March 7, 1950 E. THEMAK 2,499,890

REEL FOR METAL SUTURES

Filed March 6, 1945

Fig. 1.

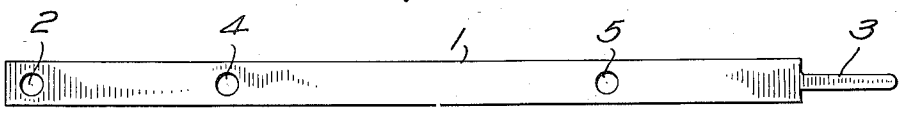


Fig. 2.

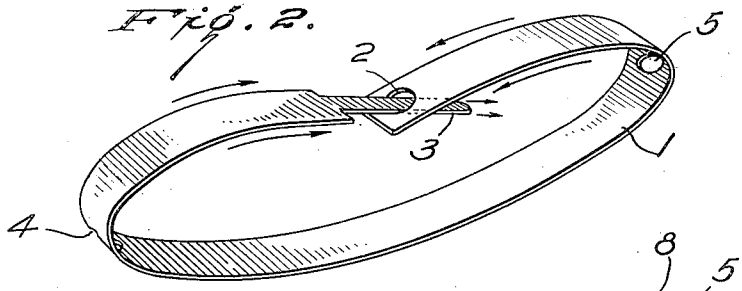


Fig. 3.

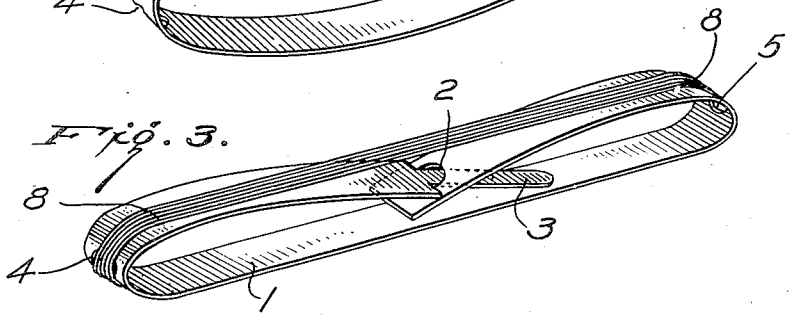


Fig. 4.

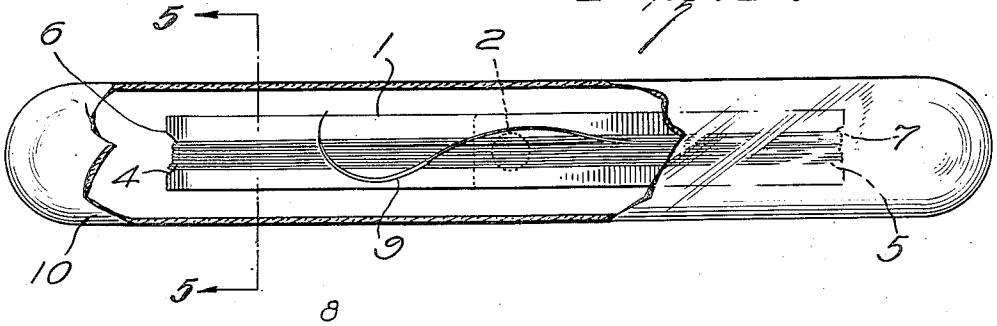
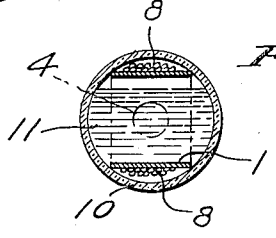


Fig. 5.



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REEL FOR METAL SUTURES

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1 Claim. (Cl. 206—59)

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The present invention relates to a reel particularly adapted to receiving a metal suture or ligature. Inasmuch as an article is a suture or a ligature dependent upon whether or not it is embedded in animal tissue, for the purpose of this application, the word "suture" hereinafter will be used to mean either or both uses.

It is customary in this art to dispense sutures of wire, such as silver, stainless steel or the like, upon reels where the former is wound on the latter in a series of convolutions. Difficulty has been experienced in the past in such a combination in that wherever the wire passed over a sharp edge of the reel, a kink or bend was produced which interferes not only in the proper unwinding of the suture from the reel but which has a tendency to cause trauma, particularly when the filament is used as a suture in contradistinction to a ligature. Additional difficulty is experienced with such combinations as above in that due to the relative stiffness of the wire, the convolutions will not remain in place on the reel unless wound very tightly which in itself tends to cause bending of the strands as they pass over the ends or edges of the reel.

Again it has been proposed to wind wire sutures or the like on reels having side wings or projections arranged to prevent accidental displacement of the wound suture from the reel but such constructions are not entirely satisfactory in that the wire, which is of an extremely fine gauge, tends to slip in between the body of the reel and the projections with consequent kinking, bending or mutilation during the unwinding procedure.

The principal object of the present invention, therefore, is to provide a reel for wire sutures and/or ligatures which will not be subject to the above difficulties and yet will be cheap, easy to manufacture and otherwise desirable.

These and other objects may be readily accomplished by making a strip of flexible material of fibre, paper, laminated for strength or not as desired, plastics or the like, forming a receivable and receiving end portion thereon so that when the strip is folded upon itself and the two ends engaged a cylinder will be formed which may collapsed into a shape having a long axis and a short axis, and upon which the metal or wire filament may be wound. By providing a perforation at two diametrically opposed locations in the strip, each convolution of the wire may be laid in the depression formed by the perforations so as to secure the wire in place and

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against accidental displacement, or without the formation of bends or kinks.

The invention further contemplates the novel combination, arrangement and construction of parts, more fully hereinafter described and shown in the accompanying drawings, in which:

Fig. 1 is a plan view of a strip of material from which a reel of the present invention is made.

Fig. 2 is a perspective view showing the method of engaging the ends of the strip of Fig. 1.

Fig. 3 is a perspective view of a collapsed reel showing a length of wire suture wound thereon.

Fig. 4 is a plan view of the combination of Fig. 3 showing the suture and reel enclosed within a sealed glass tube, and

Fig. 5 is a sectional elevation along the line 5—5 of Fig. 4.

Referring now with particularity to the embodiment illustrated, a strip is shown at 1 of any suitable flexible material such as fibre, paper, laminated or not for strength, fabric impregnated with stiffening agents such as resins or the like, or even a strip of plastic material. It is to be understood that the strip should not be made of or contain a substance or substances which will be dissolved, softened, warped or otherwise detrimentally affected by the tubing fluid, usually xylol, or by heat or chemical sterilization as the case may be. Vegetable fibre of the nature of paper is eminently suited for this purpose.

As shown, the strip 1 is provided with an aperture 2 in one end portion and an end tongue 3 so that the two ends may be united as in Fig. 2 and collapsed as in Fig. 3 to form a reel having a long axis and a short axis.

It is also desirable that apertures 4 and 5 be provided so that when collapsed these apertures will be transformed into depressions shown at 6 and 7 respectively.

With the reel in the collapsed condition, a length of wire strand or filament 8 may be wound thereon in a plurality of convolutions. This strand may have attached thereto the surgical metal 9 or not as desired.

It will be noted that due to the fact that the convolutions of the strand lie within the depressions 6 and 7, they are prevented from being accidentally displaced from the reel. Attention is also called to the fact that as the wire never passes over sharp edges, the formation of bends or kinks in the wire is definitely avoided.

Where desired, the completed reel with its wire suture may then be inserted within a glass tube

10 containing tubing fluid 11, such as xylol, and the tube hermetically sealed. The suture may be sterilized as is usual in such cases.

It will be apparent that such a combination is particularly desirable in that the wire is securely held in position against the formation of kinks or bends and may be readily unwound from the reel when the surgeon desires to use all or a part thereof.

It is desirable that the relative dimensions of the reel be such as shown in Fig. 5 so that the edges of the reel bind against the inner surface of the tube 10 and prevent undue relative movement between the tubing and the suture-reel combination.

While the invention has been shown and described with reference to a specific embodiment, it is to be understood that the invention is not to be limited thereto but is to be construed broadly and restricted only by the scope of the claim.

What is claimed:

In combination, a reel comprising a flat strip of flexible material bent upon itself to form rounded end portions, a perforation in each rounded end portion, the free ends of the strip being secured together, and a plurality of convolutions of wire wound thereon, parts of the convolutions lying in the depression formed by the perforations in the end portions of the reel.

EDWARD THEMAK.

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