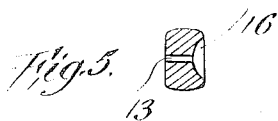
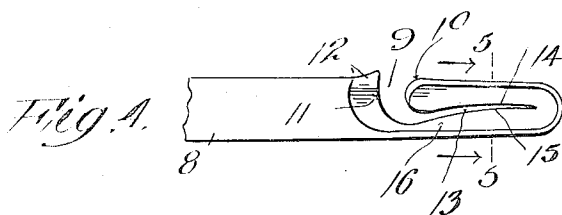
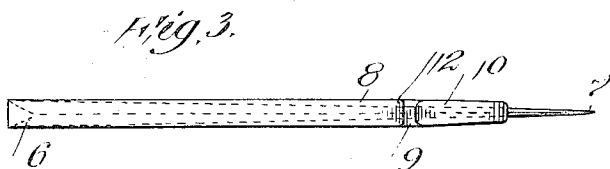
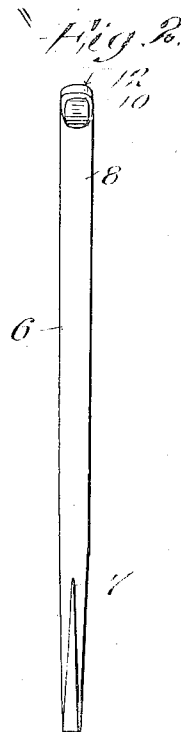
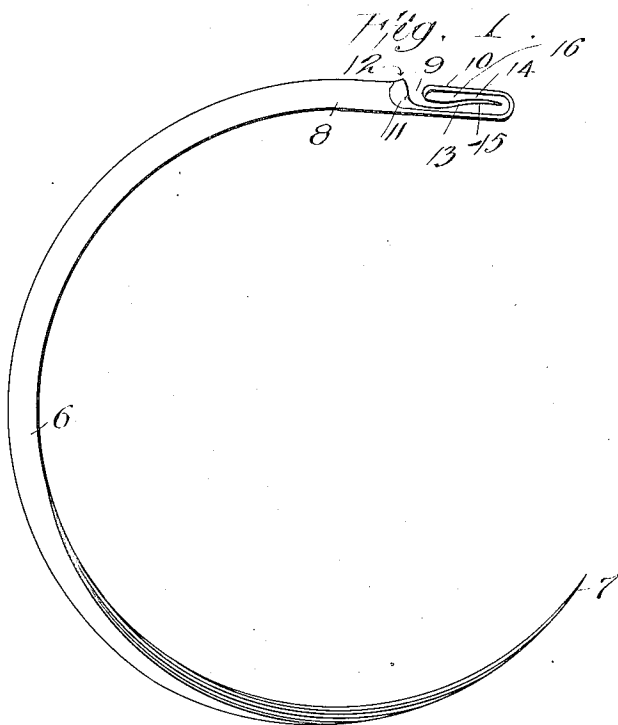


Mar. 20, 1923.

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W. J. SNYDER.
SURGICAL NEEDLE.
FILED JULY 2, 1918.



Inventor
William Jay Snyder
by his atty Samuel E. Darby

UNITED STATES PATENT OFFICE.

WILLIAM JAY SNYDER, OF WEEHAWKEN, NEW JERSEY.

SURGICAL NEEDLE.

Application filed July 2, 1918. Serial No. 243,023.

To all whom it may concern:

Be it known that I, WILLIAM JAY SNYDER, a citizen of the United States, residing at Weehawken, in the county of Hudson, State of New Jersey, have made a certain new and useful Invention in Surgical Needles, of which the following is a specification.

This invention relates to surgical needles, and particularly to needles employed for suturing cuts or wounds.

The object of the invention is to provide a suturing needle which is simple in construction and efficient in operation for retaining the suture when once applied to the needle without danger of the suture becoming unthreaded therefrom.

A further object of the invention is to provide a surgeon's suturing needle with a structure of eye to which a suture may be quickly applied and by which the suture is efficiently grasped and retained.

Other objects of the invention will appear more fully hereinafter.

The invention consists substantially in the construction, combination, location, and relation of parts, all as will be more fully hereinafter set forth as shown in the accompanying drawing and finally pointed out in the appended claim.

In the accompanying drawing—

Fig. 1 is a view in side elevation of a surgeon's suturing needle constructed in accordance with the principles of my invention.

Fig. 2 is an edge view of the same.

Fig. 3 is a top plan view.

Fig. 4 is a broken detail view, enlarged, showing the formation of the eye in the end of the needle for receiving a suture.

Fig. 5 is a view in section on the line 5, 5, Fig. 4, looking in the direction of the arrows.

Suturing needles employed by surgeons as ordinarily constructed in the form most commonly used are curved in the length thereof with a sharp pointed end and having an eye in the shank end thereof. Through the eye formed in the shank end of the needle the suture is threaded. Practical difficulty has been frequently encountered by reason of the fact that sutures frequently vary in size from the kangaroo gut suture to

the silk worm gut suture which is the smallest in quickly threading the suture through the eye of the needle. The sutures are ordinarily carried in coils immersed in chloroform contained in suitable receptacles, and when the suture coil is required it is removed from its container in coiled form and this renders it difficult to determine with certainty whether or not the suture is properly threaded through the eye of the needle because of the confusion of coils. Likewise when in coiled condition the fact that the suture after being threaded through the eye of the needle has been accidentally or inadvertently unthreaded from the eye of the needle is not discovered with the result that the needle may be inserted through the tissues in suturing a cut or wound and pulled through without the suture being pulled through with it thereby necessitating a repetition of the operation with a threaded needle. This increases or prolongs the pain of the patient undergoing the suturing operation besides consuming time which is liable in many instances to be a very serious matter as rapidity of action is often a most important feature of operations. Moreover, the ends of the suture become ravelled which makes it difficult to effect a rapid threading of the same through the needle eye. Again where different sizes of sutures are employed the eye of the same needle may not be sufficiently large to accommodate all sizes of sutures thereby necessitating needles of varying sizes of eyes and this frequently also necessitates delays in selecting the needle having the proper size of eye to receive a particular size of suture, and if a small sized suture is threaded into a needle having a large size eye the danger is increased of the suture inadvertently pulling out of the needle eye either before use or in the course of the operation, thereby causing delay. Again, the necessity for rethreading a needle in the midst of an operation is rendered difficult particularly where the gloves ordinarily worn by the surgeon or attending nurses have become smeared with blood or damp. This causes a tendency of the suture to stick to the surface of the glove rendering it difficult and slow to effect a proper threading of the suture through the needle eye. Moreover, it has

occurred that the needle after being inserted in the tissues preparatory to a suturing operation becomes detached from the suture by reason of the latter inadvertently or otherwise pulling out of the needle eye, and thereby either causing the needle to become lost or misplaced, or sometimes left in the wound. This has been known to occur with sometimes serious if not fatal results. Where the surface of the needle eye is polished the danger of the suture pulling out of the eye of the needle is increased, particularly in the case of a suture of a particularly hard or slick surface, such for example, as horse hair, or silk worm gut suture. This tendency, of course, is less in the case of Pach-
 enstecker (linen), chromic cat gut and plain cat gut suture. In order to overcome some of these difficulties experienced in the use of suture needles in surgical work it is sometimes the practice of the surgeon or the attending nurse or assistant to twist the suture one or more turns around the shank of the needle after the suture is threaded through the needle. This precaution is not always effective.

It is among the special purposes of my present invention to provide a structure of suturing needle and an eye therefor which eliminates the difficulties referred to, and to provide a needle and a structure of eye therefor which is suited for use in connection with any size of suture, to which the suture may be quickly applied without any special effort or strain of eyesight which remains efficiently attached in threaded relation to the needle and which is held or gripped more strongly the harder the effort is made to pull the suture out.

In the accompanying drawing I have shown a structure of needle and eye embodying my invention wherein the needle is indicated at 6, and is of the usual curved form having the pointed end 7 and shank portion 8. This shank portion is formed with a lateral opening or slot 9 through one side thereof. The mouth or opening of this slot is preferably its largest portion, and in practice should be of a size capable of permitting even the largest sizes of sutures to be passed laterally therethrough. The walls 10, 11, at the mouth 9 of the slot, are preferably formed on the adjacent portions of the needle shank and of curved formation as clearly shown, and preferably the wall 11 which is formed in the body part of the needle shank terminates in a lip or slight protuberance 12 at the edge of the needle. The wall surface 10 formed in the end portion of the shank of the needle is preferably curved circularly, thus providing in effect a somewhat flaring mouth or entrance 9, the one wall 10 thereof being substantially continuously curved, while the other wall 11 thereof terminates in the slightly extended

projection 12 as above described. This construction facilitates the entrance laterally of a suture into the slot. The slot is formed at its mouth to extend in a direction transversely of the needle shank part way across the shank and thereafter is curved to extend as at 13 lengthwise of the needle shank and towards the end of the shank, the portion 13 of the slot being bounded by curved walls 14, 15, and being of decreasing width thereby serving to smoothly and easily guide the suture into the narrowing portion of the slot. Instead of the portion 13 of the slot extending parallel with the direction of length of the needle shank it is preferably slightly curved in the direction of its length as well as being of decreasing width. In practice I also prefer to form a depression 16 in the side surface of the needle shank extending generally lengthwise of the needle into which one side of the slot opens. This depression or groove on the shank of the needle facilitates the use of the needle when the suture is once threaded into the eye and also aids in gripping and retaining the threaded suture.

In practice the suture is applied to the needle by passing the same laterally through the mouth 9 of the slot the curved walls of the slot serving to guide the suture smoothly and easily towards the end of the shank in one continuous movement in one direction, and portion 13 of the slot until it becomes wedged in said narrowing portion of the slot. This serves not only to cause the suture to become sufficiently gripped in the needle eye but any pull exerted on the suture tending to unthread the same from the eye will cause the suture to grip more firmly in the narrowing portion 13 of the slot.

In the construction above set forth the suture can be quickly and rapidly applied to the needle eye without special care or attention and whatever the size of the suture may be, without eye strain, and the suture remains firmly and efficiently attached to the needle without danger of inadvertent unthreading, and hence avoiding the delay of the surgeon in effecting a suturing operation as well as avoiding the danger of the needle becoming lost or remaining in the wound, and also avoiding the danger of the suture being inadvertently pulled through the eye of the needle.

While I have shown and described a specific structure embodying the principles of my invention, I wish it to be understood that variations from the details shown and described might readily occur to persons skilled in the art and still fall within the spirit and scope of my invention. I do not desire therefore to be limited or restricted to the exact details shown and described.

Having now set forth the objects and nature of my invention and a construction em-

bodying the same, what I claim as new and useful and of my own invention, and desire to secure by Letters Patent, is,—

5 A suturing needle for surgical use having a shank formed with a slot therein, said slot extending transversely part way across the shank from the outer edge thereof and thence in the direction of length of the

shank, the face of the shank having a longitudinally extending groove or depression 10 formed therein in the direction of the length of the slot.

In testimony whereof I have hereunto set my hand on this 29th day of June, A. D., 1918.

WILLIAM JAY SNYDER.