(No Model.)

L. E. SALISBURY.

NEEDLE FOR KNITTING MACHINES.

No. 601,281. Patented Mar. 29, 1898.

FIG. 1.

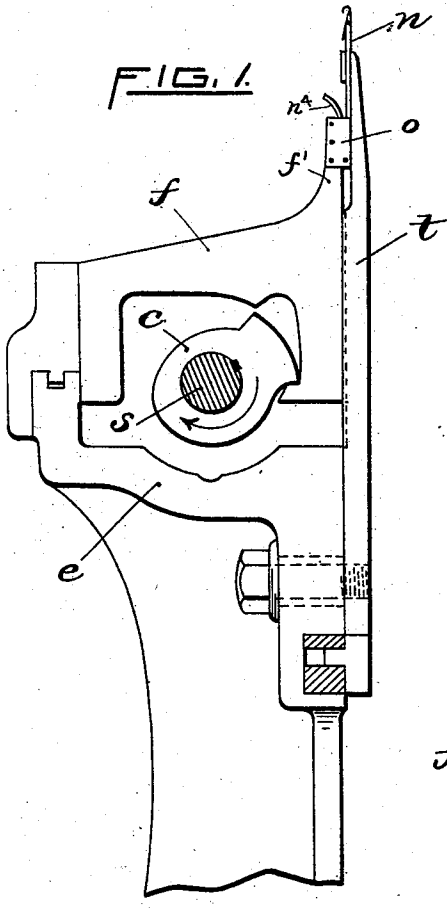


FIG. 2.

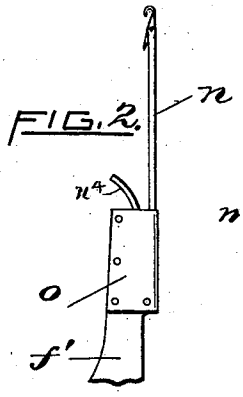
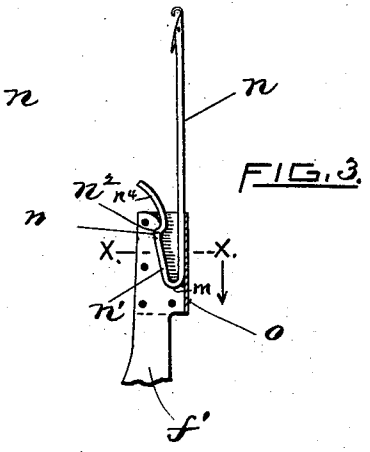


FIG. 3.



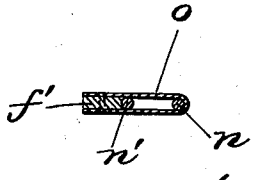


FIG. 4.

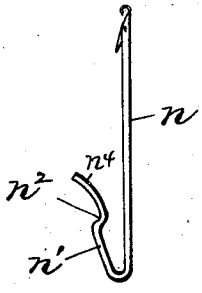


FIG. 5.

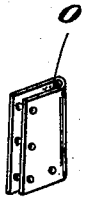


FIG. 6.

Witnesses,
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UNITED STATES PATENT OFFICE.

LEVI E. SALISBURY, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO JOHN MILLAR, OF SAME PLACE.

NEEDLE FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 601,281, dated March 29, 1898.

Application filed April 22, 1897. Serial No. 633,391. (No model.)

To all whom it may concern:

Be it known that I, LEVI E. SALISBURY, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Needles for Knitting-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My present invention relates to improvements in knitting-machines, but more particularly to the needle portion thereof; and it consists, essentially, in the combination, with the peculiarly-bent needle-shank arranged to form a spring-catch, of a jack or needle-holder provided with a notched socket adapted to receive said needle-shank and be interlocked therewith, all as hereinafter set forth and claimed.

My improved needle is more especially adapted to be employed in straight-knitting machines—that is, knitting-machines capable of producing flat webs of fabric. Machines of this class were patented to me July 7, 1891, and November 6, 1894, and numbered 455,464 and 528,810, respectively. In said patented machines, as well as in other knitting-machines, it has been usual hitherto to secure the needles to the holders or "jacks" by means of soft solder. While such former securing means constitutes a strong and rigid connection, the needle cannot be disconnected from the holder except by unsoldering it. By means of my invention the needle can be easily and quickly attached to or disconnected from the holder. Moreover, from the fact that I employ no solder or heat the needle-shanks are thus rendered stiffer, since the temper is not drawn, as is usually the case where the needles are soldered in. Another advantage resulting from my improvement is that the needles can be quickly detached or changed at will without removing the holder from the machine, thus not only facilitating the operation, but effecting a great saving of time.

In the accompanying sheet of drawings, Figure 1 is a partial transverse section of a knitting-machine or loom provided with my improved needle and holder. Fig. 2 is a side elevation, in enlarged scale, of the needle and its holder. Fig. 3 is a similar view, in partial section, showing the interior construction. Fig. 4 is a horizontal section, enlarged, taken on line $x\ x$ of Fig. 3. Fig. 5 is a side elevation of the needle detached from the holder, and Fig. 6 is a perspective view of the U-shaped yoke adapted to be secured to and form a part of the holder.

While, as before stated, my improvement is applicable to various types of knitting-machines, I find it peculiarly adapted to straight-knitting machines, and in order to show the relative arrangement of the needle-actuating parts of such a machine I have represented in Fig. 1 a partial transverse section of my improved knitting-machine. In this case the needle-driving or cam shaft s has the cams c secured thereto, the rotation of the cams causing the thin cam-frames or jacks f to reciprocate up and down in unison therewith. These frames f are mounted in a box or standard e, provided with a steel needle-bar t, which in turn is grooved to receive the adjacent edges of the frames. The upper part of the frame is elongated to form the holder portion f', soon to be described.

The needle n (shown in enlarged scale, Fig. 5) is provided at its upper end with the usual hook and latch, the opposite or lower end portion of the shank being bent rearwardly to form a reflex spring-arm n'. The said member n' is bent about midway of its length for the purpose of providing a catch or stop, as n^2, when combined with the holder portion f' of the cam-frame. The latter, it will be seen, is cut away on its inner edge adjacent to the needle-bar and forms, substantially, the counterpart of the arm n'. The lower end m of said cut-away portion constitutes a seat or abutment for the needle, thus preventing the latter from being accidentally unseated. The upper end of the holder is provided with a corresponding notch or lip m', adapted to engage the said catch n^2 of the needle-arm n', as clearly shown.

A U-shaped strap or yoke o, of quite thin metal, is secured to the holder f', the same

forming with the said cut-away portion a socket for the lower part of the needle-shank and the spring-arm n'. The act of pressing the needle into said socket past the lip m' compresses the arm until the stop n^2 passes the lip, at which instant the arm automatically springs outward or rearwardly, thus firmly locking the needle to the frame or holder, the front vertical wall of the yoke o at the same time forming a guide adapted to keep the needle in position.

I would state that I term the hook side of the needle the "back" and the opposite side the "front" of the needle. The needle may be readily removed from the holder by first simply pressing the free end n^4 of the spring-arm rearwardly until the catch thereof is detached from the upper seat or lip m' of the holder, after which the needle can be easily withdrawn endwise from the socket.

It will be seen that in using my improved needle-holding means the needle is moved endwise or longitudinally and not sidewise or laterally, the arrangement at the same time forming a practically rigid or non-yielding locking device and being comparatively inexpensive.

I do not desire to limit my improvement to the precise form represented in the drawings, since modifications thereof may be employed without materially departing from the spirit of the invention.

What I claim as my invention, and desire to secure by United States Letters Patent, is—

1. In a knitting-machine, the combination with the cam-frame or jack having the needle-holding portion thereof provided with an opening or recess, of the needle member having its shank bent to form a spring-arm arranged to automatically interlock with the said holder upon inserting it into the recess thereof, and having the free end of the spring-arm extending beyond the recess, substantially as hereinbefore described and for the purpose set forth.

2. The combination with the cam-frame or jack having a recess formed in its edge and a thin metal strap or yoke secured thereto contiguous to said recess, thus forming a socket, of the needle member n having its shank bent to form a spring-arm adapted to be sprung into and interlock with said recess, substantially as described and for the purposes set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

LEVI E. SALISBURY.

Witnesses:
GEO. H. REMINGTON,
REMINGTON SHERMAN.