April 3, 1928. 1,664,660

W. J. CAMERON

NASAL RETRACTOR OR SPECULUM

Filed Jan. 12, 1927

Fig. 1

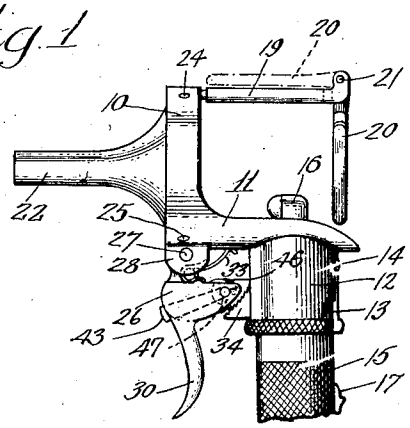


Fig. 2

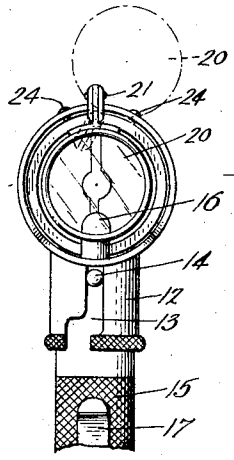


Fig. 5

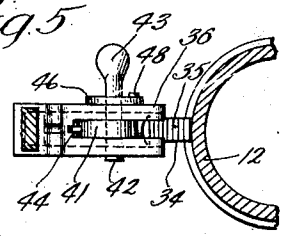


Fig. 3

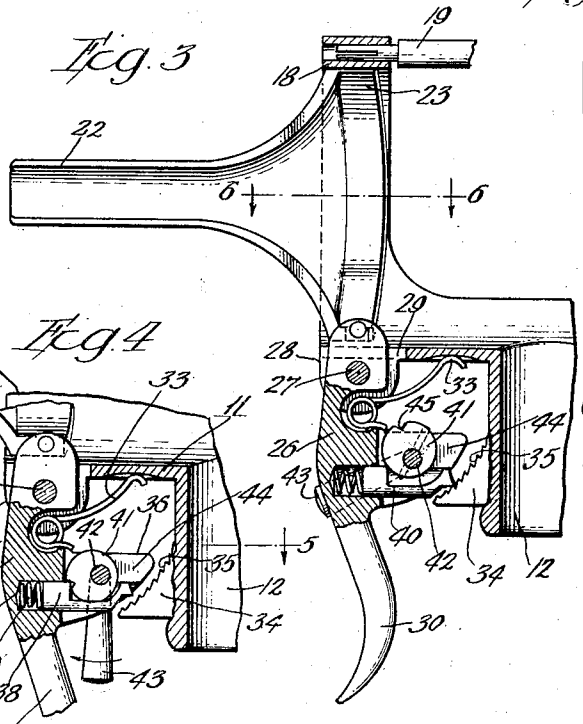
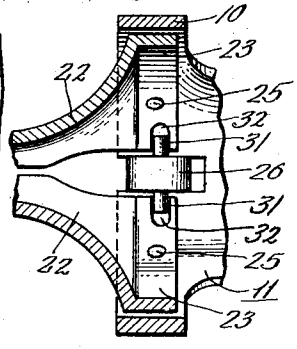


Fig. 4

Fig. 6



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UNITED STATES PATENT OFFICE.

WILL J. CAMERON, OF CHICAGO, ILLINOIS.

NASAL RETRACTOR OR SPECULUM.

Application filed January 12, 1927. Serial No. 160,635.

My present invention relates to a surgical instrument, and it has specific reference to an instrument that may be utilized in making examination, diagnosis, operation and treatment of the nasal and other cavities.

I have provided a nasal instrument that is adapted to be inserted into a cavity and by a slight movement of a control device be made to open its jaws and thereby distend the walls of the cavity so that the condition of the membrane, tissue and other physical formations may be observed for the purpose of diagnosis or treatment. The control device is in the form of a trigger that has a compound or duplex control; that is, the trigger may be moved as far as desired and when the pressure of the finger is released therefrom the jaws of the instrument will automatically close, or when it is desired to maintain the jaws in open positions a pawl and ratchet structure may be moved into co-action so that when the trigger is pulled back the latter will be maintained in any position to which it is moved. In connection with the trigger and the pawl and ratchet structures I have provided a simple means for readily releasing the trigger from any adjusted position in which it may be held by the pawl and ratchet devices, so that in an emergency the jaws may be quickly closed to remove the instrument from the cavity. The instrument is well adapted to be used in the cavity of a patient's ear when the physician is making aural inspection or treatment, and it is also adapted to be used for any other purpose to which it may be put by the physician or attendant.

Among the objects of my invention are the provision of an instrument of the kind described that is novel in construction, economical to manufacture, compact in arrangement and is dependable in performing the functions it may be called upon to do. I prefer to accomplish the foregoing objects and to carry out my invention in substantially the manner hereinafter described and as particularly pointed out in the claims, reference being herein made to the accompanying drawings that form a part of this specification, in which drawings,

Figure 1 is a vertical side elevation of my improved instrument, showing the same mounted upon a suitable holder that carries a source of illumination.

Figure 2 is an end view of the instrument looking at the same from the right in Figure 1.

Figure 3 is a vertical axial section longitudinally of the instrument and enlarged.

Figure 4 is a fragmentary view of the trigger and actuating portion shown in Figure 3.

Figure 5 is a horizontal section on line 5—5 of Figure 4, looking in the direction of the arrows.

Figure 6 is a horizontal section on line 6—6 of Figure 4 looking in the direction of the arrows.

The accompanying drawings are schematic and illustrate a typical or preferred embodiment of my instrument, and in said drawings similar reference characters are employed to designate the same parts wherever they appear throughout the several views.

The instrument comprises a barrel the forward portion 10 of which is cylindrical and the remaining portion 11 of which is of concavo-convex shape and extends away from the cylindrical portion and is provided with an opening which is fitted with a tubular stub 12 disposed with its axis arranged five degrees (5°) oblique to the vertical for convenience in use. The stub is provided with a bayonet-slot 13 to coact with a pin 14 on the upper end of the cylindrical handle 15 to effect a coaction between these members. The upper end of the handle is inserted into the stub 12 and carries an angular miniature lamp or bulb 16 that is adapted to be moved up and down into and out of alinement with the axis of the barrel by the slide element 17 so as to illuminate the portions under observation or treatment. In the upper segment of the cylindrical part 10 of the barrel there is a suitable socket 18 to receive the shouldered end of a rod 19 while the opposite end of said rod carries a lens 20 through the medium of a hinge connection 21 which permits the lens to be placed in alinement with the axis of the barrel or the lens may be swung with the rod to one side as in Fig. 2, or it may be folded over by its hinge upon the rod as illustrated in Fig. 1 in dotted lines.

The speculum jaws 22, 22, are of elongated conical shape, preferably counterparts of each other and together form a cone split upon its longitudinal axis. The rear ends of the jaws next the barrel are pro-

vided with segmental flanges 23, 23, that are each connected by upper and lower pivot pins 24 and 25, respectively, to the interior of the barrel so that when said jaws are operated their tapered ends may be moved away from or towards each other.

In order to move the jaws 22, 22, there is provided a trigger structure in the form of a bar 26 pivoted near its upper end upon a pin 27 between a pair of ears 28 depending from the lower portion of the cylindrical portion 10 of the barrel and disposed upon each side of a short longitudinal open ended slot or recess 29 in said cylinder portion. The lower portion of the bar extends downwardly in front of the handle 15 in the form of a curved finger-grip 30, and the upper end of said bar reciprocates in the slot 29 between the adjacent portion of the flanges 23 of the speculum jaws where it is provided with a cross arm 31 the ends of which enter recesses 32 in the adjacent edges of the jaws. Thus, whenever the finger portion 30 of the trigger is moved towards the handle 15 the upper end of the trigger moves forward or outwardly and the cross-arm and slot connection between the trigger and the jaws causes the outer ends of the latter to be moved away from each other. A spring element 33, connected at one end to the trigger bar, has its opposite end bearing against the underside of the barrel and is adapted to automatically return the trigger-bar 26 to its normal position and close the speculum jaws, when the operator releases his hold upon the finger piece 30.

It is frequently desirable, and sometimes necessary, to maintain the jaws in a definite opened position which of course could not be done with the structure as thus far described unless the person operating the speculum continues to hold a finger upon the trigger finger-piece 30, and this would be inconvenient to the operator for he would have the use of but one hand in performing an operation within the cavity in which the jaws have been inserted and opened. Provision is therefore made for maintaining the structure in any position into which it may be moved and for readily releasing the same whenever desired. This structure is preferably in the form of a pawl and ratchet latching device which is in itself adjustable so that the coaction between the same and the speculum may be discontinued whenever it is undesirable to employ the latch. An enlargement 34 is formed upon the side of the tubular stub 12 next the trigger and the edge thereof nearest the trigger is curved inwardly and upwardly, and is provided with ratchet teeth or serrations 35 adapted to be engaged by a pawl carried by the trigger. A laterally extending enlargement 36 is formed upon the trigger-bar 26 and is provided with a bore 37 in which a cylindrical pawl 38 is reciprocably mounted and a spring element 39 is seated in the inner end of the bore that is adapted, when the pawl is released, to project the outer pointed end of the pawl into engagement with the serrations upon the ratchet element as illustrated in Figs. 1 and 2. The body of the pawl has an elongated recess 40 cut in its upper part that extends a portion of its length to receive a cam-disk 41, which latter is eccentrically mounted upon the spindle 42 journaled in the enlargement 36 and having one end extended outside the enlargement and provided with an operating lever 43. For conveniently mounting the cam-disk 41 the enlargement 36 is provided with an elongated slot or recess 44 in which the disk is positioned upon its edge. A notch or shoulder 45 is made in the periphery of the cam-disk so as to engage the corner at the inner end of recess 40 in the body of the pawl when the parts are positioned as shown in Fig. 4 thereby maintaining the pawl in a retracted position and out of engagement with ratchet teeth 35.

It will be observed that when the major axis of the disk is opposite the inner corner of the pawl recess 40 the pawl will be retracted, and when the lever 43 is moved in the direction of the arrow thereon in Figure 4 the minor axis of the cam-disk will move into the pawl recess and permit the pawl to be projected by the spring into engagement with the ratchet teeth 35. Next to the lever arm 43 there is a concentric disk 46 mounted on spindle 42 having a recessed portion 47 and a stop-pin 48 is engaged by opposite ends of the recess to limit the movement of the lever-arm and spindle so that the cam-disk 41 may be accurately positioned with respect to the retracted or released position of the pawl and to prevent complete rotation of the cam-disk.

What I claim is:—

1. An instrument of the kind described comprising a barrel, oppositely disposed jaws pivoted on said barrel and jointly forming a walled passageway, a trigger having its fulcrum external to said barrel, and means operatively connecting said trigger to said jaws, whereby the movement of said trigger opens and closes the outer portions of said jaws.

2. An instrument of the kind described comprising a barrel, oppositely disposed jaws pivoted on said barrel and jointly forming a walled passageway, an automatically returnable trigger having its fulcrum external to said barrel, and means operatively connecting said trigger to said jaws, whereby the movement of said trigger opens and closes the outer portions of said jaws.

3. An instrument of the kind described comprising a barrel, oppositely disposed

jaws pivoted on said barrel and jointly forming a walled passageway, a trigger having its fulcrum external to said barrel, means operatively connecting said trigger to said jaws, whereby the movement of said trigger opens and closes the outer portions of said jaws, and means for maintaining said trigger in divers positions of adjustment.

4. An instrument of the kind described comprising a barrel, oppositely disposed jaws having hinge connection with said barrel and jointly forming a walled passageway, a trigger having its fulcrum external to said barrel, and a cross-arm on said trigger, said jaws provided with recesses to receive said cross arm whereby the movement of said trigger moves said jaws upon their hinges.

5. An instrument of the kind described comprising a barrel, oppositely disposed jaws pivoted on said barrel and jointly forming a walled passageway, an automatically returnable trigger having its fulcrum external to said barrel, means operatively connecting said trigger to said jaws, whereby the movement of said trigger opens and closes the outer portion of said jaws, and means for maintaining said trigger in any position into which it may be moved.

6. An instrument of the kind described comprising a barrel, oppositely disposed jaws hingedly mounted upon said barrel and jointly forming a walled passageway, a trigger fulcrumed external to said barrel and having operative connection with said jaws for actuating the same, a ratchet element, a coactable pawl mounted on said trigger, and means for retracting said pawl and maintaining said pawl in retracted position.

7. An instrument of the kind described comprising a support, jaws hinged thereon and jointly forming a walled passageway, a trigger for actuating said jaws, a ratchet element mounted on said support, a pawl reciprocable on said trigger, and a cam element engageable with said pawl whereby to maintain the same in a position out of engagement with said ratchet element.

8. An instrument of the kind described comprising a support, jaws hinged thereon and jointly forming a walled passageway, a trigger for actuating said jaws, a ratchet element mounted on said support, a pawl reciprocable on said trigger, said pawl having a longitudinal recess, and a cam element engageable in the recess of said pawl whereby to maintain the same in a position out of engagement with said ratchet element.

9. An instrument of the kind described comprising a support, jaws hinged thereon and jointly forming a walled passageway, a trigger for actuating said jaws, a ratchet element mounted on said support, a pawl reciprocable on said trigger, a cam element engageable with said pawl whereby to maintain the same in a position out of engagement with said ratchet element, a crank handle upon which the cam is mounted, and means for limiting the movement of said handle.

Signed at Chicago, in the county of Cook and State of Illinois, this 28th day of December, 1926.

WILL J. CAMERON.