R. BARBOUR.

FORCEPS.

APPLICATION FILED SEPT. 30, 1920.

1,400,653.

Patented Dec. 20, 1921.

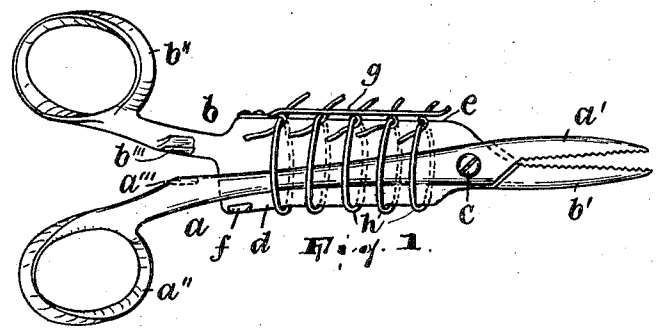


Fig. 1.

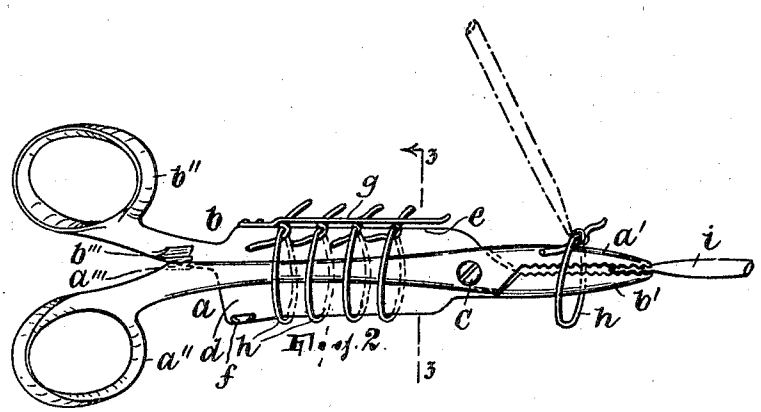


Fig. 2.

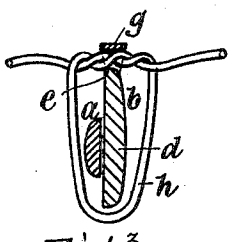


Fig. 3.

WITNESS:

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UNITED STATES PATENT OFFICE.

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FORCEPS.

1,400,653. Specification of Letters Patent. Patented Dec. 20, 1921.

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To all whom it may concern:

Be it known that I, ROBERT BARBOUR, a citizen of the United States, residing at Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Forceps, of which the following is a specification.

In surgical operations where arteries are to be severed and tied, the surgeon after severing an artery temporarily seals it by clamping it in a pair of forceps having means to lock its jaws closed and afterward permanently ties it with a piece of ligature which he cuts off from a suitable length of that material: more particularly, the usual procedure is to temporarily seal up each artery, when severed, by means of a pair of forceps and after they have all been severed and thus sealed, leaving the forceps all clamped on the arteries, then tie them up permanently one after another. Each tying operation is a slow and tedious process because the noose or cincture is not previously prepared but is formed at the time by passing the ligature around the artery and tying it, and the delay thus involved sometimes becomes a very serious factor in extending the period under which the patient must be kept anesthetized. The object of my invention is to provide means whereby to facilitate and expedite the tying of arteries or the performance of any other work of that nature.

In the drawing,

Figure 1 is a side elevation of an implement embodying my invention;

Fig. 2 is a similar view showing the forceps closed on an artery and one of the constrictive nooses, of which several are shown by way of example, being slipped off the forceps onto an artery gripped by the forceps; and

Fig. 3 is a sectional view on line 3—3, Fig. 2.

a and *b* denote the gripping members of a pair of forceps, they being pivoted together at *c* and *a'* and *b'* designating their jaws and *a''* *b''* their handles.

Member *a* is formed substantially the same as one of the members in any ordinary pair of forceps.

Member *b* is shown in furtherance of my invention as constructed as follows: Between the pivot *c* and the handle *b''* this member is widened to produce a blade or fin-like portion *d* which affords an elevation *e* whose summit extends longitudinally of the member, said member also having at *f* a stop to limit the opening movement of the other member. On the member *b*, shown for example riveted thereto, is a clip *g*, say of spring material, which preferably extends parallel with and opposite said elevation, its free end projecting toward the jaw end of the forceps.

a''' *b'''* designate the usual lugs which upon being sprung past and hooked over each other hold the forceps jaws locked closed, as in clamping an artery.

h designates the constrictive nooses. Each may be produced by forming a loop in a suitable length of ligature and twisting its ends around each other, say twice, leaving the ends projecting, as shown, so that they can be readily gripped in constricting the noose on the artery and tying a knot.

These nooses are slipped over the jaw end of the forceps and then under the clip so that they will be held clamped between the clip and the elevation *e* in suitably spaced or successive arrangement. As each artery is to be tied, having gripped the same with the forceps as shown in Fig. 2 (where *i* indicates the artery held by the forceps), the nearest noose *h* is slipped clear of the clip and over the jaws onto the artery.

So far as I am aware it is quite new to combine with forceps a constrictive noose or nooses arranged to embrace the same so as to be readily slipped off the forceps onto the artery or other part to be gripped, the forceps having means to hold the nooses releasably assembled therewith. It will be apparent that with such an implement the work of tying arteries becomes greatly facilitated and expedited, and in many instances instead of encumbering the wound with a number of forceps one pair will suffice for an entire operation.

It will be noted that the holding means afforded in the present example by the clip extends short of the free end of the jaw of the member on which it is arranged. It is not new to provide a ligature holding means on one of the members of a pair of forceps, but it is new to arrange said means, as stated, so as to extend short of the free end of the jaw of the member on which it is arranged; this not only preserves a clear-

ance at and around the free ends of the jaws very desirable in surgical forceps and particularly where the ligatures are in the form of embracing constrictive nooses releasably held thereon as hereinbefore set forth, but it affords an interim of freedom to each ligature which is very helpful at the moment of transfer thereof from the holding means, as *g*, to the artery. By actually placing the holding means at the handle side of the pivot *c* the matter of facility in removing the ligatures when required is, in addition, enhanced.

The parallel arrangement of the clip with respect to the surface of the member *b* with which it coacts forms a crotch of uniform width from end to end and so insures all the ligatures being held with the same pressure and so properly spaced from each other.

The elevation *e* is provided principally so as to extend transversely or widen the part of the forceps which is embraced by the succession of nooses, so that too much of each noose will not be free and so be likely to become disarranged or unduly distended in handling.

It will be understood that the stop *f* prevents the forceps from being opened so far as to distend the loops.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A pair of gripping forceps having means supplemental to its gripping jaws to releasably clamp and thereby hold thereon a ligature.

2. A pair of gripping forceps having spring means supplemental to its gripping jaws to releasably grip and thereby hold thereon a ligature.

3. A pair of gripping forceps having supplemental to its gripping jaws a ligature clamping clip on and projecting toward the free end of one of said jaws and terminating back of such free end.

4. The combination, with a pair of forceps, of a constrictive noose arranged in embracing relation thereto, the forceps having a clip on one of its coacting gripping members projecting toward the jaw end thereof and holding the noose pressed against the adjoining surface of said member.

5. A pair of forceps having one member relatively back of the forceps pivot of appreciably greater width than the other, measured transversely of such pivot, said forceps having means to releasably hold a constrictive noose thereon.

In testimony whereof I affix my signature.

ROBERT BARBOUR.