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H. D. MORTON
NEEDLE AND METHOD OF MAKING THE SAME

Filed Dec. 2, 1925

Fig. 1.

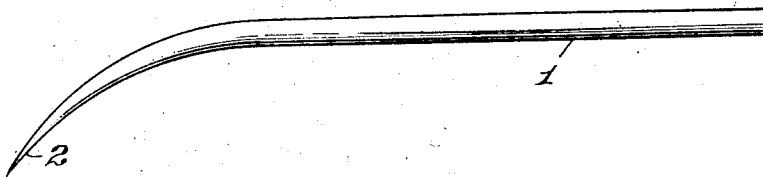


Fig. 2.

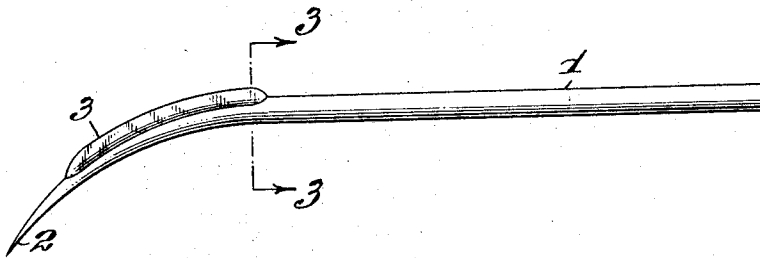


Fig. 3

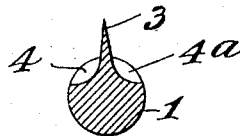
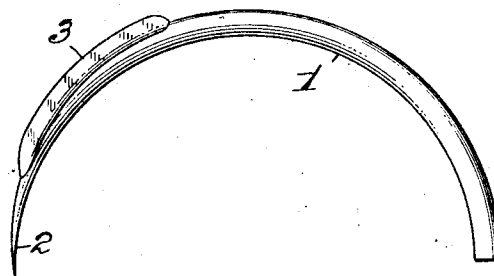


Fig. 4.



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NEEDLE AND METHOD OF MAKING THE SAME.

Application filed December 2, 1925. Serial No. 72,704.

The following is a description of a needle and methods of making the same embodying my invention in the form and manner at present preferred by me; but it will be understood that various modifications and changes may be made without departing from the spirit of my invention and without exceeding the scope of my claims.

In my application Serial No. 55,268, filed September 9, 1925, I disclosed a straight needle provided with three cutting edges, and particularly adapted for use in the art of surgery. My present invention relates to curved needles suitable for similar use and provided with a single cutting edge on the convex side of such needle.

In surgical operations much effort is required to force a needle of the usual type through certain tissues, such as the skin upon some portions of the body, the scalp and tendons. In certain classes of surgical work a half-curved or full-curved needle may be more easily manipulated than a straight needle; and the principal object of my present invention is to provide a needle all or some portion of which is curved, and to form on the convex side of a portion of such curve a projecting fin which is finished to a keen cutting edge. Such a needle may be more readily passed through resistant tissues than the conventional curved needle which is circular in cross section. So far as I am aware, it is new in this art to provide a curved needle so constructed and arranged as to permit of forming on the convex side of the curve a keen cutting edge.

Surgical needles are usually of such small diameter that attempts to hollow-grind them to form a cutting edge would present almost insuperable obstacles. By my invention it is possible, with simple and practicable manufacturing methods, to form on the convex side of the curved needle a cutting edge so keen that but slight effort is necessary to cause the needle to cut its way through thick and resistant tissue. In a needle which is full curved or partly curved, it is desirable that the cutting shall be in a direction away from the lips of the wound, leaving a smooth, uncut perforation adjacent such lips. The possibility of the stitches tearing out by reason of the tension applied to the suture is thereby reduced.

My invention will best be understood by reference to the accompanying drawings, in which I have illustrated the preferred form of my invention and methods of making the same, and in which Fig. 1 shows in elevation a so-called "half-curved" needle of the conventional type; Fig. 2 shows such a needle with a fin formed on the convex side of the curved portion; Fig. 3 is an enlarged cross-sectional view on the line 3—3 of Fig. 2; and Fig. 4 shows in elevation another type of needle embodying my invention.

Like reference characters indicate like parts throughout the drawings.

Referring to the drawings: 1 indicates the body of a needle which may have formed in its shank end an eye or other suture-carrying means (not shown). 2 is the point of the needle, which may be of any convenient shape and which may be formed in the annealed blank by any suitable method, as by grinding or swaging; 3 is a fin formed along a portion of the curved part of the needle in any suitable manner, as by pressing, stamping or swaging one side of the said needle, producing recesses 4 and 4^a and forcing the metal therefrom into the fin. This operation may be carried out either before or after the needle is curved, and while the needle is still in its annealed state. After the fin has been formed and the needle has been curved, it is hardened, tempered and polished, the point being re-ground, if necessary. The fin is then given a keen cutting edge throughout its length, as by grinding or other suitable process.

In use, the fine point of a needle readily enters tough and resistant tissue; but as the diameter increases along the taper, the effort required to perforate such tissue progressively increases. By my invention, the fine sharp needle point also readily penetrates the tissue, but, before the diameter of the needle has materially increased, the cutting blade becomes operative, and thereafter serves as a keen knife to easily cut a path for the needle body and suture. With the ordinary needle, on the contrary, the tissue is not cut, but is necessarily forced or compressed together to form the perforation. The trauma resulting from the formation through tissue of a clean-cut aseptic passage due to the action of a needle embody-

ing my invention is less than that caused by the bruising effect of the ordinary non-cutting needle.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A needle having a curved portion and a cutting blade on the convex side of such curve.
2. A needle having a curved portion and a radial cutting blade projecting from the convex side thereof.
3. A curved needle provided with a fin radially projecting from the convex side thereof and comprising a cutting blade.
4. A curved needle provided with an arcuate cutting blade projecting radially from the convex side thereof and beyond the body of said needle.
5. A needle having a curved portion the convex side of which is provided with a radial cutting blade projecting beyond the body of the needle.
6. A curved needle provided with a point and a radially projecting cutting fin extending along said curve and terminating short of said point.

HARRY D. MORTON.