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2,796,867

SURGICAL CLAMP

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FIG. 1.

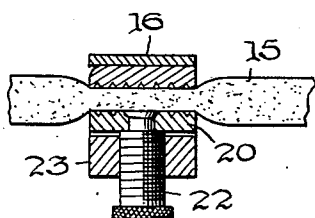
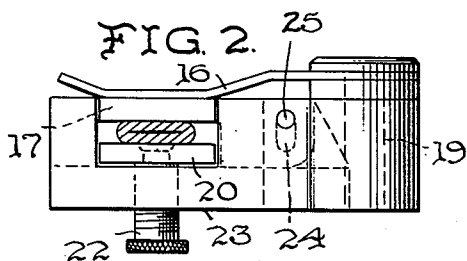
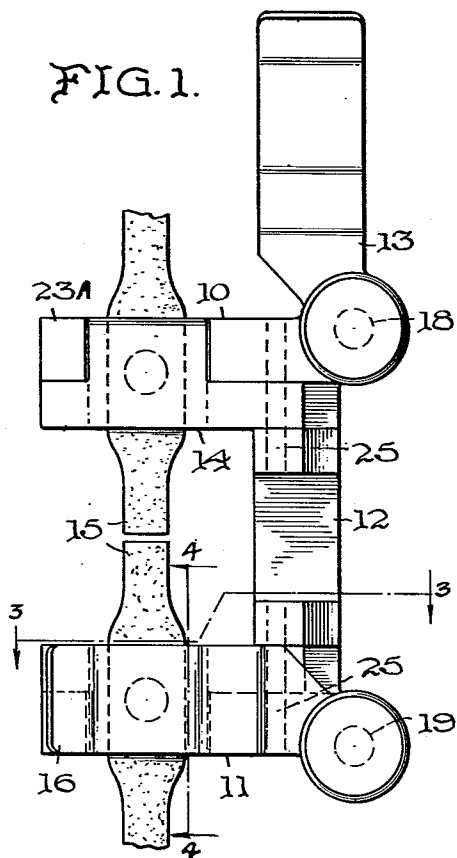


FIG. 4.

FIG. 3.

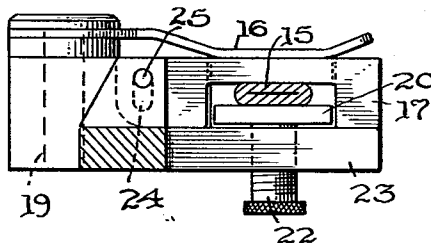


FIG. 5.

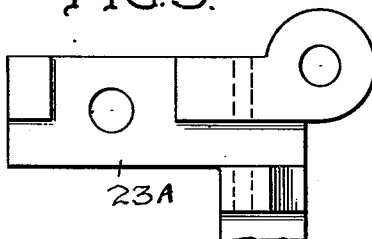


FIG. 6.

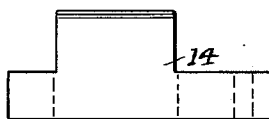
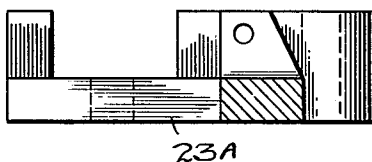


FIG. 7.

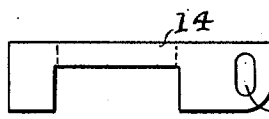


FIG. 8.

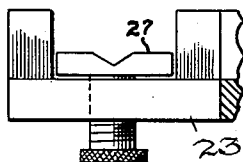


FIG. 9.

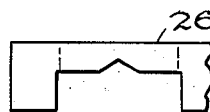


FIG. 10.

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SURGICAL CLAMP

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13 Claims. (Cl. 128—346)

This invention relates to a clamp. In one aspect this invention relates to a surgical clamp. In another aspect this invention relates to a clamp having a pair of parallel clamping members by means of which severed or damaged articles can be clamped in a position facilitating repair of said articles. In still another aspect this invention relates to a surgical clamp having a pair of parallel clamping members by means of which a severed or damaged artery or other tubular organ of the body can be clamped in a position facilitating anastomosis of said tubular organ.

Various types of surgical clamps have been devised to aid in the anastomosis of arteries, veins or other viscera of the body. Many of these are poorly adapted for the purpose for which they were designed. Some types of clamps can be used only in one position or in only one kind of operation. In many instances it is necessary to employ two clamps held in position by a surgical assistant while the surgeon performs the operation. Frequently in emergencies or in field hospitals such assistants are not available.

I have devised a clamp which overcomes the above described disadvantages of prior clamps.

It is an object of this invention to provide a clamp which greatly facilitates the repair of severed or damaged articles.

Another object of this invention is to provide a surgical clamp adapted to be produced in various sizes and thereby adaptable for holding anatomical parts of various sizes and shapes.

It is a further object of this invention to provide a surgical clamp which is simple in form, easy to operate, inexpensive to construct, easy to assemble and disassemble and adaptable to ready sterilization.

Thus according to the invention there is provided a clamp comprising a pair of parallel clamping members connected by a bar at one end, each of said clamping members being comprised of a base having a recess therein, a closure flap maintained in a cooperating position with said recess by means of a spring and adjustable compression clamping means mounted in said recess.

Figure 1 is a plan view of the assembled clamp showing one of the leaf springs rotated to a position so as to permit opening of the closure flap. An artery, the ends of which are to be sutured, is shown in the clamp.

Figure 2 is an end elevation of the assembled clamp of Figure 1 showing the clamped artery in cross section.

Figure 3 is a view, partly in section, along the line 3—3 of Figure 1.

Figure 4 is a view, partly in section, along the line 4—4 of Figure 1.

Figure 5 is a plan view of the base 23 of clamping member 10 of Figure 1.

Figure 6 is a side elevation, partly in section, of the base shown in Figure 5.

Figure 7 is a plan view of the closure flap of clamping member 10 of Figure 1.

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Figure 8 is a side elevation of the closure flap shown in Figure 7.

Figure 9 shows a modification of the engaging plate 20.

Figure 10 shows a modification of the closure flap of Figure 8.

Referring now to the drawings, where, in general, like reference numerals are employed to denote like parts, the invention will be more fully described.

In the embodiment shown in Figure 1 the clamp is substantially rectilinear and is comprised of two clamping members, denoted generally as 10 and 11, the bases of which are connected by a bar 12. In clamping member 10 spring 13 is shown in open position prior to being rotated into closed position to hold closure flap 14 in clamping position on artery 15. In clamping member 11 spring 16 is shown in closed position holding closure flap 17 (Figure 2) in closed clamping position on artery 15. Springs 13 and 16 are rotatably mounted on the bases of clamping members 10 and 11 at 18 and 19 respectively.

In Figures 2 and 3 spring 16 is shown holding closure flap 17 in clamping position on artery 15 in cooperation with engaging plate 20. Engaging plate 20 is rotatably connected to screw 22 which extends through base 23 as shown in Figure 4. Closure flap 17 is mounted on base 23 by means of eye 24 and rod 25. If desired the contacting surfaces of closure member 17 and of engaging plate 20 can be serrated for increased friction.

Figures 5 and 6 are plan and side views respectively of base 23A of clamping member 10. It should be understood that base 23 of clamping member 11 and base 23A are right and left hand counterparts respectively.

Likewise it should be understood that closure flap 17 of clamping member 11 and closure flap 14 (shown in Figures 7 and 8) of clamping member 10 are right and left hand counterparts respectively.

In another embodiment of the invention shown in Figures 9 and 10 engaging plate 27 has a V-shaped recess therein which cooperates with a V-shaped recess in closure flap 26. Engaging plates and closure flaps with recesses having a shape other than V-shaped in the clamping surfaces thereof are also within the scope of the invention.

In use, for example when it is desired to repair a lacerated artery, the divided ends of the lacerated artery are exposed in the usual manner. Both locking springs on the top side of the instrument are rotated to one side and both closure flaps are pivoted upwardly to open the instrument for application. The instrument is then slipped beneath the artery and the artery placed in the clamping recesses in the bases of the clamping members. The closure flap on one clamping member is then closed, held in place by a finger or thumb and the locking spring rotated into position on top of said closure flap to hold the same in place over the artery. The same process is repeated for the other clamping member. The ends of the severed artery are positioned to be midway between the two clamping members and clamping pressure on the said artery is adjusted by means of the adjustable engaging surface mounted in the recess of the base of each clamping member. The artery is now ready for suture. After suture the instrument is opened as described above, removed, and the repaired artery returned to its normal position.

While the invention has been described in terms of an artery clamp it is not intended to be limited to such. It can be used in the repair of other tubular organs of the body or even to any tubular article.

Reasonable variation and modification are possible within the scope of the foregoing disclosure, the drawings and the appended claims to the invention.

I claim:

1. A clamp comprising a pair of parallel clamping

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members connected by a bar at one end, each of said clamping members being comprised of a base having a recess therein, a closure flap maintained in a cooperating position with said recess by means of a spring and adjustable clamping means mounted in said recess.

2. A clamp comprising a pair of parallel clamping members, a bar connecting said clamping members, each of said clamping members comprising: a base; a closure flap; spring means connected to said base and adapted to hold said closure flap in a cooperating clamping position adjacent said base; and adjustable compression clamping means mounted in said base and adapted to coact in a clamping manner with said closure flap.

3. A surgical clamp comprising a pair of parallel clamping members, a bar connecting said clamping members, each of said clamping members comprising: a base having a recess therein for receiving an organ to be clamped; a closure flap pivotally mounted at one end to said base; a spring rotatably mounted on said base and adapted to hold said closure flap in a cooperating clamping position adjacent the recess in said base; and adjustable compression clamping means mounted in the recess of said base.

4. A surgical clamp comprising a pair of parallel clamping members connected at one end by a bar, each of said clamping members comprising: a base having a recess therein for receiving an organ to be clamped; a closure flap pivotally mounted at one end to one end of said base; a spring rotatably mounted on said base and adapted to hold said closure flap in a cooperating clamping position adjacent said base, said closure member being opposite the recess in said base; and adjustable compression clamping means mounted in the recess of said base.

5. A clamp according to claim 4 wherein said adjustable compression means comprises an engaging plate operatively connected to screw means extending through said base.

6. A clamp comprising: a base having a recess therein for receiving an article to be clamped; a closure flap pivotally mounted at one end to one end of said base; a leaf spring rotatably mounted on said base and adapted to hold said closure flap in a cooperating clamping posi-

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tion adjacent said base, the recess in said closure member being opposite the recess in said base; and adjustable compression clamping means mounted in the recess of said base adapted to coact with said closure flap in a clamping manner on said article.

7. A clamp according to claim 6 wherein said adjustable compression clamping means comprises a threaded screw extending through said base into said recess in said base and operatively connected to an engaging plate within said recess in said base.

8. A clamp according to claim 7 wherein said closure flap has a recess in the contacting surface thereof and said engaging plate has a recess in the contacting surface thereof.

9. A clamp according to claim 8 wherein said recess in said closure flap is V-shaped and said recess in said engaging plate is V-shaped.

10. A clamp according to claim 4 wherein said adjustable compression clamping means comprises a threaded screw extending through said base into said recess in said base and operatively connected to an engaging plate within said recess in said base.

11. A clamp according to claim 10 wherein said closure flap has a recess in the contacting surface thereof and said engaging plate has a recess in the contacting surface thereof.

12. A clamp according to claim 11 wherein said recess in said closure flap is V-shaped and said recess in said engaging plate is V-shaped.

13. A clamp comprising a base having a recess therein, a closure flap, a spring rotatably mounted at one end to one end of said base and adapted to maintain said closure flap in a cooperating position with said recess in said base, and adjustable clamping means mounted in said recess.

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