(No Model.)

O. TREAT.

LATCH NEEDLE FOR KNITTING MACHINES.

No. 427,134. Patented May 6, 1890.

Fig. 1

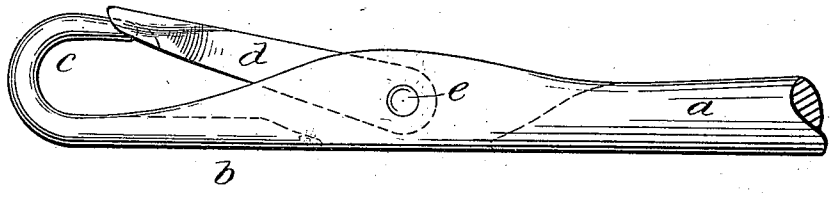


Fig. 2

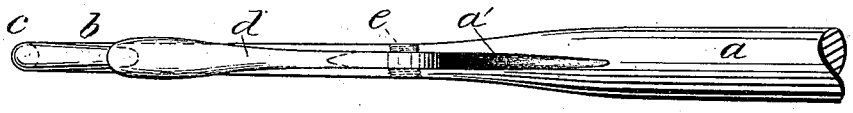


Fig. 3

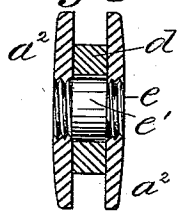


Fig. 4

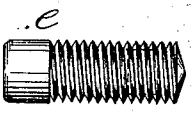
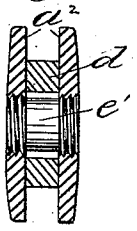


Fig. 5



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LATCH-NEEDLE FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 427,134, dated May 6, 1890.

Application filed July 30, 1889. Serial No. 319,167. (No model.)

To all whom it may concern:

Be it known that I, ORION TREAT, of Manchester, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Latch-Needles for Knitting-Machines, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

My invention relates to the class of needles that are used in knitting-machines, the latch in such a needle being pivoted in the socket near the hooked point of the needle, with the free end of the latch arranged to swing back and forth, so as to open and close the hook; and the object of my invention is to produce a needle of this class with a tongue held in place by a rivet that shall be not only secure against any rotary or endwise play, but shall also obviate any clogging of the latch, and such needle will thus obviate several serious difficulties that exist in the needles of the prior art that do not embody my improvement.

My invention consists in a latch-needle having a hooked end and a latch-socket, a swinging latch with one end located in said socket, and a screw-threaded pivot-rivet with a smooth latch-bearing and located in the threaded socket in the needle and passing through the latch; and it further consists in details of the several parts making up the needle as a whole, as more particularly hereinafter described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a side view, on an enlarged scale, of a needle embodying my improvement. Fig. 2 is a top view of the same on an enlarged scale. Fig. 3 is a view in central section across the needle, and showing the pivot in elevation. Fig. 4 is a view of the pivot-blank. Fig. 5 is a view of the pivot in place in the needle and before it is upset.

In the accompanying drawings, the letter *a* denotes the shaft of the latch-needle; *b*, the point end, that is usually bent to the form of a hook *c*. *d* denotes the latch, and *e* denotes the pivot on which the latch *d* swings. A socket *a'* is cut in the needle lengthwise of the shaft, and near the point end of this socket one end of the latch is inserted and held therein by means of the rivet *e*, that forms the pivot on which the latch freely swings to open and close the hook end.

In needles made prior to my invention the latch has been fastened in the socket by means of a rivet, the outer ends of the rivet-holes being slightly countersunk in the rivet-head and usually becoming in the heating somewhat roughened. When such a needle is used for a short time, the swinging of the latch loosens the pivot and causes or allows it to turn in its socket, with the result that the roughened ends of the rivet project sufficiently to catch into and tear the work, and a further difficulty is found in the looseness of the pivot that either causes it to drop out altogether or to make the latch fail to work properly. In the small sizes of needles in the "Balmoral needle" the walls a^2 of the opposite sides of the latch-socket *a'* in the needle-shaft are extremely thin, so that there is not enough stock at that part to resort to such devices as the flattening of the pivot-shank upon one end or making it in irregular outline to fit a correspondingly-irregular socket, nor is there enough stock to hold the ordinary rivet with any certainty. The result is that on this class of needles particularly there is great loss to the manufacturers, who by the custom of the trade warrant all their work.

In a form of old needle a screw-threaded rivet has been used by tapping a screw-thread in the pivot-socket in the needle-shank and securing the pivot by a slight riveting blow that upsets the thread and binds the pivot in the socket. In this form of old needle in which a threaded rivet is used it has been found by experience that the roughness of the threaded portion in the confined space within the latch-socket is a serious fault, as fiber or dust accumulates after a few days use of the needle (particularly on worsted goods) to a degree that renders the needle inoperative.

I have discovered that by cutting an annular groove in the surface of the screw-rivet, as shown in Fig. 3, to form a smooth latch-bearing such needle will not clog in use on any kind or grade of material. In this embodiment of my improvement the threaded rivet *e* has a smooth latch-bearing *e'*, formed on that portion that lies between the inner

walls of the latch-socket in the needle-shaft. The hole in the latch is made large enough for the threaded portion of the rivet to slip easily through it, and this of course leaves slight play of the latch on the rivet until the latter has been swelled by the riveting blow, that is of sufficient force to so expand the rivet at its center as to fill the pivot-socket in the latch just sufficiently to enable it to have a proper swinging motion without allowing it any endwise play.

I claim as my invention—

1. The improved latch-needle comprising the needle-shank and latch-socket, the swinging latch having one end located in said socket and supported on the smooth expanded central portion of the pivot-rivet, the threaded pivot-socket formed in the needle-shaft on both sides of the latch-socket, and the pivot-rivet threaded on each end within the socket and having a smooth expanded central latch-bearing, all substantially as described.

2. In combination with the needle *a*, having a hooked end *b* and a latch-socket *a'* near the hooked end, a swinging latch *d*, with one end located in the needle-socket, and the threaded rivet *e*, fitting the threaded socket in the needle and having the smooth and expanded latch-bearing, all substantially as described.

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