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KNITTING NEEDLE

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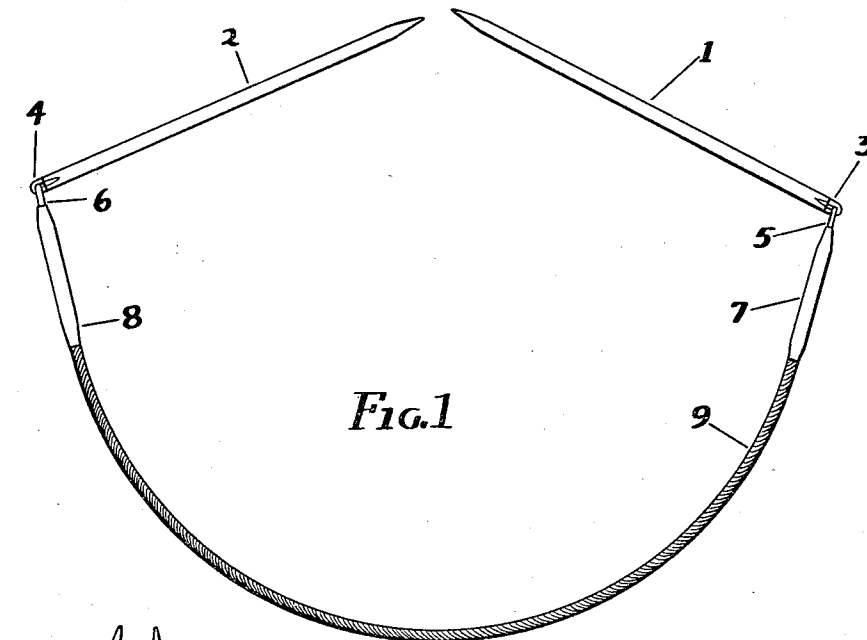


FIG. 1

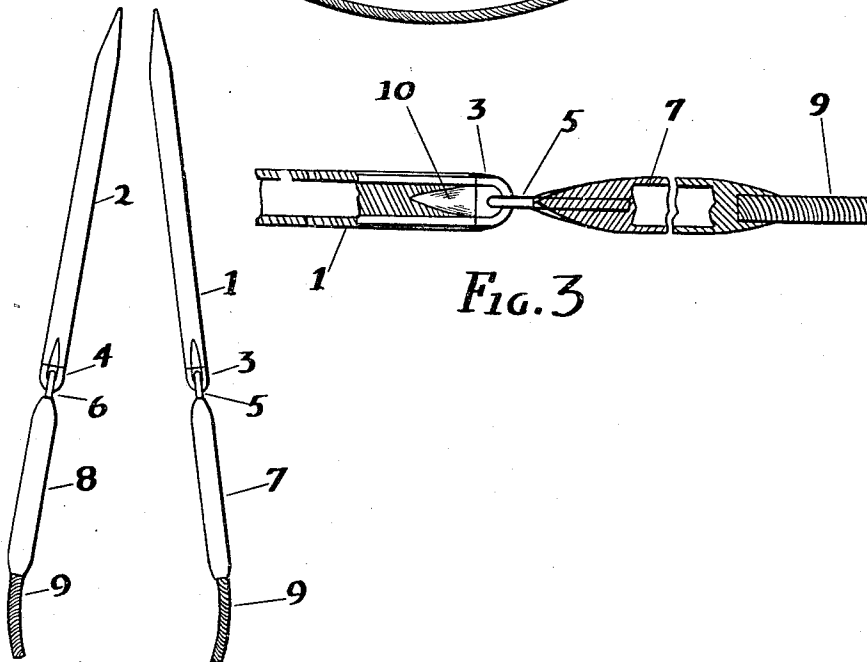


FIG. 3

FIG. 2

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KNITTING NEEDLE

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4 Claims. (Cl. 66—117)

The present invention relates to knitting needles, and more particularly to needles for knitting such articles that have no ends, such for instance as skirts or bodices.

In this type of work it is already customary to employ needles that have sometimes been called circular needles. This type of needle is usually one in which the two needle points are at opposite ends of the body of the needle or rather where the needle has knitting points at both of their ends.

It is common in this type of needle to construct the needle of a flexible element with rigid knitting pins at each end. The knitting is done with the pins in the usual way and the knitting itself is pushed back and forth over the flexible element. Such circular knitting pins as they are sometimes called, quickly break particularly at the point where the flexible cable or element is joined to the rigid or stiff part of the needle.

It will be realized upon consideration that a tremendous amount of bending occurs at this point, and therefore this point should be stronger or more flexible than any other point in the needle. However, due to the fact that the junction between the stiff element and the flexible element is made at this point, and due further to the fact that it is usually made by soldering, it frequently happens that not only does this point become less flexible than the rest of the needle, but further it must bear more of the wear. As a matter of fact it takes very little to make the needle useless since if it becomes rough in any way, the wool will catch and pull and will therefore become useless for knitting purposes. Considerable effort should therefore be made to make such junctions smooth and when they become rough the needle must always be discarded.

In the present invention, these difficulties are overcome by making a joint in which no strain at all can be put upon it, and further which is sufficiently smooth so that the wool will readily slip over it.

In the needle of the present invention, the pins are rigid as in the needles previously described and also the body portion of the needle is provided with a flexible cable for holding the knitting as in the type of the needle just described.

In the present invention, however, the flexible body portion of the needle is terminated by a rigid element which itself provides the junction at which all the bending occurs. In this way there is no strain at the joint of the flexible cable. The rigid elements fixed to the flexible cable are joined to the needle point by a joint which takes

up all of the twisting or bending so that the cable is left practically unbent or unstrained at all times.

The invention will be more clearly understood in connection with the drawing, in which:—

Figure 1 shows a general view of the needle.

Figure 2 shows an enlarged view of the needle pins and the junction with the cable ends.

Figure 3 shows in section the junction of the needle pin and the cable end.

In Figure 1, the needle pins are indicated by Nos. 1 and 2. Formed at the end of each needle pin are eyes 3 and 4 which will be described in detail presently. These eyes 3 and 4 link with corresponding eyes 5 and 6 in the link elements 7 and 8 respectively. The link elements 7 and 8 are rigid elements and have at their ends flexible cable 9 which may be held fast in the element 7 and 8 either by soldering, pressing, welding, or in any other suitable manner. The cable 9 may be of flexible yielding material either of metal or non-metal element.

In Figure 2 an enlarged view of the needle pins and rigid coupling elements 7 and 8, are shown. It will be noted from consideration of Figures 1 and 2 that no bending occurs at the junction between the cable 9 and the coupling elements 7 and 8, but that all of the bending is taken up in the needles 1 and 2 by the couplings at the ends. Not only does this make it impossible to break the needles since no strain is put upon the metal itself, but it should also be noted that the knitting needles 1 and 2 are relatively free and that no restraint upon the movements of knitting is imposed.

The inventor has found that the present type of joint not only allows complete freedom in knitting but also allows the knitting material to slide without effort over the joint. This appears to happen because the joint presents no sharp edges or surfaces, and while the contour in all positions is not a continuous curve, nevertheless, no edges are exposed. This is quite evident in Figure 2, in which there is inserted in the hollow pin 1, an eyelet formed by the U-shaped wire 3 which has a smooth curved surface, while in the rigid hollow element 7 there is placed a similar eyelet formed by the wire 5. These eyelets indicated more clearly in Figure 3 are inserted in the hollow knitting pins 1, 2 and elements 7 and 8, in such a manner that the curved portion of the eyelet engages the edge of the end of the pin. In the manufacture of the knitting pin, the eyelet 3 is placed in the end of the hollow pin which is then pressed in the middle as indicated by the

holes in which the prongs of the eyelet 3 are held in place. By pressing the end of the knitting pin at the point 10, a smooth contour is obtained between the surfaces of the eyelet 3 and the pin 1. 5 The eyelet may and is preferably soldered in place by dipping the end of the knitting pin in solder or applying it in any other suitable fashion. In this way the eye is made at the end of the knitting pin without a single rough edge or surface appearing, thus allowing the wool to slip over this joint without any difficulty at all. 10

The eyelet 5 is placed in the rigid link 7 in the same manner, the eyelet 5 being put in a rigid tubular section 7, the end being pressed in place and the link being soldered in. It is obvious, of course, that the link 5 must first be inserted through the link 3 if this is the last joint to be made. The flexible cable 9 may be soldered in the other hollow end of the rigid link 7 in the usual fashion, or the cable may be fastened in any way that is desired. In place of constructing the eye links in exactly the same way, it is possible to make one of the eyes as a part of the pin or pressed with the pin as a rigid link itself in which case the other eye is made in the manner as described above. 15 20 25

As will be noted from Figure 1, the cable 9 with the rigid links 7 and 8 lie in a smooth curve so that no strain at all is presented between the cables 9 and the joints 7 and 8. On the other hand, between the knitting pins 1 and 2 and the rigid links 7 and 8 no strain is provided since these elements are only loosely joined together. As far as the knitting material itself is concerned, it has been found that it will readily slip over the joint in the position indicated in Figure 1, without any special attention or effort on the part of the operator, and that as the material is gradually knitted at the needle points and is pulled up in the usual fashion, the material will follow over the eyelet joints without being necessary at all to work the material over the joints. 30 35 40

In the construction of the coupling link it may be noted that the link is no wider than the pins themselves and that while the links are free in all directions, the freedom of movement is such that one side can not be caught by the side of the other. This is obtained by making the eye as small as possible consistent with the free motion of the parts of the link. 5

Having described our invention, we claim:

1. A knitting needle having knitting pins comprising hollow tube elements, a U shaped wire forming a half link having the prongs thereof inserted in the end of one of the hollow tube elements and solder means for holding said prongs to the end of said tube. 10 15

2. A knitting needle having knitting pins comprising hollow tube elements, a U shaped wire forming a half link having the prongs thereof inserted in the end of one of the hollow tube elements, said end being pressed to shape about the prongs and solder means for holding said prongs to the wall of the tube element. 20

3. A knitting needle having knitting pins comprising hollow tube elements, a flexible cable having a hollow tube fixed at one end thereof, a pair of U shaped wires linked to each other and having the prong ends inserted in the ends of one of said knitting pins and the tube on said flexible cable respectively, and solder holding said prongs respectively in each hollow tube. 25 30

4. A knitting needle having knitting pins comprising hollow tube elements, a flexible cable having a hollow tube fixed at one end thereof, a pair of U shaped wires linked to each other and having the prong ends thereof inserted respectively in the hollow ends of one of the knitting pins and the tube on said flexible cable, said ends being pressed to shape about said prongs and solder holding said prongs firmly in the ends of said tubes. 35 40

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