which the movement of the various parts of the instrument is attained, will be discussed below in connection with FIGS. 12 and 13. It is not of major importance with regard to the salient features of the invention, nor is the manner in which the various parts of the instrument are connected and in which they can be adjusted relative to each other.

Supposing now that serving ring 3 has been turned to the left, thereby effecting a relative adjustment of head 2 and of main tube 1. Upon further turning of ring 3 to the left, a bulge 11, disposed on the tube part 8, emerges above the free edge 6 of main tube 1. Below this bulge, the narrower tube part 8 also is provided with air suction openings 8a. In practice, when the constriction 12 has formed, a string is tied around the anum, constricted by the air suction, so that the rectum is securely held in the constriction. When the constriction 13 above the free edge 6 has formed, the rectal wall 10, by means of the suction air, also is sucked against

tube part 8, but not tied. In this manner, two inversions, a short distance from each other, and one above the other, are formed in the rectum. By turning the serving ring 4, head 2 now can be adjusted relative to the free edge 6, so that the head approximately returns to its initial position. The inversion in the rectal constriction 13 thereby is squeezed between the underside of bulge 11 and a ring 16 disposed thereunder. This is feasible because the bulge 11 is movable in axial direction to the ring 16 disposed below it. When head 2 emerges, a spring 40 assures that bulge 11 and the underlying ring 16, separated from each other thereby, are at a certain distance from each other. Upon the closing motion of head 2, the bulge 11, against the spring action, is pressed in the direction of ring 16 while clamping the inverted rectal wall. The co-action between ring 16, spring 40 and bulge 11 is shown in FIG. 12.

After the first constriction 12 has formed, forceps 12a are clamped around the rectum, surrounding the predominantly dual-conical bulge 7, within the abdominal cavity. The jaws of these forceps are semi-circular and have a cross-section approximately the shape of a >. In this manner, the forceps tightly grip the dual-conical bulge 7. The forceps are held tight until an ensuing manipulation of the instrument has taken place. The latter leads to the cutting of the rectum. For that purpose, a knife or scalpel, 14, is disposed within head 2, especially within its bulge 7. In the embodiment shown, this scalpel 14 not only is adjustable in its axial direction, but also rotatably around the shaft. By turning handle 5 to the left, the cutting edge 15 of the turning knife 14 emerges from below bulge 7 of head 2, whereby, hence, the knife adjusts in axial direction relative to bulge 11. The upper part 11b of bulge 11, facing knife edge 15 and now serving as dissecting table, preferably is made of a rather soft material. Upon cutting the constriction of the rectal wall lying on the dissecting table, the part of the rectum held in position by the anum tied with a string to the narrow tube part 8 remains within the circular path of the knife. When the cutting is terminated, the rectal strip thus obtained can be removed and subjected to histological examination. The cutting movement hence is such that the knife follows the direction of the passing rectum and cuts off the loop-like constriction within the rectum.

As will be explained more fully in the discussion of FIGS. 12 and 13, head 2 is fastened to shaft 18 by means of screw thread 17. By means of the screw thread 19, the knife 14 is rotatable within a drill hole in the head. The knife is carried along when shaft 18 turns because pins 20 engage a slit 21 in a part of the knife provided with screw threads. The pitch of threads 17 and 19 is different from each other. When shaft 18 is turned, the knife reaches the outside faster than head 2 detaches from shaft 18. For that purpose, the pitch of thread 19 is larger than that of thread 17. When the cutting motion is finished, due to turning of shaft 18, head 2 and the knife 14 consequently are detached from shaft 18 simultaneously. The thus detached part of the instrument still is held by the forceps 12a and now is removed together with the diseased intestinal part as a whole. The lumen of this intestinal part is sealed hermetically, and infection of the field of operation with detritus or with infected material from the tumor is impossible.

Meanwhile, main tube 1 still remains in the anus while the free edge of the cut rectum still is clamped in the instrument. It now is intended to carry out an anastomosis between the rectal stump remaining in the small pelvis and the proximate intestinal part. For that purpose, the accessory is fastened in the proximate intestinal part. This accessory consists of a plastic ring 22 which widens upward substantially conically. This ring has a groove 22a on its outside, wherein the end of the proximate intestinal part is tied. Plastic ring 22 has a screw thread 25a holding a substantially tube-shaped part 23

5

which has an external screw thread 25, both threads 25 and 25a being lefthanded, part 23 also has an internal screw thread 24 corresponding to the thread 17 on shaft 18. This enables screwing the tubular part 23 onto shaft 18, the end of which is in the pelvis. For that purpose, the proximate intestinal part 26 (see FIG. 8) with plastic ring 22 and the tubular part 23 present therein are taken up by the surgeon with a piece of sterile gauze and moved in the direction of shaft 18. By turning the handle 5 to the right, screw thread 17 is screwed into thread 24 of part 23, whereby constriction 27 approaches constriction 13 of the rectal wall.

This movement is continued until the surgeon finds that the accessory tends to turn with the assembly. As will be described more fully below, the tubular part 23 can be removed from the plastic ring 22 by turning handle 5 to the right because, when the accessory is held in place, the tubular part 23 turns out of ring 22, since the screw threads 25 on the outside of part 23 and 25a on the inside of ring 22 are left-handed. Hence, upon turning the shaft to the right, the ring detaches from the tubular part. However, before this detachment takes place, an anastomosis must first be accomplished.

When the accessory is connected to central shaft 18 in the manner described above, the constriction 27 of the proximate intestinal part 26 is at a certain distance from the constriction of the rectal wall 10 (cf. FIG. 6). FIGS. 2 to 5 show the situations described above. By further turning handle 5, main tube 1 is returned in such a manner that the expandable part 28 protrudes beyond the free edge 6 of the main tube. In that situation, an annular spring 29 becomes visible. This spring is situated in the vicinity of the free edge of a plurality of lips 30, disposed circularly next to each other. These lips, at the end not shown in the drawing, are linked flexibly in such a manner that the ends around which annular spring 29 rests, give way outwardly so that the diameter of these lips is enlarged. This manipulation of the instrument is carried out by turning the serving ring 4 to the left. The central shaft 18 thereby is pulled in together with the accessory. Thereby, the underside of plastic ring 22 now gets into the space enclosed by the free ends of lips 30. The annular spring 29 thereby is expanded, and its diameter becomes larger than the inner diameter of main tube 1. If, by turning the serving ring 3 to the right, main tube 1 is adjusted toward, and in the direction of, plastic ring 22, the free edge 6 of main tube 1 pushes against the underside of annular spring 29. The latter then is pressed away from the lips 30 and inverts in the constriction at 27. Consequently, the outer wall of rectum 10 is carried along with the ring and comes to rest against the outer wall of the proximate intestinal part in the constriction 27. In order to accomplish a good anastomosis, it is of particular importance to press the outer walls of these two parts, i.e., of the intestinal part and of the rectum. The required squeeze is provided by the spring 29. At the borderline of death and life, these two parts later grow together, and a necrosis of the intestinal walls forms. It has been found that after approximately two months the connection between these two intestinal parts can be recognized only by the mucous membrane relief without a trace of stenosis. The annular spring 29 preferably should be of a corrosion-proof metal.

An anus praeter, temporarily disposed in the colon transversum for the relief of the anastomosis, is closed after six weeks. After the situation shown in FIG. 9 has formed, the accessory with the tubular part 23 must be removed from the body. For that purpose, as shown in FIG. 10, main tube 1 first is brought into a larger distance from plastic ring 22 by turning serving ring 3 to the left. Then, the front of the instrument can be opened above the free edge 6 of main tube 1 to a maximum. If serving ring 4 first is turned to the right, the central shaft

6

18 is brought forward as far as possible, and plastic ring 22, on which the anastomosis is fixed by means of the annular spring 29 inside the intestine, emerges from the front end of the instrument. This phase also is shown in FIG. 10. By then turning handle 5 to the right, whereby the anastomosis is held with gauze in the hand, plastic ring 22, with its left-handed thread, is disengaged from the tubular part 23 in the manner described above. Part 23 remains, due to its right-handed thread, on the central shaft 18. The instrument then is removed, with the tubular part and the central shaft, from the anus. In the intestine, solely plastic ring 22 and the spring which presses at the anastomosis from inside, remain. The ring which has a relief passage (not shown in the drawing) remains in the body for some time and later is removed therefrom. When the intestinal parts have entirely grown together, the plastic ring detaches itself from the inside of the intestine.

In order to facilitate the removal of plastic ring 22, it is recommended to install a string 31 at its upper rim in openings 53 provided for the purpose. This thread also is fastened to the upper end of tubular part 23 by means of the apertures 52a in studs 52. This string must be much longer than the direct distance between the two fastening points. When, upon the detachment, in the situation shown in FIG. 11, the tubular part 23 is pulled out of the central opening of plastic ring 22, the string, remaining tied to the plastic ring, also is pulled out of the anus. With the aid of this string, it can be established later on whether or not the ring has detached itself from the intestinal walls. This can be ascertained after approximately 7 to 8 days by gently pulling the string. The term, "string" is used herein in preference to "thread" which is a more common term to distinguish from the screw threads frequently appearing in this disclosure.

Now that the different phases of manipulation of the instrument and its functions and those of its subparts have been described, it will be explained with reference to FIGS. 12 and 13, how a preferred embodiment of the instrument according to the invention may be assembled. FIG. 1 shows the instrument consisting of a main tube which carries calibrations. Bulge 7 of head 2 rests on free edge 6 when the instrument is in closed position. Further illustrated are the serving rings 3 and 4, handle 5 and a perforated sleeve 32, surrounding main tube 1. Sleeve 32 serves to ascertain and to fix the positions shown in FIGS. 1 to 11, inclusive. For that purpose, a holder 44 is disposed in a part within sleeve 32 for an arresting ball 43 which is under spring action. This holder engages in the perforations of sleeve 32 when a definite position has been attained. The different positions which are attained by turning serving ring 3 are fixed by an arresting ball which cooperates with the apertures in the upper part of sleeve 32 as will be described below in detail. Those positions attained by turning serving ring 4 are arrested by a second ball which cooperates with the apertures in the lower half of sleeve 32.

FIGS. 12 and 13 illustrate the upper part and the lower part, respectively, of the instrument which together form the total instrument.

At the start of the use of the instrument, head 2 is screwed onto central shaft 18 which is provided with threads 17. FIG. 12 shows the instrument according to the position in FIG. 3. In that position, the central shaft 18 is screwed up, and the narrower tube 8, provided with air suction openings 8a, is visible. At some distance from the bulge 7 of the head 2, which is conical in two directions, a bulge 11 is present on narrower tube 8, which consists of a soft material 11a at the side facing the head 2, since this serves as a dissecting table. In this manner, the constriction 12 forms, whereas the constriction 13 forms below bulge 11. In the head, knife or scalpel 14, having a cutting edge 15, is visible. The knife is provided, at its upper side, with a right-handed screw thread 19 whose pitch is higher than that of screw thread 17

within the head or at the end of shaft 18, respectively. In the knife head, slits 21 are present into which pins 20 fit. The latter carry the knife along upon rotation of shaft 18. By turning handle 5, the shaft can be turned to the left or to the right for reasons given below. An adjustment of head 2 relative to main tube 1 without turning shaft 18 is accomplished by actuating serving ring 3. The latter is rotatable about main tube 1, but cannot be adjusted in the axial direction of the latter. When serving ring 3 is turned, the screw socket 34 having internal threads is adjusted by way of screw socket 35. Socket 35 is rigidly fastened to the internal tube 36. The turning of serving ring 3, hence, effects an upward or downward adjustment of screw socket 34. With this adjustment, a seat 37 for an arresting ball 38 is adjusted which then becomes visible in one of the apertures 39 of sleeve 32.

After edge 6 of main tube 1 has been further removed from head 2, the narrower tube part 8 comes into sight, also bulge 11, above and below which the constrictions 12 and 13, respectively, are present. Under the part wherein apertures 33 are disposed, a spring 40 is located which provides, in the situation depicted, for a certain distance between bulge 11 from upper edge 6 or from the upper surface 41 of the ring 16 covering it, respectively. A part not shown also can effect that bulge 11 can glide along hollow shaft 18 but is held at a definite maximum distance from ring 16. When head 2 is brought into closed position, this is accomplished against the action of the spring 40 in such a manner that the lower edge of bulge 11 gets close to the frontal surface 41 of ring 16. Head 2 is carried to free edge 6 or its upper surface 41, respectively, by turning serving ring 4 to the left. This ring is fastened to a screw socket 42 having internal threads and also having, on its outside, a seat or support for a ball 43. Ball 43 is actuated by spring 43a and is visible through aperture 44 of sleeve 32. When serving ring 4 is turned to the left, socket 42 is carried along with screw socket 45, the latter being rigidly connected to inner tube 36. This adjustment has the effect that central shaft 18 is pulled downward without rotation since socket 42 is freely rotatable around a clamping sleeve 46, clamped on shaft 18 and rigidly connected to ring 4. Central shaft 18 is hollow, and air can be sucked out of the same at 9. Air can enter the shaft at 33 and 47. It is obvious that in the manner described the different positions of the instrument can be attained.

The perforated sleeve 32 is rigidly fastened to the inner tube 36. The latter is provided with a slit 48 wherein a pin 49 of main tube 1 moves up and down in axial direction. This pin 49 prevents turning but facilitates adjustment of tubes 1 and 36 relative to each other.

Main tube 1, according to the position shown, e.g., in FIG. 7, can be brought back further with respect to the frontal surface 41 of ring 16. In that position, the ends of lips 30 extend beyond edge 6 and annular spring 29. Lips 30 are substantially loose and are connected by means of a collar 50a to a ring-shaped part 50b at 50. For easy cleaning of the apparatus, the lips together with the collar can be removed from the ring. By moving these parts of the instrument in the direction of the ring 16, the ends of the lips spread out. This expands spring 29. This spring, as has been stated above, can be stripped off by the lips. Spreading of the lips can be effected by the lower edge of plastic ring 22 when the latter is fastened to the central shaft, together with the other parts of this accessory, as also has been discussed above.

The accessory is shown in FIG. 6, and, on a larger scale, in FIG. 14. The tubular part 23 has an internal screw thread to be able to cooperate with the end of central shaft 18. Tubular part 23 also has a left-handed thread 25 on its outside onto which the plastic ring 22 is screwed. The strings 31 are fastened at opening 52a

to the tubular part 52, and at 53 to the plastic ring and are sufficiently long to extend outside the anus when the tubular part is removed therefrom.

Finally, in FIG. 15, the so-called presenting rod is illustrated. This simple device has a thread at its end which fits the thread of tubular part 23. After the latter has been screwed onto the presenting rod, the accessory can be inserted in the proximate intestinal part, and the presenting rod then is screwed and removed. Conical portion 54 of the presenting rod can be used to stretch annular spring 29, when, after cleaning of the device, that spring again is to be set around the lips. The diameter of cone 54, hence, is to correspond to the diameter of the circle which the lips form in unspread position.

I claim as my invention:

1. An instrument to be inserted at least in part in the human body, to be used in the resection therapy for carcinoma recti and other disease-caused abnormalities of the rectum and of the rectosigmoid and for carrying out an anastomosis between rectum and intestine, which comprises, in combination, a main tube; a central shaft traversing and protruding beyond said main tube; a head detachably connected to the top of said central shaft; screw means for connecting and disconnecting said head to and from said shaft; a narrow tube concentrically disposed beyond said central shaft and said main tube and protruding beyond the latter, provided with air suction openings; means for applying a vacuum to effect air suction; a bulge rigidly attached to said head at said head's lower end and resting detachably upon the upper edge of said main tube; screw means to raise said bulge from said upper edge of said main tube thereby baring, and providing access to, said narrow tube; said bulge, in raised position, being capable of insertion in said rectum therein causing constriction, compression and reversion of said rectum to approximately its original position under the influence of said vacuum in said narrow tube, said bulge also serving as a dissecting table; a knife disposed in said bulge and movable through said head, capable of cutting completely through said rectum upon moving in the direction of said head while carrying out a circular motion of a periphery larger than that of the constricted rectum over said bulge; screw means for actuating said knife and moving it through said head; means for actuating said head on, and for detaching said head plus knife from said central shaft; a plastic ring, to be inserted in said intestine; a tubular part removably connected to said ring; means for attaching said ring plus tubular part to said shaft when said head is disconnected therefrom thus bringing said rectum and said intestine in intimate contact; means for disconnecting said tubular part from said ring after said contact has been made; means for disconnecting said tubular part from said shaft; and means for removal of said ring from the human body after said contact between said intestine and said rectum has become permanent.

2. The instrument as defined in claim 1, wherein said head is provided with an obtuse frontal part to which a second bulge is connected, said second bulge being situated between said obtuse part and the upper edge of said main tube and being substantially conical in two opposite directions.

3. The instrument as defined in claim 1, wherein said knife within said head is cylindrical and is equipped with screw threads which provide for rotation of said knife in coaction with said head.

4. The instrument as defined in claim 3, wherein the screw threads of said knife have smaller pitch than the screw means by which said head is attached to said central shaft.

5. The instrument as defined in claim 1, wherein said means for connecting said ring plus said tubular part

coact with an expandable part surrounding said narrower tube while the latter remains entirely within said main tube without protruding therefrom, said expandable part comprising a plurality of lips, disposed loosely and circularly around said narrower tube, a second ring, disposed 5 on the outside of said narrower tube, holding said lips at their lower ends, and an annular spring surrounding the upper ends of said lips, said spring being capable of being stripped off said lips when said narrower part protrudes beyond said main tube.

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