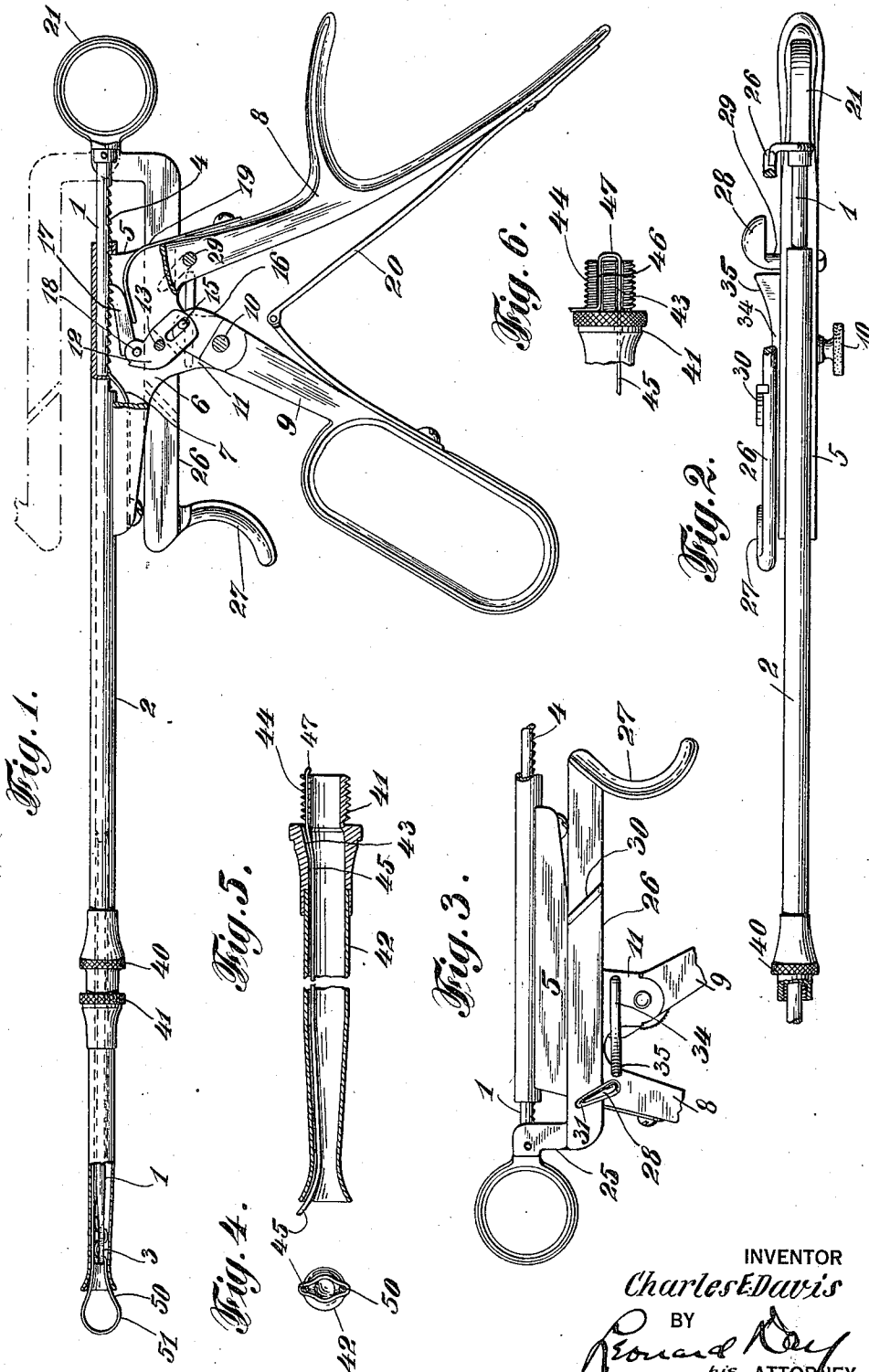


C. E. DAVIS.
SURGICAL SNARE.
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1,310,982.

Patented July 22, 1919.



INVENTOR
Charles E. Davis
BY
Ronald Roy
his ATTORNEY

UNITED STATES PATENT OFFICE.

CHARLES E. DAVIS, OF NEW YORK, N. Y., ASSIGNOR TO FRANK E. MILLER, OF NEW YORK, N. Y.

SURGICAL SNARE.

1,310,982.

Specification of Letters Patent.

Patented July 22, 1919.

Application filed February 14, 1918. Serial No. 217,076.

To all whom it may concern:

Be it known that I, CHARLES E. DAVIS, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Surgical Snares, set forth in the following specification.

This invention relates to surgical instruments employed in the removal of tonsils and like operations. The object of the invention is to improve the manner in which a snare may be contracted and released both at will and automatically. The above and further objects of my invention will better be understood by reference to the following specification and claims, which are directed to the illustrative embodiment shown in the accompanying drawings in which like characters designate corresponding parts in the several figures, and in which—

Figure 1 is a side elevation, with parts broken away and parts in section, of the complete instrument;

Fig. 2 is a top plan view, with parts broken away, of the structure shown in Fig. 1;

Fig. 3 is a fractional side elevation of the instrument viewed from the opposite side to that shown in Fig. 1;

Fig. 4 is an end view of the operating tip, with the snare wire shown in section;

Fig. 5 is a longitudinal section through the operating tip; and

Fig. 6 is a top view of the nipple at the end of the operating tip showing the anchorage for the snare wire.

Referring to the drawings, a long steel draw needle 1 guided in the tubular stem 2 is provided, with the usual wire gripping eyes in its forward end 3 and at the rear, on one side only, is provided with ratchet teeth 4. The stem 2 is fixed to a breech-frame 5. In the cavity 6 of the breech-frame 5 a spring detent 7 is located and operates to press and catch into the teeth 4. The breech-frame 5 extends downwardly and rearwardly into the hand-grip or handle 8. The operating lever 9 is hinged by the pin 10 to the lips 11 extending out from the breech-frame 5. A link lever 12 is hinged to the breech-frame 5 by the pin 13 and at its lower end has a slot 14 in which the pin 15, itself fixed to the upwardly extending lips 16 of the lever 9, operates to force rearwardly a pawl 17 hinged by the pin 18 to

one end of the link lever 12 and itself spring pressed against the ratchet teeth 14 by a spring 19.

A rearward movement of the arm 9 causes the pawl 17 to force the needle 1 rearwardly, in which position it is held by the detent 7 while the spring 20 returns the arm 9 to original position ready for another rearward step of the needle 1. A finger hold 21 is fixed to the rear end of the needle 1 and is serviceable to cause a rearward movement of the needle 1 against light resistance,—that is, until considerable force is required to cause a rearward movement of the needle. It is also obvious that, if the needle 1 should be rotated upon its axis until the ratchet teeth 4 disengage the pawl 17 and the detent 7, the needle 1 may be moved freely either forward or backward so far as the manipulating mechanism is concerned. Some surgical snares have been made in which there was nothing to prevent an accidental rotation of the needle and its consequent accidental release when no release should have been permitted. To overcome this my apparatus is provided with a combined guide-lock and quick manipulator 25, which is fixed to the rear end of the needle 1 and comprises a guide bar 26 adapted to slide along the side of the breech-frame 5. The forward end of this bar 26 may be provided with a finger hold 27 useful for manipulation by a forefinger to cause a quick adjustment of the needle 1. The engagement of the bar 26 against the side of the breech frame 5 prevents rotation of the needle 1 in one direction while rotation in the other direction may be prevented by the pivoted clip 28, the pin 29 of which is rotatably mounted in the handle 8. The automatic release of the pivoted clip 28 is effected by a cam 30 carried on the outer face of the bar 26. Although when the cam 30 engaged the upper end 31 of the clip 28 to turn it counter-clockwise, as viewed in Fig. 3, this merely permits the bar 26 to swing out but does not force it to swing out to cause a rotation of the needle 1 and the consequent release of the ratchet teeth 4. To insure an automatic release when a complete rearward movement of the needle 1 has been effected, I provide a cam 34 which may be fixed to the lip 11 and which has an outward extension 35 functioning to engage the inner edge of the finger hold 27 when

it comes into position and thereby rotate the needle 1 to effect its automatic release.

It is to be understood that this manipulating mechanism so far described may serve to operate a snare in any well-known manner. I prefer, however, that the tubular stem 2 be provided with an interiorly threaded socket 40 at its front end adapted to seat a nipple 41 of the operating tip 42. A channel 43 is cut across the threads 44 and diagonally into the interior of the tip 42 to accommodate a snare wire 45. A second channel 46 is cut through the threads 44 so that a bight 47 may be formed in the snare wire 45, which serves as a positive anchor when the nipple 41 is screwed home into the socket 40. By this arrangement only the leg 50 of the snare 51 is drawn in when the needle 1 is retracted. This has much advantage for certain operations.

The dot and dash lines in Fig. 1 indicate the position of the bar 26 when a 180° rotation of the needle 1 has been effected.

What I claim and what I desire to secure by United States Letters Patent is:—

1. In a surgical snare a retracting needle provided with ratchet teeth on one side; pawl and detent mechanism for cooperating with said ratchet teeth; a guide bar for preventing the rotation of said needle; and a releasable catch for cooperation with said guide bar.

2. In a surgical snare a retracting needle provided with ratchet teeth on one side; pawl and detent mechanism for cooperating with said ratchet teeth; a guide bar for preventing the rotation of said needle; a releasable catch for cooperation with said guide bar; and means on said guide bar for automatically releasing said catch.

3. In a surgical snare a retracting needle provided with ratchet teeth on one side; pawl and detent mechanism for cooperating with said ratchet teeth; a guide bar for preventing the rotation of said needle; a releasable catch for cooperation with said guide bar; means on said guide bar for automatically releasing said catch; and means for automatically rotating said ratchet teeth out of engagement with said pawl and detent mechanism to release said needle.

4. In a surgical snare a retractor comprising a rotatable bar having ratchet teeth of limited circumferential extent along one side; pawl and detent mechanism for retracting said retractor by engaging said ratchet teeth but inoperative when said bar is rotated to disengage said teeth; independent means for effecting a quick retraction of said bar; and releasable means for locking said bar against disengaging rotation but permitting longitudinal movement of said bar.

5. In a surgical snare a retractor comprising a rotatable bar having ratchet teeth of limited circumferential extent along one side; pawl and detent mechanism for retracting said retractor by engaging said ratchet teeth but inoperative when said bar is rotated to disengage said teeth; releasable means for locking said bar against disengaging rotation but permitting longitudinal movement of said bar; and means for automatically releasing said means for locking and for automatically rotating said bar upon a predetermined retraction.

In testimony whereof I have signed my name to this specification, this 25th day of January, 1918.

CHAS. E. DAVIS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."