L. E. SALISBURY.

KNITTING-MACHINE NEEDLES.

No. 189,501. Patented April 10, 1877.

Fig. 1.

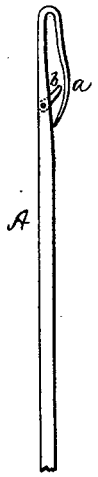


Fig. 2

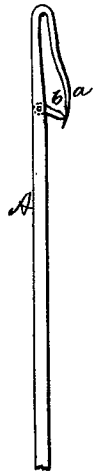


Fig. 3

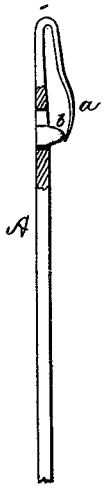
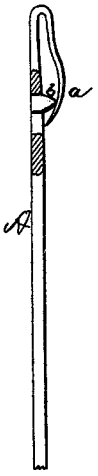


Fig. 4.



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IMPROVEMENT IN KNITTING-MACHINE NEEDLES.

Specification forming part of Letters Patent No. **189,501**, dated April 10, 1877; application filed January 17, 1877.

To all whom it may concern:

Be it known that I, LEVI E. SALISBURY, of the city and county of Providence, in the State of Rhode Island, have invented certain new and useful Improvements in Knitting-Machine Needles; and I do hereby declare that the following specification, taken in connection with the drawings furnished, and forming a part of the same, is a clear, true, and complete description thereof.

The object of my invention is to produce a needle which in itself shall have the capacity of retaining the loop last formed in case of a break in the yarn, or in case, from any cause, the needle has failed to be fed with yarn, thus obviating the necessity of stop-motions, or at least positively preventing the dropping of stitches from the needles, even if a stop-motion be employed.

As a result of another invention made by me, which constitutes the subject of a separate application for Letters Patent, I have produced rigid hook-needles, which have the capacity above set forth; but my present invention relates to what are termed "spring-hook or barbed needles." These needles, as heretofore constructed, have been either normally open or normally closed, and they have been generally employed in connection with separate mechanical devices, which, in case they are normally open, close the hooks as by a "presser" after they pass the point at which they should receive the yarn to form a new loop, or which in case they are normally closed open them to receive the yarn.

I am also aware that normally-closed spring barb-needles have heretofore been provided with a long slide, having at the upper end a hook, and at the lower end a projecting finger, with the upper surface of which the loop last formed engages as the needle ascends.

In operation these slides are controlled, as the needle descends, by contact of the yarn or the loop with the hook at the upper end of the slide within the main hook, and, as the needle ascends, by the contact of the loop last formed with the projecting finger.

My invention consists of a knitting-machine needle having a spring-hook which is normally closed, and a moving finger which is attached to the shank of the needle, is wholly located within its hook, and is arranged to engage with the inner surface of the spring-hook for maintaining the hook in an open condition, or for permitting it to close.

This finger is wholly controlled by the yarn, whether it be newly fed to the needle or whether it constitutes the loop last formed by the needle, and the yarn, whether newly fed or in the loop last formed, alternately raises or depresses this finger by alternate contact with its lower and its upper surface.

To more particularly describe my invention I will refer to the accompanying drawings, in which—

Figure 1 represents in side view one of my needles having a pivoted finger, with the spring-hook closed. Fig. 2 represents the same with hook open. Fig. 3 represents in side view, and partially in section, one of my needles having a sliding finger, with the hook open. Fig. 4 represents the slide-finger needle with the hook closed.

A denotes the shank of the needle with its spring-hook as at *a*. The heel of the needle may be made in any desired manner, according to the character of the needle-cam which is to be used therewith. The hook is tempered while closed, so that it is normally in a closed condition.

The movable finger is shown at *b*. I prefer that it be pivoted to the shank, as illustrated in Figs. 1 and 2, although approximately desirable results can be attained if the finger constitutes a part of a slide, which occupies a slit in the shank, as illustrated in Figs. 3 and 4. It is quite immaterial in what manner the movable finger be attached to the shank, provided that when in its most elevated position its outer end permits the hook to be closed, and when in its lowest position its said outer end engages with the inner surface of the spring-hook sufficiently near its point to open the hook and maintain it in that condition.

Other modes of attaching the movable finger to the shank may be employed, as I am well aware, and these may be varied almost indefinitely without departing from the spirit of my invention.

Needles having a spring-hook which is normally closed, and a movable finger on the shank which can engage with the spring-

hook, substantially as shown, will operate as follows: On starting the machine it will first be necessary to depress all the fingers, whereby all the hooks will be opened. The work will then be set up in a manner well known by forming a loop on each needle. The introduction of the yarn raises the finger and allows the hook to close. As the needle rises the loop depresses the finger and passes between its end and the hook, leaving the latter open for the reception of new yarn, which, when it enters, engages with the finger and elevates it, and this permits the hook to close for passing through the loop in forming a new one. If no yarn be fed to the needle, or if it should fail to engage therewith, the hook will still remain open for the re-entrance of the loop last formed, which will be retained therein instead of being cast off, as would be the case if the movable finger were not employed.

It will be seen that the movable finger may readily be combined with fine as well as coarse needles; that it will prevent the dropping of stitches or loops; that a needle can be raised out of service because the loop on the needle passes freely over the end of the finger; that a stop-motion will not be required on machines in which such needles are employed, or if a stop-motion be employed the finger will obviate the casting off of a loop if the needle fail to receive its yarn, even though said yarn were not broken or exhausted, and the stop-motion should for that reason fail to operate.

It is to be distinctly understood that I do not limit my invention to a movable finger of any particular form, nor to any particular method of mounting the same on the shank of the needle, provided always that said finger be located wholly within the main hook.

I claim as new and desire to secure by these Letters Patent—

A knitting-machine needle having a spring-hook which is normally closed, and a movable finger which is attached to the shank of the needle, located wholly within the spring-hook, and arranged to engage with the inner surface of said hook, substantially as described.

LEVI E. SALISBURY.

Witnesses:
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