Sept. 5, 1961 A. S. MILLER ET AL 2,998,649

COMBINATION SUTURE CUTTING AND REMOVING INSTRUMENT

Filed June 2, 1959

Fig. 1

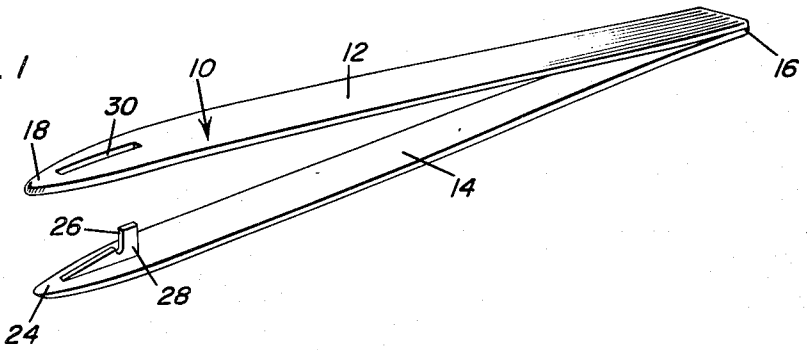


Fig. 2

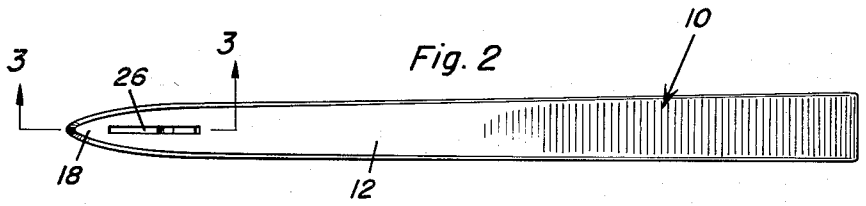


Fig. 3

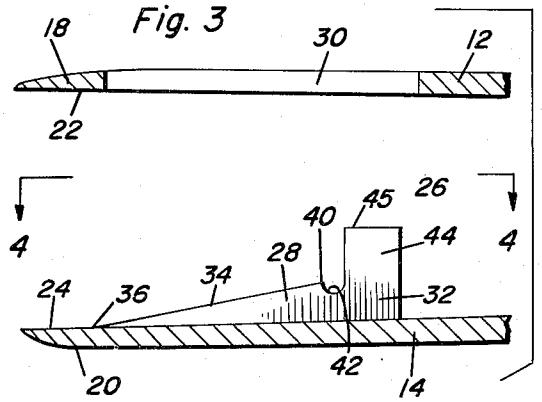


Fig. 5

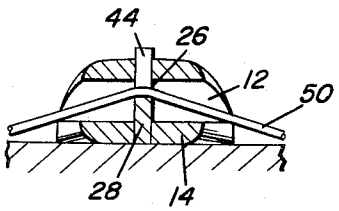
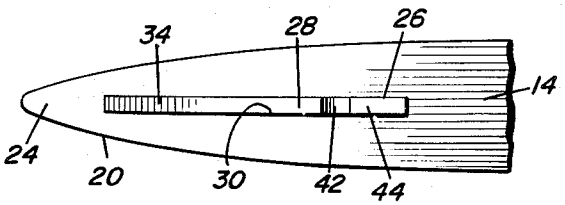


Fig. 4



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COMBINATION SUTURE CUTTING AND REMOVING INSTRUMENT

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This invention relates to instruments and more particularly to an instrument to facilitate the cutting and removal of surgical sutures.

An object of the invention is to provide an instrument which materially facilitates suture removal by a specially constructed arrangement of tweezers equipped with a cutter which operates on the punch and die principle for shearing the suture.

Another object of the invention is to provide a practical instrument of the nature described, which may be produced at reasonable cost and which serves its intended purpose far more satisfactorily than currently available and used instruments for severing and removing sutures.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a perspective view of an instrument in accordance with the invention.

FIGURE 2 is a top view of the instrument in FIGURE 1.

FIGURE 3 is an enlarged fragmentary sectional view taken approximately on the line 3—3 of FIGURE 2.

FIGURE 4 is an elevational view of one part of one leg of the instrument and taken approximately on the line 4—4 of FIGURE 3.

FIGURE 5 is a transverse sectional view of the suture severing and removing instrument showing it in use.

In the accompanying drawings there is shown an instrument 10 which has a pair of legs 12 and 14 joined at one end 16 to form a pair of tweezers. The instrument is made preferably of metal and of the type which has sufficient inherent resilience to provide a tweezer action. The rest position for legs 12 and 14 is shown in FIGURE 1, and when the legs are brought together so that the leading or front ends 18 and 20 thereof touch, the tweezer jaws are closed, but the inherent resilience and elasticity of the legs opposes this movement. When the closing force on the legs 12 and 14 is removed, the legs return to the normal or rest position (FIGURE 1). Ends 18 and 20 are rounded (FIGURE 2) and bevelled at their edges. The confronting surfaces 22 and 24 of the jaws formed by ends 18 and 20 may be serrated to enhance gripping action. However, serrations are an optional feature.

The cutter 26 of instrument 10 operates on a punch and die principle and includes a blade 28 together with slot 30. Blade 28 is fixed to leg 14, while slot 30 is in leg 12, and the blade and slot are registered with each other. Blade 28 is made of a flat plate 32 having a wedge shaped fromt portion with an upwardly inclined edge 34. The front end 36 of edge 34 is coplanar with surface 24 and spaced rearwardly (FIGURE 3) from the tip of end 20. The rear edge 40 of surface 34 terminates in an upwardly opening pocket 42 formed by a notch in the plate 32. The remainder of plate 32 projects upwardly to form a pilot 44 that enters slot 30 first when the legs 12 and 14 are moved together (FIGURE 5).

Slot 30 has square edges and is rectangular in plan form. When the legs 12 and 14 are brought together the edges of plate 32 cooperate with the edges of slot 30 to

shear anything which is in pocket 42, for instance suture 50 (FIGURE 5).

In operation the instrument is held with lower leg 14 against the skin of the patient. The front part 20 of the lower leg is slid along the skin and inserted under the suture to be cut and removed. The suture slides up surface 34 and drops into pocket 42 with pilot 40 functioning as a stop for the suture. Then, the legs of the instrument are squeezed together. First, the pilot 44 enters slot 30 and for this action, the upper part 45 of the pilot preferably has rounded edges to assure that the pilot will enter the slot. The upper part of the pilot absorbs all misalignment forces and acts to assure that the forward portion of the blade 28 will enter aperture 30 in correct alignment and further assures that the blade 28 will remain in perfect alignment with slot 30 indefinitely. Then as the legs are closed further suture 50 is sheared. Cut ends of the suture are removed by using the instrument as a standard pair of tweezers. The ends of the suture may be pinched with either the front or any forward side edge of the jaws fromed by ends 18 and 20 of the legs 12 and 14.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. An instrument for the cutting and removal of surgical sutures, said instrument comprising a pair of tweezer legs joined at one pair of ends, the other pair of ends being spaced apart from each other in a normal rest position, the second mentioned pair of ends having a cutter associated therewith, said cutter comprising an elongated blade carried by one of said legs, the other of said legs having a slot in alignment therewith, said blade being adapted to enter said slot along its entire length and shear the suture in between said blade and slot, said blade being composed of a plat plate having an inclined surface for gradually elevating the suture when one of said legs is inserted under the suture, said slot having substantially square side edges and said plate having correspondingly squared edges to shear the suture when said plate enters said slot, said inclined surface having an upwardly opening pocket therein to form a rest within which the suture is received when said legs are moved in a direction to enter said blade into said slot.

2. An instrument for the cutting and removal of surgical sutures, said instrument comprising a pair of tweezer legs joined at one pair of ends, the other pair of ends being spaced apart from each other in a normal rest position, the second mentioned pair of ends having a cutter associated therewith, said cutter comprising an elongated blade carried by one of said legs, the other of said legs having a slot in alignment therewith, said blade being adapted to enter said slot along its entire length and shear the suture in between said blade and slot, said blade being composed of a flat plate having an inclined surface for gradually elevating the suture when one of said legs is inserted under the suture, said slot having substantially square side edges and said plate having correspondingly squared edges to shear the suture when said plate enters said slot, said inclined surface having an upwardly opening pocket therein to form a rest within which the suture is received when said legs are moved in a direction to enter said blade into said slot, a pilot portion which first enters said slot when said legs are brought to-

gether, and said pilot portion constituting a stop against which the suture is abutted upon entering said pocket.

3. The instrument of claim 2 wherein said inclined surface has a front edge portion spaced rearwardly from the tip of the leg to which said blade is secured thereby leaving a portion of the last mentined leg to cooperate with an opposing portion of the other of said legs and form a pair of tweezer jaws.

4. In an instrument for cutting and removal of surgical sutures, the combination of a pair of tweezer legs having flat free end portions forming a pair of jaws movable toward and away from each other, an elongated blade extending centrally and longitudinally on one of said jaws perpendicular thereto, the other of said jaws being provided with a slot extending centrally and longitudinally therein, said slot corresponding in length and width to the length and thickness of said blade respectively and receiving the entire length of the blade therein when said jaws are brought together, said blade having a front end portion provided with a rearwardly inclined upper edge and a rear end portion projecting substantially above the front end portion to form a pilot for entry of the

blade in said slot, an intermediate portion of the blade between the rear end of said inclined edge and said pilot being provided with a notch forming a seat for a suture to be cut, said inclined edge providing means for elevating and guiding a suture into said seat, and said pilot providing a stop to prevent rearward displacement of a suture from said seat.

5. The device as defined in claim 4 wherein said blade and said slot have their front ends spaced rearwardly from the free ends of the respective jaws, whereby portions of the jaws forwardly of the front ends of the blade and slot constitute means for gripping a cut suture.

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