June 16, 1959 C. R. STORZ, JR 2,890,519

SURGICAL SPRING CLIP FORCEPS

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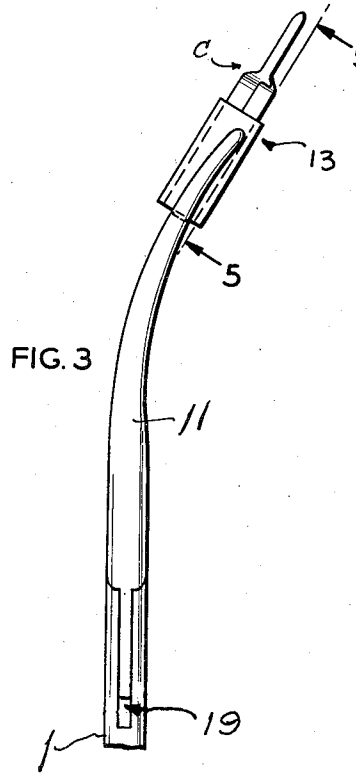

FIG. 3

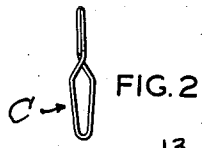

FIG. 2

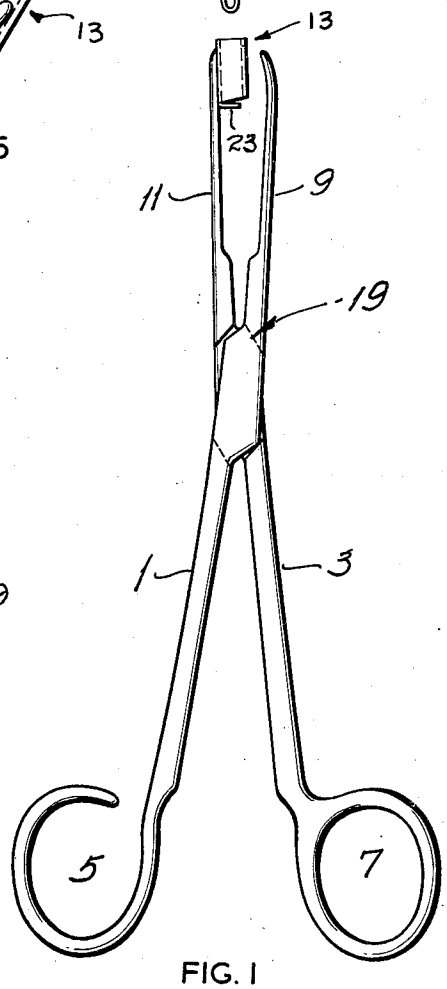

FIG. 1

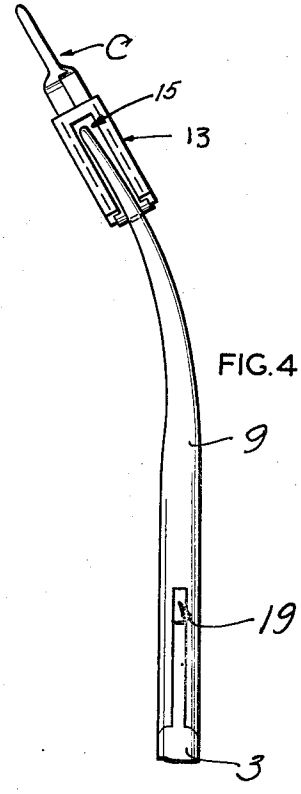

FIG. 4

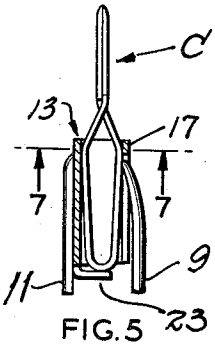

FIG. 5

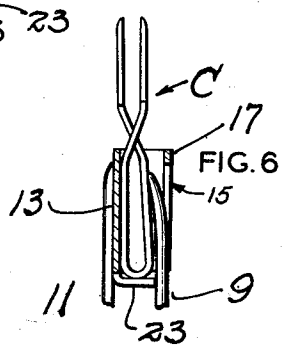

FIG. 6

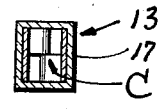

FIG. 7

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SURGICAL SPRING CLIP FORCEPS

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Application August 1, 1955, Serial No. 525,562

3 Claims. (Cl. 29—225)

The invention relates to surgical instruments to be used in holding and manipulating cross action spring clips, known as serre-fines, and the invention comprises a forceps-like structure in which one of the clamping fingers at the forward end of the instrument may be used as a receptacle for the spring clip.

The main object of the invention is to facilitate the handling of spring clips of the type mentioned by mounting a clip at the end of the instrument, frictionally retaining the clip in mounted position without muscular action by the user, pressing the jaws of the spring clip apart when it is desired to apply the clip to a blood vessel or the like, and freely releasing the spring clip from the instrument after the clip has been applied, so that the instrument may be freely withdrawn.

Another object is to facilitate the insertion of the spring clip at one end of the instrument into a deep cavity without injury to the tissue surrounding the cavity.

These and other detail objects as will appear from the following description are attained by the structure illustrated in the accompanying drawings, in which:

Figure 1 is a top view of a forceps embodying the invention.

Figure 2 illustrates one of the cross action spring clips or serre-fines to be handled by the instrument.

Figure 3 is a view of one side of the instrument shown in Figure 1 but drawn to a larger scale, and holding a clip.

Figure 4 is an elevation of the other side of the instrument, and holding a clip.

Figure 5 is a longitudinal section through the forward end of the instrument showing the clamping fingers engaging the spring clip to frictionally retain it in the instrument.

Figure 6 is a similar section showing the clip jaws released.

Figure 7 is a transverse section on the line 7—7 of Figure 5.

The instrument comprises a forceps-like structure with elongated arms 1, 3 having handles 5, 7, respectively, at the rear end of the instrument. The forward ends of the arms form clamping fingers 9, 11, respectively. Elements on finger 11 form a box-like enclosure 13 projecting toward finger 9 and having an open outer end adapted to freely receive the spring clip C. Three sides of the receptacle are continuous. The fourth side facing in the general plane of movement of the arms and toward finger 9 is slotted at 15 to receive the corresponding portion of finger 9 when handles 5 and 7 are moved toward each other. Finger 9 is shorter than finger 11 and the outer end of the receptacle includes a transverse shallow element 17 crossing the end of slot 15 and cooperating with the other deeper sides to form a rectangular enclosure.

At the crossed portion of arms 1 and 3, arm 1 is slotted at 19 parallel to the plane of movement of the pivoted arms and arm 3 fits snugly between the sides of slot 19 so as to frictionally maintain the arms in adjusted position, although readily subject to shifting by muscular pressure on the handles. With this structure, the instrument, when in the position shown in Figure 1, will freely receive a spring clip C and handles 5 and 7 may be moved together (Figure 5) to engage the spring clip and frictionally retain it within the instrument until handles 5 and 7 are moved apart, when the clip will be released. Upon movement of fingers 9 and 11 toward each other from the position shown in Figure 5 to the position shown in Figure 6, the looped portion of the spring clip will be compressed to spread its jaws, as indicated in Figure 6, so that they may straddle a blood vessel or other material to be clipped. When the clip is so applied, handles 5 and 7 may be moved apart and the clip will be released from frictional engagement with the fingers and the instrument may be freely withdrawn without straining the blood vessel or other clipped part.

The inner end of receptacle 13 includes a stop 23 which limits the movement of fingers 9 and 11 towards each other. Preferably receptacle 13 is oblong in cross section with its shorter dimension less than the width of the material of the clip C so that the clip may only be inserted into the receptacle in the necessary angular relation for clamping.

The structure described attains the objectives set forth above and provides a simple, efficient instrument for applying clips of the type described without requiring pressure on the clamping fingers except at the moment of compressing the clip. The clip may be inserted into and removed from a fairly deep cavity with minimum likelihood of injuring tissue at the side of the cavity.

The details may be varied without departing from the spirit of the invention and the exclusive use of those modifications coming within the scope of the claims is contemplated.

What is claimed is:

1. A device for compressing a surgical cross action spring clip or serre-fine, comprising a forceps-like instrument with arms pivoted to each other each having a handle at one end and a clamping finger at the other end, one finger being provided with a structure box-like in cross section transversely of the finger and having opposing elements spaced apart in the general plane of pivotal movement of the arms and adapted to retain between them a spring clip, said structure having an opening at the outer end of the finger adapted to receive a spring clip endwise therethrough, the side of said structure facing toward the other finger being recessed to receive a portion of the latter mentioned finger to engage and compress transversely a spring clip within the structure.

2. A forceps-like instrument for folding cross action spring clips, comprising a pair of crossed arms, each having a handle at one end, the other end of one arm having a hollow receptacle of rectangular box-like cross section, transversely of the length of the arm, with its outer end open to freely receive therethrough a spring clip inserted lengthwise of the arm with the opposed sides of the receptacle engaging and positioning the sides of the clip, the side of the receptacle facing toward the other arm having a slot of less width than said side and extending lengthwise of said side, said side including a shallow transverse element closing the outer end of the slot, said other arm terminating short of said element and being of less width than said slot and movable transversely of its length through said slot to the interior of the receptacle to engage and compress a clip therein.

3. A forceps-like instrument comprising a pair of crossed arms having a pivot at their crossing, there being individual handles on the arms at one end of the instrument, the other ends of the arms forming respective clamping fingers, one of which includes an enclosure, box-like in cross section transversely of the finger and

extending lengthwise of the finger away from said pivot a greater distance than the outer end of the other finger, said enclosure being constructed and arranged to freely receive and surround a surgical cross action spring clip through its outer end, said enclosure projecting toward the other finger and the portion of the enclosure nearest the latter finger being open from its inner end nearer said pivot toward but not through its outer end to receive the latter-mentioned finger within the enclosure when the fingers are brought together to compress the spring clip within the enclosure.

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