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SURGICAL INSTRUMENT

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6 Claims. (Cl. 128—321)

This invention relates to surgical instruments and more particularly to forceps adapted primarily for use in the vascular phases of surgery.

Heretofore, the difficulty in using the conventional forceps in handling and manipulating the delicate vascular tissues and members, particularly adjacent the area of the heart, without producing a traumatic effect thereon was one of the principal hazards which confronted the surgeon in performing heart surgery. By reason of the design of the jaw segments of the prior forceps, it was extremely difficult, if not impossible, to prevent tearing, rupturing, or permanent damaging of certain of the vascular members of the body when the jaw segments were moved into gripping relation therewith to effect controlling or stoppage of the blood flow through the vascular member. Furthermore, the likelihood of the prior forceps producing a traumatic effect on the vascular members, seriously handicapped the surgeon in his efforts of reconstructing and grafting the vascular members of shattered or damaged limbs. The result of this traumatic effect on the vascular tissues and members of the body caused by the use of prior forceps, was that certain heart surgery or mending of shattered limbs was deemed a hopeless effort by the most competent men of the medical profession.

A further shortcoming of the prior forceps resided in the difficulty and awkwardness experienced by the surgeon or his assistant in using an approximator to maintain two pairs of forceps at a predetermined spaced relation during the course of the operation. The connecting and disconnecting of the approximator with respect to each of the forceps was a source of the difficulty and awkwardness to the surgeon or his assistant and thereby limited to a certain degree the instances wherein the approximator and forceps could be successfully used together.

Thus it is one of the objects of this invention to provide forceps which may enable the surgeon or his assistant to readily handle or manipulate delicate vascular tissues and members without the fear of having such tissues and members torn, ruptured, severed, or permanently damaged by the forceps.

It is a further object of this invention to provide forceps which will greatly reduce the hazards associated with certain types of surgery thereby broadening the possibility of successful surgery in cases heretofore considered hopeless.

It is a still further object of this invention to provide forceps which will greatly facilitate the handling and manipulation of the most delicate vascular tissues and members, thereby reducing the time required in performing the surgery and lessening the shock to the patient's body with the result that the patient's recovery rate is materially improved.

It is a still further object of this invention to provide a forceps which includes an approximator of very lightweight that may be readily connected to or disconnected

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from the forceps thereby increasing the instances wherein the forceps and approximator may be used together.

It is a still further object of this invention to provide a forceps which is simple and compact in construction, effective in operation, and inexpensive to produce.

Further and additional objects will appear from the description, accompanying drawings, and appended claims.

In accordance with one embodiment of this invention a surgical forceps is provided comprising a pair of complementary jaw segments operatively connected together for movement into and out of gripping relation. Mounted on one of the jaw segments and in overlying relation with respect to the gripping surface thereof is a resilient pliable member, which, when the jaw segments are in gripping relation, is adapted to assume a spaced relation with respect to the gripping surface of one of the jaw segments.

For a more complete understanding of this invention, reference should now be made to the drawing wherein:

Figure 1 is a perspective view of a pair of forceps shown in a released position;

Fig. 2 is a fragmentary side elevational view of a pair of forceps showing the jaw segments thereof in released position and one of the jaw segments in partial section;

Fig. 3 is similar to Fig. 2 but showing the jaw segments in gripping relation;

Fig. 4 is a fragmentary top plan view of a pair of forceps showing the jaw segments in gripping relation;

Fig. 5 is an enlarged sectional view taken along line 5—5 of Fig. 3;

Fig. 6 is a fragmentary view of the gripping surface of one of the jaw segments;

Fig. 7 is a fragmentary perspective view of two pairs of forceps used in combination with an approximator and showing one pair of forceps disengaged from the approximator; and

Fig. 8 is an enlarged fragmentary sectional view of the approximator shown in Fig. 7.

Referring now to the drawings and more particularly to Fig. 1, a pair of surgical forceps 10 is shown comprising two elongated members 11 and 12 pivotally connected at point 13 to form jaw segments 14 and 15 to one side of the pivotal connection 13 and handle segments 16 and 17 on the opposite side of pivotal connection 13. Each of the handle segments 16 and 17 terminates in a loop 18 or 20, respectively, which is adapted to accommodate the fingers of the surgeon or his assistant. Mounted on each of the handle segments 16 and 17 and adjacent the finger loop 18 or 20 on said segment is one of a pair of complementary locking lugs 21a and 21b, respectively, which, when the forceps is brought into gripping relation, are caused to engage one another and effect locking of the jaw segments against movement out of a gripping position. Each of the lugs 21a and 21b has the side thereof, which engages the other lug, serrated to form a plurality of teeth 22a and 22b, respectively, which are adapted to mesh with one another when the forceps is moved to its closed position. To effect unlocking of the lugs 21a and 21b, sidewise force in opposite directions is exerted on handle segments 16 and 17 until the teeth 22a and 22b become disengaged from one another whereupon the handle segments may be pivoted about point 13 to cause the jaw segments to open. The length of the handle segments 16 and 17 and their slender shape permits the looped ends of the handle segments to be moved without difficulty sidewise of one another to effect unlocking of lugs 21a and 21b.

The jaw segments 14 and 15 which constitute a part of elongated members 11 and 12, respectively, are adapted to grip, without any traumatic effect, the vascular tissues