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HOLDER FOR SURGICAL NEEDLES

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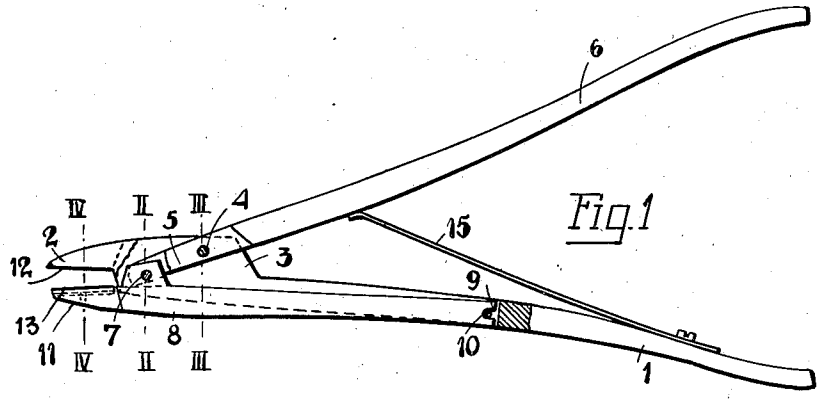



Fig. 1

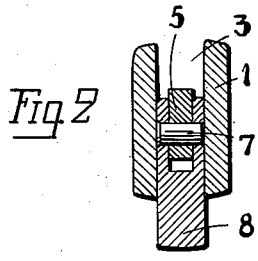



Fig. 2

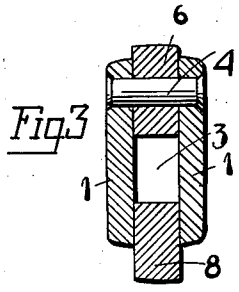



Fig. 3

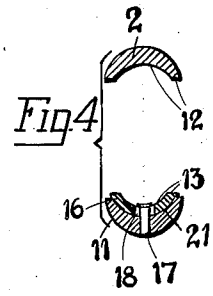



Fig. 4

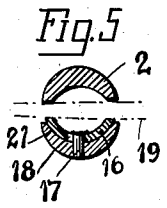



Fig. 5

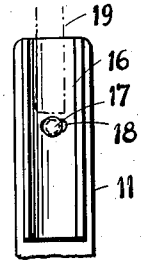



Fig. 6

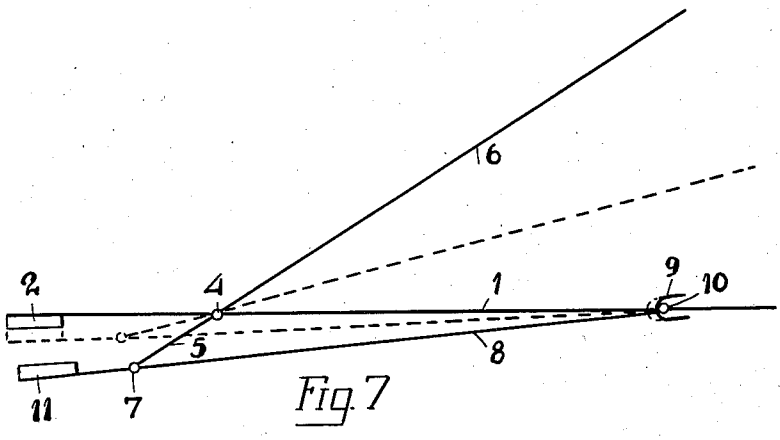



Fig. 7

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## HOLDER FOR SURGICAL NEEDLES

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7 Claims. (Cl. 128—321)

The present invention relates to improvements in holders for surgical needles, the principal object of the invention being to so construct a holder that it may firmly grip needles of various forms and sizes.

A further object of the invention is to create a holder for surgical needles by means of which the needle by a slight power will be firmly gripped in various positions between the jaws of the holder.

With these and other objects in view the invention consists in certain novel features of construction and combinations of parts as hereinafter set forth and pointed out in the claims.

An embodiment of the invention is illustrated in the accompanying drawing in which Fig. 1 shows a side-elevation of the holder in open position with certain parts removed. Figs. 2 and 3 show sections on the lines II—II and III—III respectively of Fig. 1. Fig. 4 is a cross-section of the jaws of the holder on the line IV—IV of Fig. 1. Fig. 5 shows a cross-section of the jaws in gripping position the needle being only indicated by dotted lines. Fig. 6 shows a plan view of one of these jaws, a needle also being indicated in this figure. Figure 7 is a diagrammatical view, showing, broadly, the manner of operation of the holder. Figs. 2 to 6 are drawn on a larger scale than Fig. 1.

The holder is made in the shape of forceps, and 1 represents one shank of the forceps carrying at the outer end a jaw 2 which is formed integrally with or is directly connected with the jaw 1 in the usual manner. This shank has a longitudinal recess 3 into which the extreme end of the other shank of the forceps projects. This latter shank by means of a pin 4 is pivoted to the first mentioned shank 1 and constitutes a double-armed lever the arm 5 of which projects into the recess 3 and is substantially shorter than the other arm 6 serving as a handle. The extreme end of the short arm 5 by means of a pin 7 is pivoted to a member or arm 8. The inner end of this arm is provided with a recess 9 extending in the longitudinal direction of the arm and engaging with a pin 10 fastened to the shank 1. The arm or member 8 is pivotable about the pin 10 and is at the same time in a certain degree slidable along the shank 1. The member 8 at the outer end is formed as a jaw 11 similar to the jaw 2 of the shank 1. A concavo-convex plate or needle gripping member 16 is seated within the concave bearing surface 21 of the jaw 11 and is connected to the latter by means of a pin 17 extending through a slot formed within the plate 16, whereby the needle gripping member or plate may have a limited lateral movement with respect to the jaw 11. The longitudinal edges of the needle-gripping member extend past the longitudinal edges of the jaw 11 so that the member 16 may automatically adjust itself when gripping needles 19 of conical or tapering form as shown by Fig. 5. Thus also a needle of this form will be gripped quite as good as a needle the gripping portion of which has the same thickness throughout its length.

As usual a spring 15 is provided to move the shanks apart when they are released. The rather long shanks 1, 6 are also in themselves of somewhat springy character.

When the jaws are opened, as shown by Fig. 1 and by full lines in Fig. 7 the jaw 11 of the pivotable and slidable member 8 is somewhat retracted in comparison with the other jaw 2. If the shanks are forced together as indicated by dotted lines in Fig. 7, the jaw 11 will be pushed forward a little as it swings towards the other jaw 2. By arranging the jaw 11 on a particular slidable and pivotable member 8 the pivot pins 7 and 10 of which are located on opposite sides of the pivot pin 4 between the shanks 1, 6 of the holder, the gripping surfaces 13 receive such a movement that the surfaces 12, 13 will be practically parallel. Hereby the needle will bear on the surfaces 12, 13 in a favourable manner, i. e., not by means of "points" but by means of "surfaces". The needle will be gripped satisfactorily whether it is placed crosswise between the jaws as indicated by Fig. 5 or lengthwise as indicated by Fig. 6. From the foregoing, it is quite obvious that a surgeon's work will be greatly facilitated in the sewing up of cuts or other wounds by the use of my holder, in that needles of various sizes may be more easily and readily gripped and firmly held at different angles by the surgeon. The plate 16 will automatically adjust itself in a transverse direction of the jaw 11 when gripping a needle so that needles having a tapering form as is indicated by the numeral 19 in Figure 5 of the drawing may be firmly gripped and supported in a transverse direction across the holder by the opposite sides or edges of the jaw, whereas, if the member 16 were omitted or rigidly attached to the jaw 11, only a biting contact at one point along the length of the needle would be effected, which would permit the needle to wabble within the holder. From Figure 5 of the drawing, it will be noted that this tapering needle is engaged at two points along its length by the opposite sides of the jaws in order to prevent the needle from hav-

ing any play whatsoever within the jaws when gripped therebetween, whereas, if only a single contact were effected between a tapering needle and the jaws, the needle would be permitted to move therein, which would interfere with the surgeon's work in the sewing up of cuts or other wounds. In the event the needle should be of a cylindrical form and placed transversely between the jaws, the oscillating gripping plate 16 would not be necessary but by providing this oscillating gripping plate 16, needles of various shapes may be retained in a transverse direction between the jaws or extend in a longitudinal direction from the jaws as is illustrated in Figure 6 of the drawings. When pressure is applied to the handles 1 and 6, the jaw 11 is given a sliding movement in a plane substantially parallel with that of the jaw 2, whereby, the needle will be properly seated within the jaws and upon the further application of pressure to the handles 1 and 6, the needle so seated will be firmly gripped between the jaws so as to prevent any wabbling movement whatsoever and permit the surgeon to more efficiently perform the sewing operation.

I do not desire to restrict my invention to the embodiment above described with reference to the drawing, but the details thereof may be varied without departing from the spirit of the invention. For instance, in the drawing the distance between the pins 4, 7 is substantially shorter than the distance between the pins 4, 10. The relation between these distances may also, for instance, be as 1: 1. The pin 10 may be attached to the member 8 in which case the oblong hole or slot 9 is provided in the shank 1. Also the jaw 2 may be provided with an adjustable channel-shaped needle-gripping member such as 16.

What I claim as new is:

1. A holder for surgical needles comprising a pair of shanks pivoted together in the form of forceps, a jaw directly connected to one end of one of said shanks, a lever, a jaw directly connected to one end of said lever, means pivotally and slidably connecting the opposite end of said lever to said first mentioned shank, and the second of said shanks having an end pivotally connected to said lever between said jaw and said first mentioned pivotal connection of said lever.

2. A holder for surgical needles comprising a pair of shanks pivoted together in the form of forceps, a jaw formed on one end of one of said shanks, a lever, a jaw formed on one end of said lever, means pivotally and slidably connecting the opposite end of said lever to said first mentioned shank and the second of said shanks having an end pivotally connected to said lever between said jaw and said first mentioned pivotal connection of said lever.

3. A holder for surgical needles comprising a pair of shanks pivoted together in the form of forceps, a jaw directly connected to one end of one of said shanks, a lever, said first mentioned shank having a longitudinally extending slot formed therein for receiving the inner portion of said lever, means pivotally and slidably connecting one end of said lever to said first mentioned shank within said slot, a jaw directly connected to the outer portion of said lever, and the second of said shanks having an end pivotally connected to said lever between said jaw and said first mentioned pivotal connection of said lever.

4. A holder for surgical needles comprising a pair of shanks pivoted together in the form of forceps, a jaw formed on one end of one of said shanks, a lever, a jaw formed on one end of said lever, means pivotally and slidably connecting the opposite end of said lever to said first mentioned shank, the second of said shanks having an end pivotally connected to said lever between said jaw and said first mentioned pivotal connection of said lever and the distance between the pivot connecting said two shanks and the pivot connecting said lever and said second mentioned shank being substantially shorter than the distance between the pivot connecting said two shanks and the said pivotal means.

5. A holder for surgical needles comprising a pair of shanks jointed together in the form of forceps, a jaw connected to each shank, one of said jaws having a concave setting surface formed therein and extending longitudinally thereof, a concavo-convex gripping plate arranged within the concave setting surface of said jaw and means for connecting said gripping plate to said jaw whereby the plate may have free transverse movement with respect to said jaw.

6. A surgical needle holder of the character described comprising a pair of movable jaws, the opposed faces of said jaws each having a concave groove formed therein and extending longitudinally thereof forming with each jaw a pair of parallel side edges, a plate seated within the concave groove of one of said jaws, the opposite edges of said plate extending beyond the sides edges of the jaw in which it is seated and means for loosely connecting said plate to the jaw in which it is seated whereby the opposite edges of the plate may cooperate with the side edges of the other jaw for gripping at spaced points along the length of needles inserted therebetween.

7. A needle holder of the character described comprising a pair of movable jaws, said jaws each being semicircular in cross section, a concavo-convex gripping plate seated within one of said jaws and extending longitudinally thereof, said gripping plate having a transversely extending slot formed therein, a pin projecting through said slot for connecting said plate to the jaw in which it is seated and said plate being of a greater width than that of the jaw in which it is seated substantially as and for the purpose specified.

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