

Aug. 16, 1938.

D. I. SOLOMON

2,127,190

COMBINED SURGICAL INSTRUMENT

Original Filed March 1, 1937 2 Sheets-Sheet 1

Fig. 1

Fig. 5

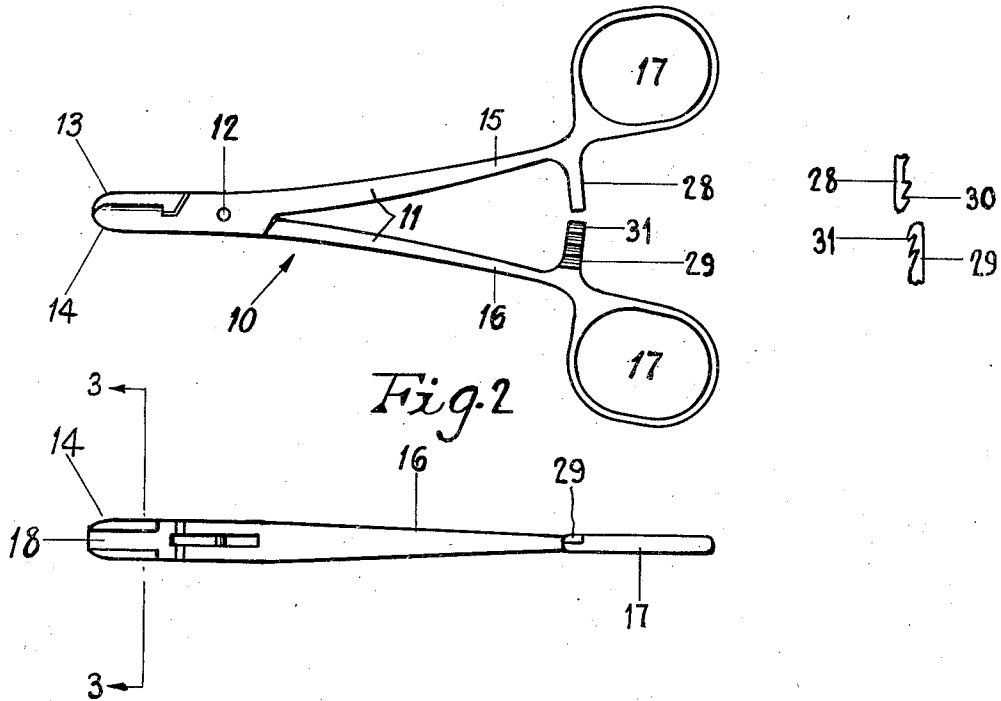


Fig. 2

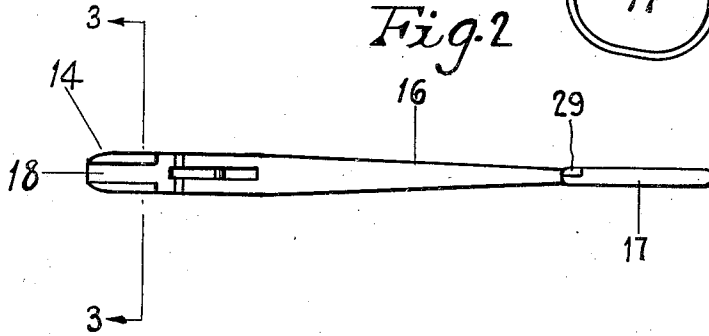


Fig. 4

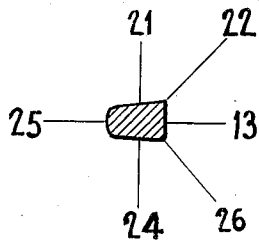
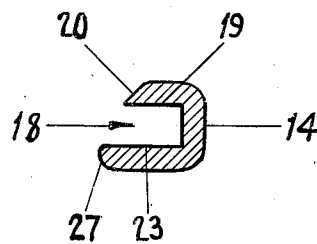


Fig. 3



DAVID I. SOLOMON

INVENTOR.

BY Joseph Blacker

ATTORNEY

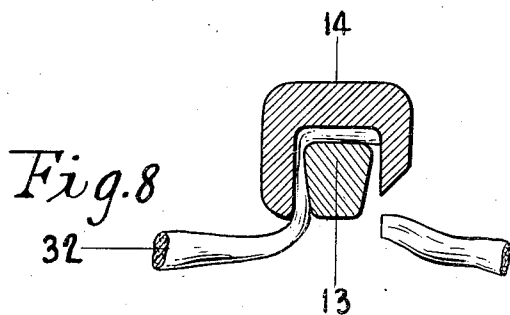
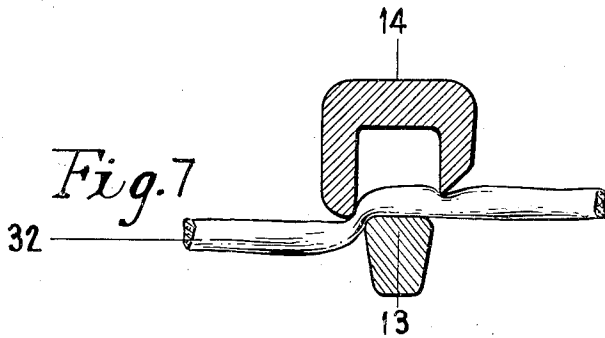
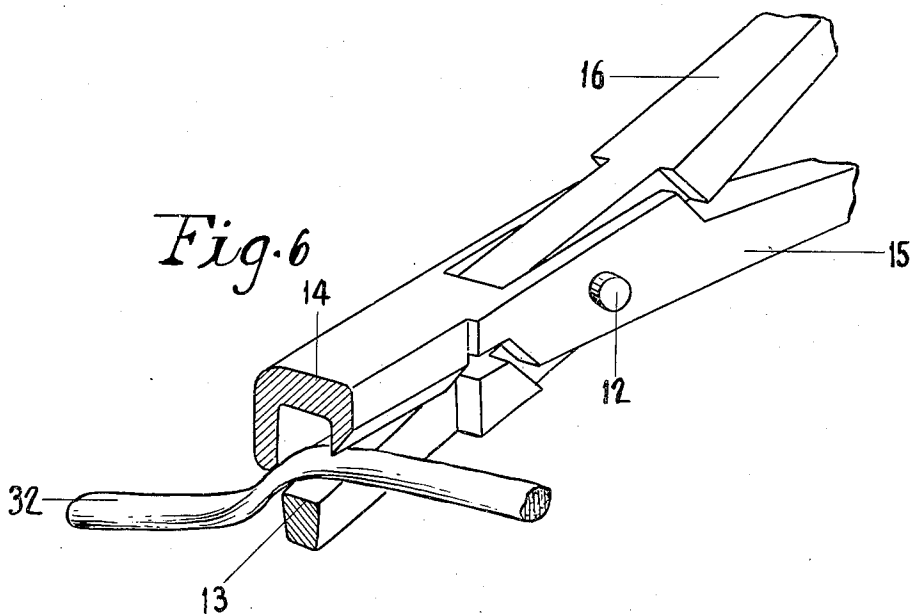
Aug. 16, 1938.

D. I. SOLOMON

2,127,190

COMBINED SURGICAL INSTRUMENT

Original Filed March 1, 1937 2 Sheets-Sheet 2



DAVID I. SOLOMON
INVENTOR.

BY *Joseph Blacker*

ATTORNEY.

UNITED STATES PATENT OFFICE

2,127,190

COMBINED SURGICAL INSTRUMENT

David I. Solomon, New York, N. Y.

Substitute of application Serial No. 128,524,
March 1, 1937. This application February 2,
1938, Serial No. 188,398

2 Claims. (Cl. 128—321)

This invention relates to cutting implements and an object of this invention is to provide a combined surgical instrument especially designed for the use of physicians and surgeons.

Another object of this invention is to provide an instrument embodying a two jaw structure whereby a suture may be severed and one end of the cord automatically held in tightly clamped relation in the instrument after it has been cut.

Another object of this invention is to provide an instrument of the character described wherein means is provided for automatically latching the jaws in closed position after the cutting operation, so as to leave one hand of the operator free.

Another object of this invention is to provide an instrument of the character described which is of simple and efficient construction, easily manipulated, and having jaws which are well adapted to seize and cut a suture and automatically hold one end of the severed cord in tightly clamped relation. This application has been filed in place of abandoned application, Serial No. 128,524.

With the above and other objects in view, the invention will be hereinafter more particularly described, and the combination and arrangement of parts will be shown in the accompanying drawings and pointed out in the claims which form part of this specification.

Reference will now be had to the drawings, wherein like numerals of reference designate corresponding parts throughout the several views, in which:

Figure 1 is a side elevation of a combined surgical instrument embodying my invention.

Figure 2 is an edge elevation of one of the elements of the instrument.

Figure 3 is an enlarged cross-sectional view of one of the jaws, the section being taken as on line 3—3 in Figure 2, the view being on a greatly enlarged scale.

Figure 4 is an enlarged cross-sectional view of the complementary jaw, the section being taken as on line 3—3 in Figure 2.

Figure 5 is a side view of latching means which connect the jaws after an article has been cut.

Figure 6 is a perspective view of the combined surgical instrument showing the initial position when the cord to be cut is seized or gripped between the jaws at one side thereof, the view being on a greatly enlarged scale.

Figure 7 is a cross-sectional view showing the jaws in the position when the cutting operation has just begun.

Figure 8 is a cross-sectional view showing the jaws in the position when the cutting operation is completed and one end of the severed cord has been tightly clamped and irremovably held in locked pressure engagement.

In the illustrated embodiment of the invention, Figure 1 shows a combined surgical instrument 10, comprising a pair of levers 11, which are fulcrumed together intermediate their ends by means of a pin 12 so as to provide short arms on one side of the pin and long arms on the other side. The short arms are in the form of jaws 13 and 14. The long arms are in the form of shanks 15 and 16 having at their ends loops 17 for the insertion of the fingers of the person using the instrument.

As shown in Figures 2 and 3, the jaw 14 is substantially U-shaped in cross-section and has a groove 18 extending lengthwise of the jaw. The three walls defining the groove 18 are substantially in right-angular relation. The groove 18 faces the jaw 13 and is designed to receive in close engagement the said jaw which is substantially of rectangular cross-section. The jaws 13 and 14 form the clamping means at one side of the instrument.

As shown in Figure 3, one side wall 19 defining the groove 18 has been beveled and sharpened to provide a longitudinal cutting blade 20. As shown in Figure 4, one side wall 21 of the jaw 13, in adjoining relation with the wall 19 has been beveled and sharpened to provide a longitudinal cutting blade 22. The blades 20 and 22 are adapted to cut from opposite sides against an object placed between them and jointly function as shears.

The side wall 23 of the groove 18 serves to prevent lateral play between the blades 20 and 22 during the cutting operation.

The side wall 24 of the jaw 13 has been formed slightly tapering outwardly so as to be thinner at its non-engaging end 25 than at its operating end. One edge 26 of the jaw 13 has been rounded. A clearance or clamping recess is thus formed at the side 23 between the jaws 13 and 14, when in closed relation.

The side wall 23 of the U-shaped jaw 14 extends outwardly to a greater extent than the beveled cutting blade 20. The outer edge 27 of the jaw 14 has been rounded. When the jaws are brought into operating relation, the rounded edge 26 and the side wall 23 grip the article to be cut before the cutting operation is started.

As shown in Figures 1 and 5 the looped ends of the shanks 15 and 16 have integral latch ex-

tensions 28 and 29 which project toward each other and are provided with oppositely extending teeth 30, 31. When the looped ends are brought together, the latch extensions spring apart to permit the teeth to pass. The teeth thus engage each other resiliently and hold the jaws 13 and 14 in closed position when the bottom faces of the jaws come into forced clamping engagement against one end of a severed suture.

It is evident that the combined instrument may be used in numerous other ways wherever it is desired to positively hold the severed article after it has been cut. The embodiment of the invention which I have described refers to the preferred form thereof and it is evident that numerous changes in the details of construction and in the combination and arrangement of parts may be resorted to without departing from the spirit or scope of the invention as hereinafter claimed.

It is to be noted that my combined surgical instrument has a double clamping effect, first a light clamping effect before cutting to prevent slippage during cutting, and then a positive clamping and holding effect when the cutting is finished and these combined actions result in a very efficient surgical instrument that is adapted for cutting suture material.

Figure 6 shows the initial position when the suture 32 to be cut has been lightly clamped to prevent slippage of the suture during cutting. Figure 7 shows the second position when the cutting operation has just begun. Figure 8 shows the cutting operation completed and one end of the severed suture tightly clamped and irremovably held in locked pressure engagement between the jaws 13 and 14.

I claim:

1. In a combined surgical instrument, a pair of levers crossed and pivoted together to provide relatively movable jaws, one of said jaws having a substantially U-shaped cross-section designed to receive a complementary tapering jaw of substantially rectangular cross-section, said tapering jaw having its smallest end directed outwardly,

one side of said U-shaped jaw being rounded and cooperating with said tapering jaw to provide a clamping recess at one side, one side of said U-shaped jaw being beveled and sharpened and cooperating with said tapering jaw to provide shearing means, the rounded side of the U-shaped jaw extending outwardly to a greater extent than the beveled side whereby said instrument is adapted to exert a clamping action on an article being cut before the cutting operation is started, the bottom wall of the jaw having a U-shaped section acting as an abutment for the other jaw and providing a clamping action therebetween for clamping one piece of said severed article when said cutting operation is finished, and means for automatically latching said jaws and causing a cut article to be held after cutting.

2. In a combined surgical instrument, a pair of levers pivoted together to provide relatively movable jaws, one of said jaws having a substantially U-shaped cross-section designed to receive a complementary tapering jaw of substantially rectangular cross-section, said tapering jaw having its smallest end directed outwardly and having one rounded edge at the acting face, one side of said U-shaped jaw being rounded and cooperating with the side of the tapering jaw having the rounded edge at the acting face to provide a clamping recess at one side, one side of said U-shaped jaw being beveled and sharpened and cooperating with said tapering jaw to provide shearing means, the rounded side of the U-shaped jaw extending outwardly to a greater extent than the beveled side whereby said instrument is adapted to exert a light clamping action on an article being cut before the cutting operation is started, the bottom wall of the jaw having a U-shaped section acting as an abutment for the other jaw and providing a clamping action therebetween for clamping one piece of said severed article when said cutting operation is finished, and means for automatically latching said jaws and causing a cut article to be held after cutting.

DAVID I. SOLOMON.