May 14, 1929. W. N. ALLYN 1,712,866

ANUSCOPE

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Fig. 1.

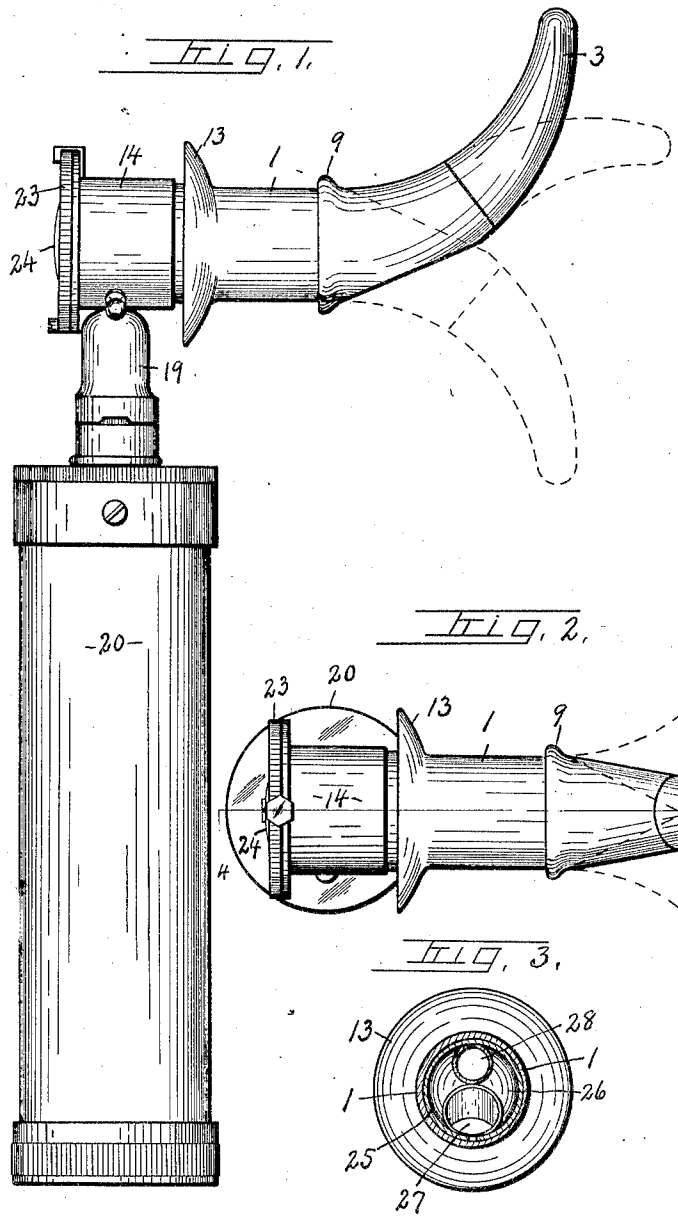


Fig. 2.

Fig. 3.

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Fig. 4.

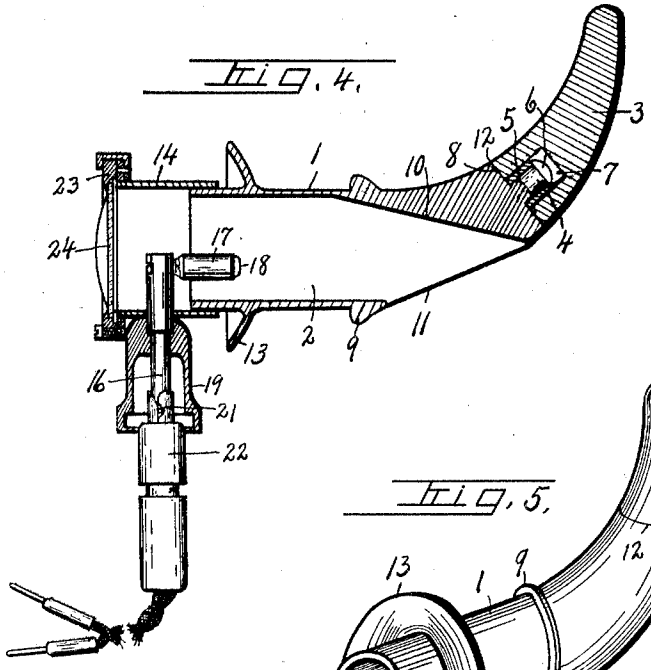


Fig. 5.

Fig. 6.

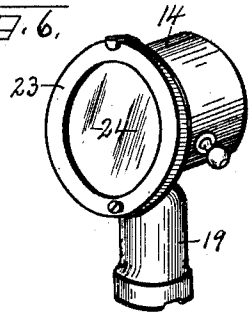


Fig. 7.

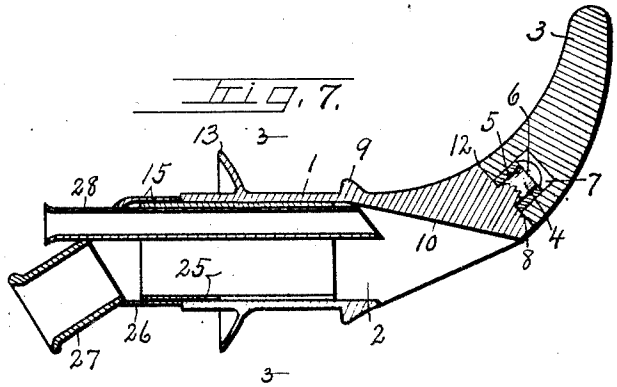
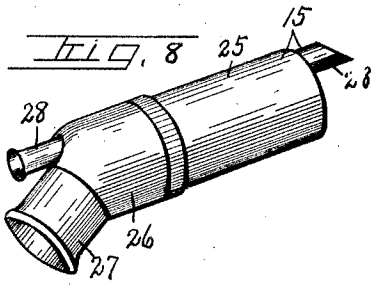


Fig. 8



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UNITED STATES PATENT OFFICE.

WILLIAM NOAH ALLYN, OF AUBURN, NEW YORK.

ANUSCOPE.

Application filed November 28, 1927. Serial No. 236,188.

This invention relates to an anuscope adapted to be used by physicians and surgeons in the examination, diagnosis and treatment of the terminal portions of the alimentary canal and involves the use of a tubular member open at both ends and having its distal end provided with a laterally curved and tapered entrant section swiveled thereto at one side of the opening to automatically direct the entrance of the tubular member into the more or less sinuous duct without irritation thereof, the proximal end of the tube being arranged to receive a suitable lamp case carrying a relatively small but powerful incandescent electric lamp projecting into the interior of the tube for illuminating the anatomical parts under examination or, when desired, the lamp case may be removed and replaced by an irrigating device inserted into the interior of the tube through the proximal end thereof for permitting the introduction of an irrigating fluid and simultaneous discharge of excretions from the duct into which the anuscope is inserted.

The main object is to provide a device of this character which is more sanitary, more convenient of manipulation and less irritating to the patient than has heretofore been practised.

One of the specific objects is to make the joint between the tapered entrant member and main body of the tube substantially smooth so that the surfaces of both members will be continuous or free from irritating obstructions.

A further object is to provide the medial portion of the tube with an annular bead of such construction that it will readily enter the duct and allow the latter to contract thereover at the rear side thereof to assist in retaining the tube in operative position when making the examination or diagonsis of the condition of the duct.

Another object is to provide the tube with a protective shield or stop flange to prevent its excessive entrance into the duct.

A further object is to enable the device to be readily connected to or detached from a suitable battery-containing handle whereby the anuscope may be more conveniently projected into and withdrawn from the anatomical duct and at the same time to supply the necessary current for lighting the lamp.

Other objects and uses relating to specific parts of the device will be brought out in the following description.

In the drawings:—

Figure 1 is a side elevation of an anuscope in which the lamp section is mounted upon a suitable battery handle containing the source of electric energy for the lamp, the dotted lines indicating different angular positions to which the main body of the tube and swiveled extension thereof may be turned.

Figure 2 is a top plan of the device shown in Figure 1 in which the dotted lines indicate different positions of adjustment of the tube and swiveled extension.

Figure 3 is a transverse sectional view through the proximal end of the tube with the irrigating device therein taken in the plane of line 3—3, Figure 7.

Figure 4 is a longitudinal vertical sectional view of the device shown in Figure 1 taken in the plane of line 4—4, Figure 2, except that the battery handle is omitted and the lamp terminals are connected to a flexible cord adapted to be plugged into or otherwise connected to a medical battery or other source of electric energy.

Figure 5 is a perspective view of the detached tube and swiveled extension thereof.

Figure 6 is a perspective view of the detached lamp case.

Figure 7 is a longitudinal sectional view of the tube shown in Figure 5 and my improved irrigator mounted therein.

Figure 8 is a perspective view of the detached irrigator.

As illustrated, the anuscope comprises a tubular member —1— having an opening —2— extending therethrough from end to end, the distal end of said tube being curved laterally to one side of the opening and provided with a tapered entrant extension —3— swiveled thereto to turn about an axis at an agle to the axis of the tube —1— and this swivel connection between the part —1— and —3— may be made in any suitable manner but, as illustrated, the distal end of the member —1— is provided with a reduced cylindrical stud or pivotal pin —4— projecting forwardly therefrom and upon which is journaled a sleeve —5— held in place against outward axial displacement by a head —6— on the outer end of the pivotal pin —4—.

The rear end of the extension —3— is pro-

vided with a socket —7— for receiving the sleeve —5— which is tightly held in the socket by pressing the extension —3— endwise over and upon the sleeve after the latter has been properly mounted upon the pivotal pin —4—.

The sleeve —5— is held against axial movement between the head —6— and the shoulder as —8— formed by the reduction of the diameter of the pivotal pin —4— while the socket —7— is slightly longer than the pivotal pin —4— and its head —6— to enable the rear end of the tapered extension —3— to be pressed firmly against the shoulder —8— when forcing it over and upon the periphery of the sleeve thus forming a tight connection between the sleeve and extension —3— and permitting said extension with the sleeve therein to be rotated about the axis of the pivotal pin which fits snugly within the sleeve to prevent radial movement of the parts —1— and —2— relatively to the pivotal pin.

This pivotal connection between the tube —1— and tapered extension —3— is wholly at one side of the distal end of the opening —2— through the tube while the adjacent ends or meeting faces of the sections —1— and —2— are of the same diameter and approximately the same degree of taper so as to establish a substantially smooth joint and continuous curved surface across the joint to avoid irritation of the duct into which the device may be inserted.

The object in curving the distal end of the anuscope laterally is to facilitate its entrance into the duct while the swiveled tapered extension —3— directs such entrance through more or less tortuous parts of the duct by automatically conforming to the direction of extension of said duct.

The medial portion of the tubular section —1— is provided with a peripheral annular bead —9— having its front end tapered forwardly to facilitate its entrance into the duct and its rear end more abrupt or more nearly at right angles to the axis of the tube to enable the walls of said duct to contract against the adjacent portion of the tube and thereby to retain the anuscope in operative position during examination of the interior of the duct.

The rear end of the tubular section —1— terminates in a plane diagonal to the axis thereof and approximately tangential to the curvature of the adjacent side of the distal end of said section so that the opening in the distal end of the tube is somewhat larger than the interior diameter of the tube thus permitting the examination of a relatively wide area of the interior of the duct into which the device is inserted by visual observation through the proximal end of the tube.

The inner wall of the distal end of the opening —2— to which the extension —3— is attached is inclined at —10— forwardly and inwardly toward the axis of the tube to afford a more solid support for the extension —3— without materially contracting the opening in the inner end of the tube.

The inclination of the wall —10— relatively to the axis of the tube approximates the angle of inclination of the end face as —11— of the tube so that the apex of the angle between the two surfaces will be approximately in the axis of the tube —1— and just at the rear of the joint as —12— between the sections —1— and —3—, the object of which is to facilitate the entrance of the anuscope into the duct and the drainage of excretions therefrom through the tube.

Aside from the inclined distal end —11— of the tube the cross sectional area of the exterior thereof and of the extension —3— is circular and smooth to enable those parts to readily enter the anatomical part under examination and also to be turned about its axis without excessive irritation of that part, it being understood that during the turning movement of the tubular section —1— in the duct the extension —3— will remain in its adjusted position or may assume any other position of least resistance.

The tubular section —1— is also provided with a rearwardly flaring annular flange —13— of greater diameter than and in axially spaced relation to the bead —9— to constitute a stop shield for preventing excessive entrance of the anuscope into the terminal end of the alimentary canal.

The proximal end of the tube —1— is cylindrical, both externally and internally for receiving a lamp case —14— and an irrigator —15— respectively.

The lamp case is placed telescopically over and upon the proximal end of the tube with a reasonably close sliding and circumferential fit to permit relative angular movement of those parts as may be required for convenience of manipulation of the anuscope.

An electric terminal post —16— is secured in an opening in one side of the lamp case —14— to extend radially through and beyond said side for receiving and supporting at its inner end a lamp socket —17— containing an electric incandescent lamp —18—, the outer end of said post being provided with a coupling member —19— for attachment to a suitable battery handle —20— and is also provided with a radial lug —21— for connection with cord coupling —22—, if desired, without removing the coupling member —19—.

The terminal post —16— and its cord coupling —22— are similar to that set forth in my application Serial No. 11,495, filed Feb. 25, 1925, allowed September 14, 1927, and application Serial No. 226,726, filed October. 17, 1927.

The battery coupling section —19— is similar to that set forth in my pending application Serial No. 220,460, filed Sept. 19, 1927,

which also shows a battery handle similar to the battery handle —20— of this application and adapted to contain one or more battery cells and a suitable switch for controlling the current to the lamp.

The lamp case —14— is similar to that shown in my pending application Serial No. 226,726, previously referred to and not necessary to herein further illustrate or describe, except that its proximal end is provided with a lens supporting frame —23— carrying a lens —24—, both of which are movable to and from a position across the opening in the tubular lamp case.

In the present application the lamp socket —17— is secured directly to the inner end of the post —16— so as to project into the proximal end of the tube —1— but in spaced relation to the walls thereof and preferably near its axis so as to project the rays of light forwardly through the tube and into the duct into which the anuscope is inserted, said lamp being also located some distance to the rear of the distal end of the tube which protects the same against contact with the walls of the anatomical duct.

The irrigating device —15— comprises a metallic tube —25— having an exterior diameter substantially equal to the interior diameter of the tube —1— to fit telescopically therein with a close friction fit to permit relative angular movement of both tubes, the tube —25— being provided with an enlarged outer end head —26— adapted to abut against the outer end of the tube —1— to limit the inward movement of the tube —25— as shown in Figure 7.

The outer end of the head —26— is provided with a reduced tubular nipple —27— at an angle to the axis thereof and mainly at one side of said axis to deflect any excretions from the anatomical duct entering the tubes —1— and —25— from the outer end of said tubes.

A relatively small metallic tube —28— is secured in an opening in the outer diagonal wall of the head —23— to extend into and through the tube —25— parallel with, but wholly at one side of the axis of the tubes —1— and —25— and has its outer end adapted to be connected to any available source of supply for a suitable irrigating fluid which may be projected through the tube —28— and into the anatomical duct under examination or treatment.

The inner surface of the tubular member —1— may be coated with a black lining adhesively secured thereto to permit a more direct projection of the light rays from the lamp to the affected part under examination or treatment.

What I claim is:—

1. An anuscope comprising a tubular member open at both ends, and a tapered extension swiveled to the distal end of the tubular member to rotate about an axis at any oblique angle to the axis of said member.

2. An anuscope comprising a tubular member having its distal end curved laterally, and a laterally curved extension swiveled to the distal end of the tubular member to rotate about an axis at an oblique angle to the axis of said member.

3. An anuscope comprising a tubular member having its distal end curved laterally and a forwardly tapered extension swiveled to the distal end of said member to rotate about an axis at an oblique angle to the axis of said member.

4. An anuscope comprising a tubular member open at both ends and having its distal end face disposed diagonally to its axis for enlarging the adjacent end opening, the inner wall of the opening opposite the diagonal end face being inclined forwardly and inwardly toward said axis to serve as a deflector for liquid injections through the tubular member.

5. An anuscope comprising co-axial tubular members telescopically assembled for relative turning movement, and a tapered extension swiveled to the distal end of the entrant member wholly to one side of the axis of the tubular member for relative turning movement.

6. An anuscope comprising co-axial tubular members telescopically assembled for relative turning movement, and a forwardly curved extension swiveled to the distal end of the entrant member wholly to one side of the axis of said members for relative turning movement.

7. An anuscope comprising co-axial tubular members telescopically assembled for relative turning movement, the entrant member having its distal end curved laterally, and a laterally curved tapered extension swiveled to said curved end for relative turning movement.

8. In an instrument of the character described, a tubular member having a peripheral flange near its proximal end and its distal end provided with a laterally curved tapered extension, said tubular member having a peripheral bead between said flange and laterally curved tapered extension to assist in retaining the tubular member in the organ under treatment.

In witness whereof I have hereunto set my hand this 17th day of Nov., 1927.

WILLIAM NOAH ALLYN.