

Oct. 7, 1958

J. L. MORRIS

2,854,836

KNITTING MACHINE NEEDLE HOOK

Filed Feb. 14, 1955

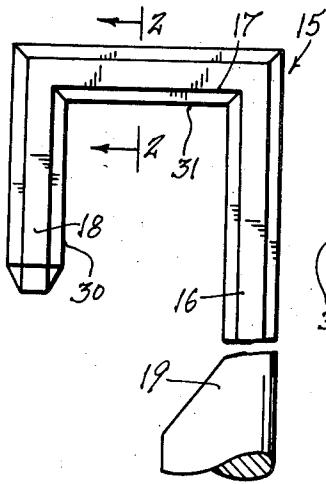


FIG. 1

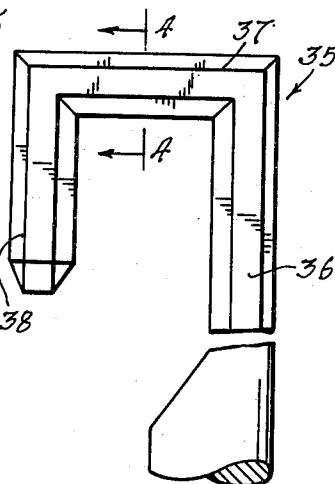


FIG. 3

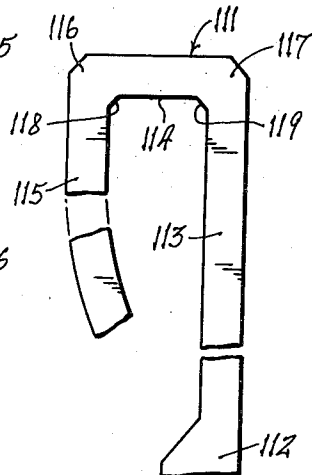


FIG. 14

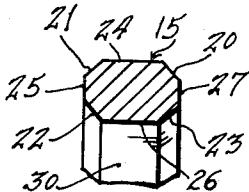


FIG. 2

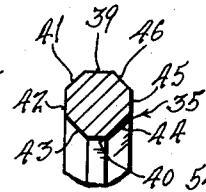


FIG. 4

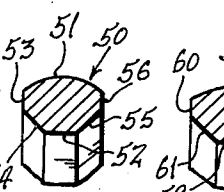


FIG. 5

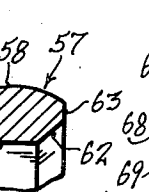


FIG. 6

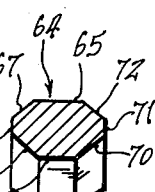


FIG. 7

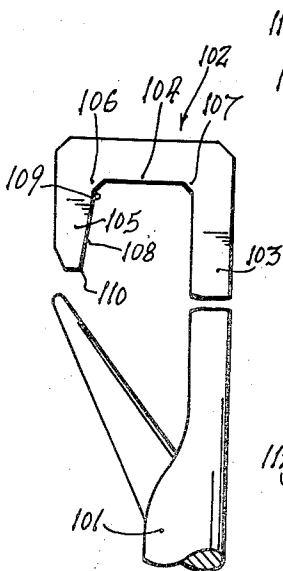


FIG. 12

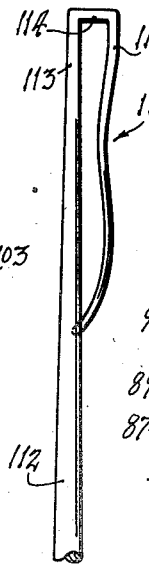


FIG. 13

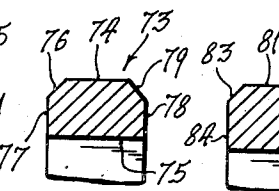


FIG. 8

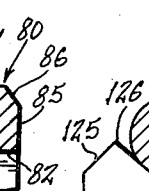


FIG. 9

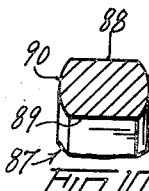


FIG. 10

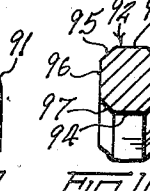


FIG. 11

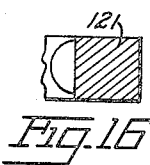


FIG. 16

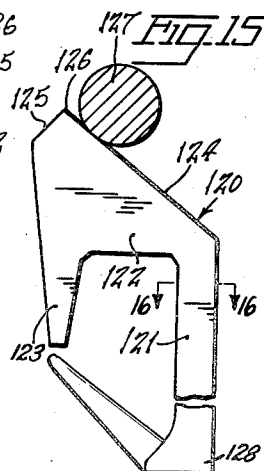


FIG. 15

INVENTOR
JOSEPH L. MORRIS
BY
Goldman Blackwell
ATTORNEY

1

2,854,836

KNITTING MACHINE NEEDLE HOOK

Joseph L. Morris, Elmhurst, N. Y.

Application February 14, 1955, Serial No. 487,905

2 Claims. (Cl. 66—121)

This invention relates to new and useful improvements in knitting machine needle hooks for spring beard needles, latch needles, two-part needle assemblies and other types and kinds of knitting machine needles.

In knitting by machine, a small knitting hook produces better quality of knitting but causes more difficulties in operation due to knots, slubs and uneven yarns. It is common practice to enlarge the outside diameter of the hook in order to increase the inside diameter, the common hook being a true arc or segment of a circle, but this results in a larger hook unless the diameter of the hook material is reduced, but reducing the cross section thusly weakens the hook.

One object of the present invention proposes constructing an improved hook by increasing the inner or inside cross dimension of the hook and at the same time decreasing the outside cross dimension by forming a relatively square hook. Still further, the present invention proposes forming the hook with legs of other than round cross section and in a variation of different shapes to afford larger inside dimensions without increasing outer dimensions.

Another object of the present invention proposes the shortening of the hook length to reduce latch motion on latch needles where the hook is used on such needles.

A further object of the invention proposes forming a point on the hook for entering loops in knitting that are to be transferred and entering in a more accurate and positive manner.

A still further object of the present invention proposes constructing the hook with a cam surface on its outer side to function as a web holder when knitting without a fabric take-up roll.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

Fig. 1 is an enlarged side view of a knitting machine needle shank with parts broken away and with a hook constructed and arranged in accordance with the present invention.

Fig. 2 is a fragmentary sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a view similar to Fig. 1 but showing a hook having different dimensions.

Fig. 4 is a fragmentary sectional view taken on line 4—4 of Fig. 3.

Fig. 5 is a view similar to Fig. 4 but illustrating a modification of the present invention.

Figs. 6 to 11, inclusive, are views similar to Figs. 4 and 5 but illustrating other modifications of the present invention.

Fig. 12 is a view similar to Fig. 1 but illustrating another modification of the present invention.

2

Fig. 13 is an enlarged side view of a beard needle having a hook constructed and arranged in accordance with the present invention.

Fig. 14 is an enlarged view with parts broken away of the hook shown in Fig. 13.

Fig. 15 is a view similar to Figs. 1 and 3 but illustrating a still further modification of the present invention.

Fig. 16 is a sectional view taken on the plane of the line 16—16 of Fig. 15, parts being omitted.

Referring more particularly to the drawings, the knitting machine needle hook in accordance with the first form of the invention shown in Figs. 1 and 2 is designated generally by the reference numeral 15.

Hook 15 has a shank portion or base leg 16, an outwardly extending leg 17 and an outer leg 18 disposed substantially parallel to the shank portion or base leg 16. The shank portion or base leg 16 is connected to and is an extension of the shank 19 of a knitting machine needle which may be a spring beard needle, a latch needle, a two-part needle assembly or any other type or kind of knitting machine needle. For example, the hook 15 may be formed on a twenty-four gauge (.034 inch shank) needle in which event the outside width or cross dimension of the hook is about .085 inch as compared with an outside diameter of .090 inch on the usual round hook, while the inside width or cross dimension of the hook is about .050 inch as compared with an inside diameter of .040 inch on the usual round hook for this gauge needle.

Instead of the legs 16, 17 and 18 of hook 15 being round in cross section as found on the usual knitting needle hook, these legs are substantially rectangular in cross section with angular peripheral edges 20, 21, 22 and 23 connecting the sides 24, 25, 26 and 27. Where the hook 15 is on a twenty-four gauge needle and has the dimensions mentioned above, the heights of the three needle hook legs 16, 17 and 18 between their opposed sides 24 and 26 is about .0175 inch and the width between opposed sides 25 and 27 is about .030 inch. The inside surface 30 of the hook will bypass knots and slubs more easily than that of a round hook because the yarn tension is generally at point 31 and at this point the surface 30 is relatively flat as compared to the arcuate or curved form at this point of the usual round hook of round cross section.

Where the usual round cross section hook for a twenty-four gauge needle has a diameter of about .025 inch and the hook has a cross sectional area of about .000490875 square inch, hook 15 has a cross sectional area of .000525 square inch due to its cross-sectional shape, about .000034125 square inch greater than the usual hook. Thus the cross-sectional shape of hook 15 provides a hook of greater tensile strength than the common round cross section hook.

The hook 35 shown in Figs. 3 and 4 is similar to hook 15 except that it has base leg or shank portion 36, outwardly extending leg 37, and outer leg 38 extending parallel to the base leg 36, all of which are polygonal in cross section. Each leg 36, 37 and 38 has an outer side 39, an inner side 40 and connecting sides 41, 42, 43, 44, 45 and 46. The outside width or cross dimension of the hook is reduced so that for a twenty-four gauge needle it is about .080 inch while the inside width or cross dimension of the hook is increased to about .045 inch for this gauge needle due to the cross-sectional shape of hook 35. As compared with the usual round hook on a twenty-four gauge needle of round cross section, the outside width or diameter is reduced by .010 inch and the inside width or diameter is increased by .005 inch.

The modifications of the invention shown in Figs. 5 to 11, inclusive, are characterized by the provision of different cross-sectional shaped legs all, however, being poly-

3

onal in cross section. In Fig. 5 the leg 50 has a rounded outer side 51, a flat inner side 52 and flat connecting sides 53, 54, 55 and 56.

In Fig. 6, the leg 57 has a rounded outer side 58, a flat inner side 59 and flat connecting sides 60, 61, 62 and 63.

In Fig. 7, the leg 64 has a flat outer side 65, a flat inner side 66 and flat connecting sides 67, 68, 69, 70, 71 and 72 which are flat.

In Fig. 8, the leg 73 has a flat outer side 74 and a flat inner side 75 with flat connecting sides 76, 77, 78 and 79.

In Fig. 9, the leg 80 has a flat outer side 81, a flat inner side 82 and flat connecting sides 83, 84, 85 and 86.

In Fig. 10, the leg 87 has a flat outer side 88 and a flat inner side 89 with rounded or curved connecting sides 90 and 91.

In Fig. 11, the leg 92 has all flat sides, an outer side 93, and inner side 94 and connecting sides 95, 96, 97, 98, 99 and 100.

The modification of the invention illustrated in Fig. 12 is characterized by the provision of a latch needle 101 having a hook 102 with legs 103, 104 and 105 connected by short beveled angular portions 106 and 107. In addition, the inside surface 108 is cut or otherwise formed to incline from point 109 to 110 to provide a substantially square hook.

The modification of the invention illustrated in Figs. 13 and 14 is characterized by the provision of a hook 111 on a beard needle 112, the hook 111 having legs 113, 114 and 115 connected by short beveled portions 116 and 117 to simplify the bending. The sharp ninety degree corners shown in the other hooks are difficult to manufacture and a few thousandths angle in the corners makes the bending operation easier. The inner angular corners 118 and 119 in the crook of the hook may be substantially right angle corners with small bend radii.

The modification of the invention illustrated in Fig. 15 is characterized by the provision of a latch needle 128 with a hook 120 having legs 121, 122 and 123, the legs 122 and 123 having inclined surfaces 124 and 125 terminating in a point 126. The inclination is in the direction of the reciprocation of the needle so as to act as a cam surface on a cast-off loop 127 and to cause the loop 127 to move toward the base leg 121 of the needle when the needle moves toward the loop. Because of these inclined surfaces, the hook will act as a web holder when knitting is done without a fabric take-up roll. The inclined surface 125 may also function in cooperation with sinkers (not shown) which also function as web holders. The point 126 provides a simple method of entering knitted loops that are to be transferred from one needle bank to another. It is only necessary for point 126 to enter a loop that is to be transferred so that the hook can properly and easily enter the loop.

The point 126 may be formed with inclined surfaces on all sides of the point or only on two or three sides. The outer, inner and connecting sides of the legs 121, 122 and 123 are all flat such as the sides of the leg 121 shown in Fig. 16.

4

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and that various changes and modifications may be made within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

1. A knitting machine needle hook for a needle having a shank connected with the hook, comprising three legs disposed substantially at right angles to each other, one of said legs being a continuation of the needle shank and forming the base leg of the hook, another of said legs being outwardly extending from the base leg substantially at a right angle thereto, and the other of said legs being disposed substantially parallel to the base leg and at a substantially right angle to the leg extending outwardly therefrom, said leg parallel to the base leg terminating in a point disposed toward the shank of the needle, said three legs forming a hook with a relatively square inner shape, said leg extending outwardly from the base leg having an outer inclined cam surface inclined to the direction of reciprocation of the needle, said leg disposed substantially parallel to the base leg having an inclined outer cam surface inclined to the direction of reciprocation of the needle and connected with said other outer inclined cam surface on the leg extending outwardly from the base leg by a loop entering point at the end of the hook for transfer purposes.

2. A knitting machine needle hook for a needle having a shank connected with the hook, comprising three legs disposed substantially at right angles to each other, one of said legs being a continuation of the needle shank and forming the base leg of the hook, another of said legs being outwardly extending from the base leg substantially at a right angle thereto, and the other of said legs being disposed substantially parallel to the base leg and at a substantially right angle to the leg extending outwardly therefrom, said leg parallel to the base leg terminating in a point disposed toward the shank of the needle, said three legs forming a hook with a relatively square inner shape, said leg extending outwardly from the base leg having an outer inclined cam surface inclined to the direction of reciprocation of the needle, said leg disposed substantially parallel to the base leg having an inclined outer cam surface inclined to the direction of reciprocation of the needle and connected with said other outer inclined cam surface on the leg extending outwardly from the base leg by a loop entering point at the end of the hook for transfer purposes, said leg disposed substantially parallel to the base leg also having an inside surface inclined in the direction of reciprocation of the needle.

References Cited in the file of this patent

UNITED STATES PATENTS

2,044,324 Page _____ June 16, 1936