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[54] LATCH NEEDLE FOR KNITTING MACHINES

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[58] Field of Search.....66/121-123

[56] References Cited

UNITED STATES PATENTS

600,692 3/1898 Huke et al.66/122

63,746 4/1867 Peaslee.....66/122

FOREIGN PATENTS OR APPLICATIONS

1,520,109 4/1968 France.....66/122

1,142,409 2/1969 Great Britain.....66/22

394,631 6/1933 Great Britain.....122/

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[57]

ABSTRACT

A latch needle for knitting machines having a latch provided with a hole and pivotably located in a longitudinal slot formed between faces of the needle shaft, and having a steel axle pin inserted through the hole, the ends of the pin being rotatably mounted in holes in the shaft faces, wherein the axle pin ends have a larger diameter in the region of the shaft faces than the portion of the pin in the latch hole.

2 Claims, 3 Drawing Figures

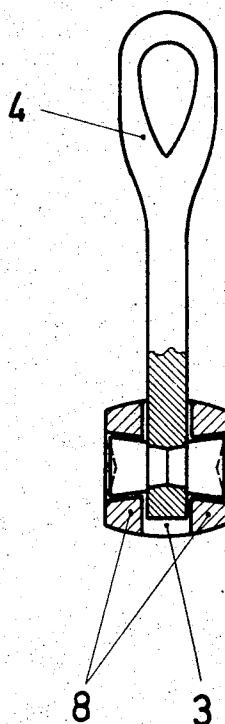


Fig. 1

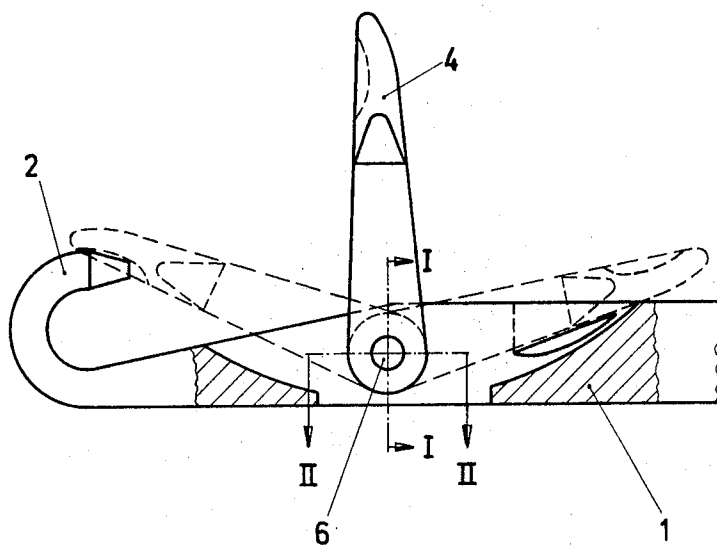


Fig. 2
I-I

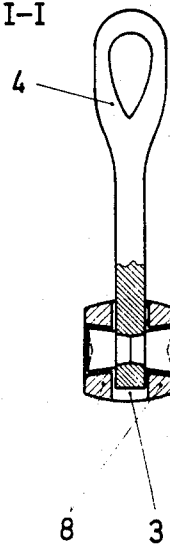
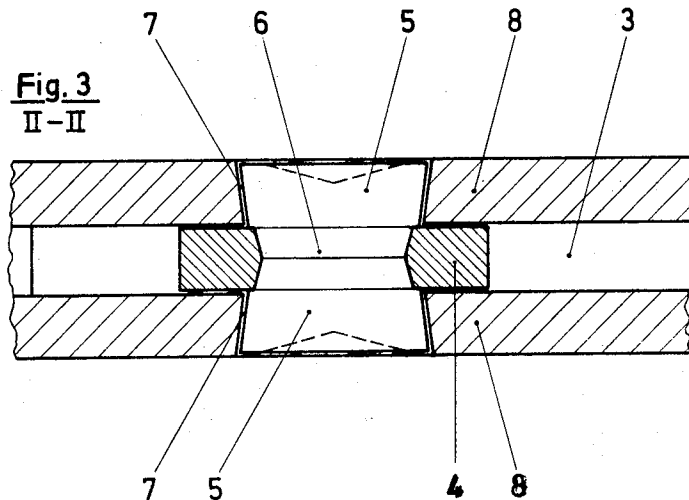


Fig. 3
II-II



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LATCH NEEDLE FOR KNITTING MACHINES

This invention relates to a latch needle for knitting machines.

More specifically, this invention relates to a latch needle having a latch pivotably mounted between the faces of a longitudinal slot of the needle shaft, the latch being provided with a hole through which a steel axle pin is inserted. The ends of the pin are rotatably mounted in holes of both shaft faces. Needles of this kind, contrary to known needles having axle pins made of thermoplastic material, have the advantage that they may be hardened in a completely assembled state.

Accordingly, the invention increases the wear resistance and hence the life of the latch bearing to keep up with the constantly increasing working speeds of knitting machines. This requires an increase of the pivot bearing surfaces to reduce the pivot bearing surface loading. In the latch needles of the kind referred to above, the axle pin has a larger diameter in the region of the shaft faces than in the latch region. It is obvious that the diameter and length of the axle pin ends can be selected from the required dimensions, and with a conventional upsetting process, the bearing surfaces may be enlarged without impairing the latch, which leads to a noticeable wear reduction, regardless of the size of the needle.

To safeguard the needle and also to insure that normal operating stresses do not alter the rotary mounting between the axle pin ends and needle shaft faces, an embodiment is preferred in which the axle pin is provided in the latch region with an annular groove, there being a corresponding annular inward bulge in the latch hole. Hence the location of the axle pin in the latch itself remains unimpaired even when the pivot ends are worn to below the latch hole diameter. The annular bulge may have a polygonal cross-section, in order to prevent relative rotation between the pin and the latch. It is also expedient for the holes and pivot pin ends to be outwardly enlarged, to improve the ease of manufacture.

It is therefore an object according to the present invention to provide a latch needle for knitting machines which is capable of increasing the wear resistance and the life of the latch bearing of the machine at increasing working speeds.

It is another object of the present invention to provide an improved latch needle which is simple in design, easy to manufacture, and reliable in operation.

Other objects and features of the present invention will become apparent from the following detailed description considered in connection with the accompanying drawing which disclose an embodiment of the invention. It is to be understood, however, that the drawing is designed for the pur-

poses of illustration only, and not as a definition of the limits of the invention.

In the drawing, wherein similar reference characters denote similar elements throughout the several views:

FIG. 1 is an overall side view, partly in cross-section, of a latch needle of the invention;

FIG. 2 is a cross-section taken along line 1—1 of FIG. 1; and FIG. 3 is a fragmentary view taken along line 2—2 of FIG. 1.

FIG. 1 shows a shaft 1 of a latch needle on one or both ends of which a hook 2 is formed. For cooperation with hook 2, there is pivotably mounted a latch 4 in a slot 3 of shaft 1. Two pivot bearing ends 5 of a steel axle pin 6 pass through latch holes 7 in shaft faces 8. These holes are slightly enlarged conically outwards, as are also the pivot pin ends 5, this being obtained by upsetting or spreading the axle pin ends after insertion through the latch. Holes 7 in latch 4 for axle pin 6 have an annular inward bulge in the latch region, the cross-section of which may be polygonal to prevent the axle pin 6 from rotating relative to the latch.

The pin, latch and needle may be hardened after assembly.

While only a single embodiment of the present invention has been shown and described, it will be understood that many changes and modifications may be made thereunto without departing from the spirit and scope of the invention.

What is claimed is:

1. A latch needle for knitting machines, comprising: a needle shaft, having a longitudinal slot at one end, and at least one pair of apertures disposed in said shaft opening on the inside surfaces of said slot, said apertures being enlarged conically outwardly from the inner surface of said longitudinal slot to the outside surface of said needle shaft;

a needle latch, having an aperture at one end, disposed in said longitudinal slot; and

an axle pin, inserted through said aperture in said latch and secured to said latch so that said latch and said pin are united, having end members enlarged conically outwardly from the center of said axle pin towards the ends of said pin, and disposed in said conical apertures provided in said needle shaft for rotating in said apertures with said needle latch.

2. The latch needle as recited in claim 1, wherein said axle pin has an annular groove circumscribing said pin, and wherein said latch aperture has an inwardly directed, annular bulge, having a polygonal cross-sectional shape, disposed in said groove on said axle pin, for securing said latch on said axle pin, and preventing rotational movement of said pin with respect to said latch.

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