

April 13, 1943.

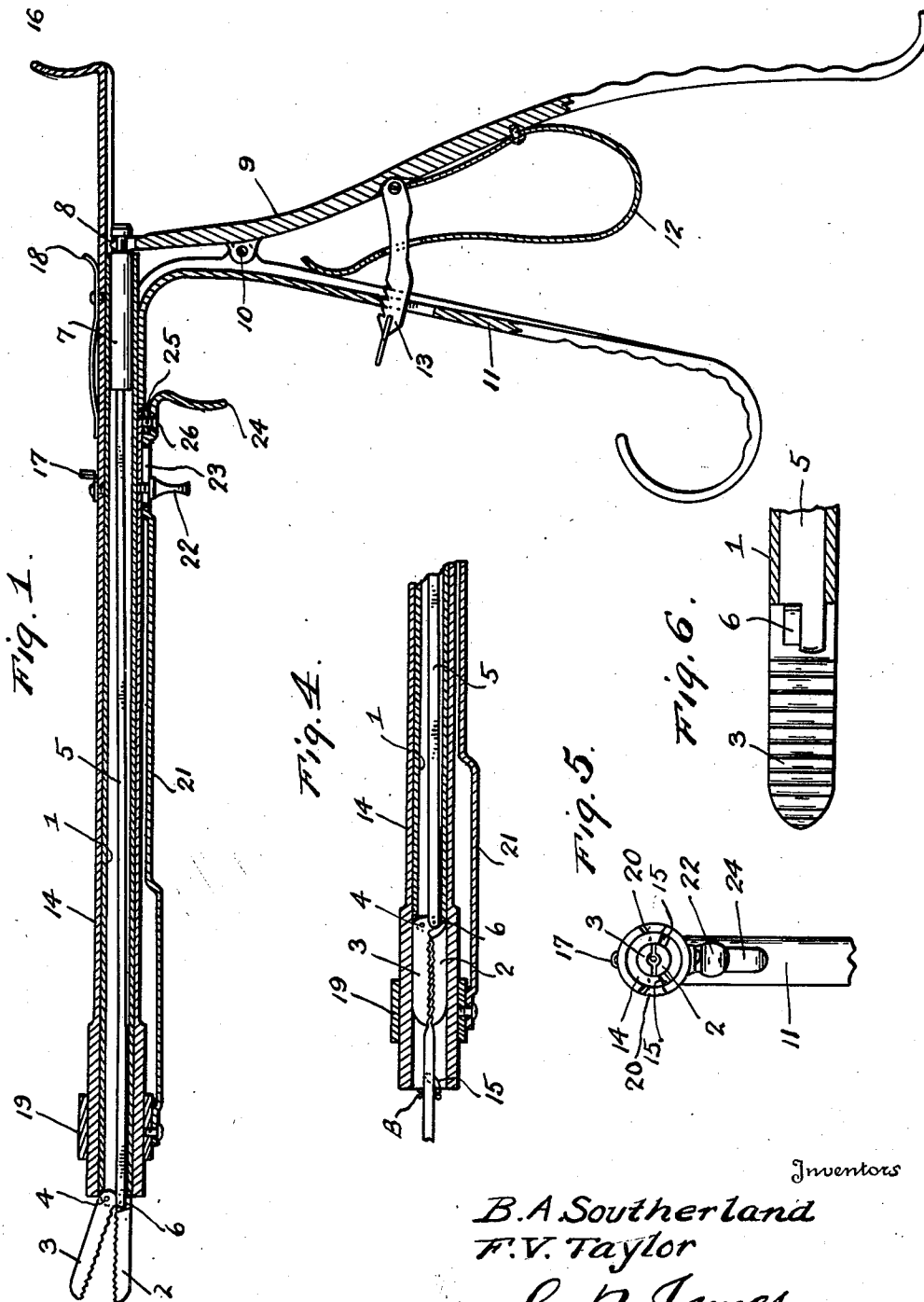
B. A. SOUTHERLAND ET AL

2,316,297

SURGICAL INSTRUMENT

Original Filed April 2, 1941

2 Sheets-Sheet 1



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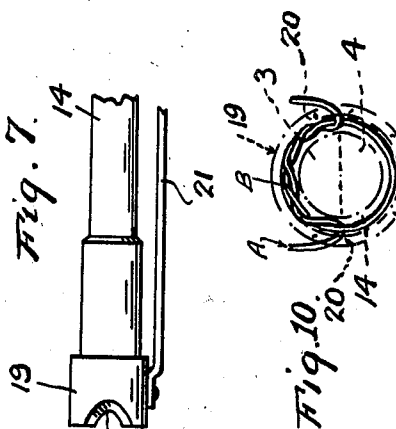
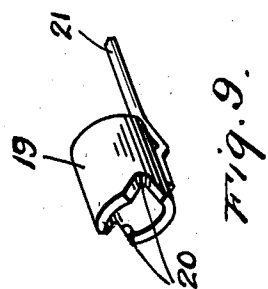
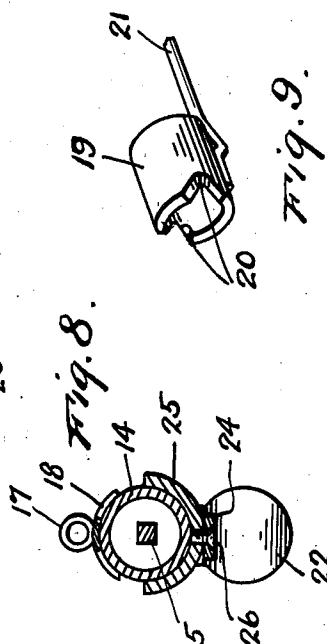
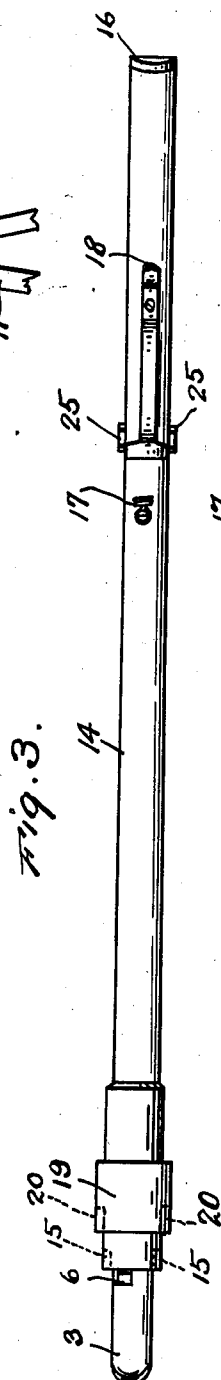
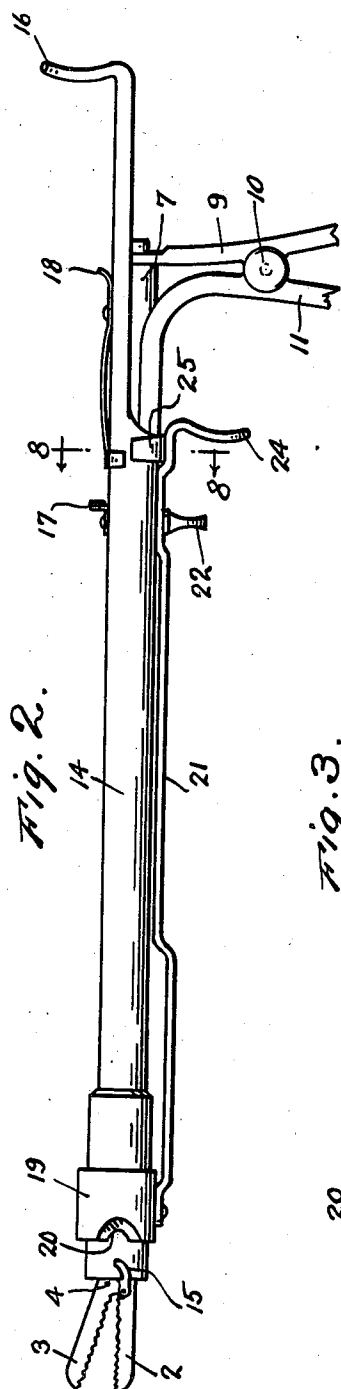
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SURGICAL INSTRUMENT

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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SURGICAL INSTRUMENT

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1 Claim. (Cl. 128—326)

This invention relates to a surgical instrument, the general object of the invention being to provide means for facilitating the tying of blood vessels and arteries, particularly in throat operations, the invention eliminating the use of several other instruments and enabling the operation to be performed by one person without assistance.

The invention also consists in certain other features of construction, combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claim.

In describing the invention in detail reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:

Fig. 1 is a longitudinally sectional view through the improved instrument.

Fig. 2 is an elevation thereof.

Fig. 3 is a top plan view thereof.

Fig. 4 is a longitudinal sectional view through the front end of the instrument, with the jaws holding a blood vessel and the tubular parts in their forward positions.

Fig. 5 is a front end view of the instrument.

Fig. 6 is a detail view, partly in section, showing how the movable jaw is connected with the operating rod.

Fig. 7 is an elevation of the front end of the instrument, with the sliding members in their forward positions.

Fig. 8 is a section on line 8—8 of Fig. 2.

Fig. 9 is a perspective view of the cutter member.

Fig. 10 is a view of the knot showing the end of the instrument in dot and dash lines.

In these drawings, the numeral 1 indicates a barrel, which has a lower stationary jaw 2 fastened to its front end and an upper movable jaw 3 is pivoted at 4 to said front end. A rod 5 is pivoted to a depending ear 6 on the movable jaw and said rod passes through the barrel and has a plunger forming part 7 on its rear end which slidably engages the rear part of the barrel and projects therefrom. The projecting part has a groove 8 therein which receives the forked upper end of a movable handle 9, which is pivoted at 10 to the stationary handle 11 which depends from the rear part of the barrel. A spring 12 tends to force the handle 9 away from the handle 11 and to cause said handle 9 to hold the rod in position with the movable

jaw 3 in raised position, as shown in Fig. 1. Latch means shown generally at 13, holds the handle 9 adjacent the handle 11 with the movable jaw in closed position as shown in Fig. 4. These parts may be of the usual or any desired construction.

A tubular member or barrel 14 fits over the barrel 1 and is slidably arranged thereon and has an enlarged front end part, which has the upwardly curved hook forming slots 15 in the sides of its front end. The upper portion of the rear part of this member 14 is extended beyond the rear end of the barrel 1 and has its rear end turned upwardly to form the thumb piece 16. An eye member 17 is connected with the top part of an intermediate portion of the member 14 and a spring holding clip 18 is fastened to the top of the member 14, in rear of the eye member 17. A short tubular member 19 is slidably arranged on the enlarged front end of the member 14 and has notches 20 in the sides of its front end, the walls of which are bevelled to form cutting edges, as shown. A rod 21 is connected to the member 19 and extends rearwardly along the bottom of the member 14 to which it is slidably connected by a thumb screw 22 passing through a slot 23 in the rear portion of the rod and entering a threaded hole in the member 14. A depending finger piece 24 is formed on the rear end of the rod and a substantially U shaped clip 25 embraces the lower part of the member 14 and is connected to the finger piece 24 by a screw 26.

In using the instrument, the end of the artery or blood vessel is gripped by the jaws 2 and 3, after the suture indicated in Fig. 10 by the letter A is tied in a loose surgeon's knot B around the base of the jaws with the ends passed through the slots 15 and then passed through the eye member 17 and secured in the clip 18. Then, with the end of the artery held by the jaws, the tubular member 14 is pushed forwardly on the barrel 1 by pressure against the thumb piece 16, until it latches and when this is done the front end of the member 14 will be located around the jaws, as shown in Fig. 4. The ends of the suture are then removed from the clip 18 and a steady pull exerted upon said ends to cause the knot to tighten around the artery. After this has been done pressure has been applied to the piece 24 to push the tube 19 forwardly so that the knife forming parts 20 will cut the ends of the suture at each side of the knot. Opposite pressure on the piece 24 will return both members 14 and 19 to their original

positions and then the jaws can be moved to releasing position.

As before stated, this invention will eliminate the use of several additional instruments now used with the forceps and one person can perform the operation without assistance.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction, combination and arrangement of the several parts, provided such changes fall within the scope of the appended claim.

What we claim and desire to protect by Letters Patent is:

An instrument of the class described comprising an elongated barrel having an enlarged cylindrical forward end provided with rearwardly and upwardly curved slots opening on opposite sides of its forward edge, a stationary handle formed on and depending from the rear portion of said barrel, a thumb piece formed on the rear end of said barrel, a barrel slidably disposed in the first mentioned barrel, a stationary jaw formed on the forward end of said second mentioned barrel, a pivoted jaw secured to the forward end of the second mentioned barrel in opposed relation to the stationary jaw,

a depending ear formed on the pivoted jaw, a plunger slidably disposed in the rear portion of the second mentioned barrel with its rear end projecting therefrom and provided with an annular groove, a rod formed on the plunger and having its forward end pivotally connected to the ear of the pivoted jaw, a handle pivoted on said stationary handle and having a forked upper end engaging the annular groove in the plunger, ratchet locking means between the handles, an expansion spring between the handles, a tubular member slidably disposed on the enlarged end of the first mentioned barrel and having forwardly disposed cutting areas in its edge and in alignment with the notches in said barrel, a rearwardly extending rod connected to said tubular member and having a slot formed therein adjacent its rear end, a thumb-screw passing through the slot in said rod and screwed into the second mentioned barrel, a finger piece formed on the rear end of said rod, a clip secured to said rod and partially surrounding the second mentioned barrel, an eye member secured to the second mentioned barrel, and a suture securing clip carried by the second mentioned barrel to the rear of said eye member.

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