(No Model.)

L. E. SALISBURY.

KNITTING MACHINE NEEDLE.

No. 287,175. Patented Oct. 23, 1883.

Fig. 1.

Fig. 2.

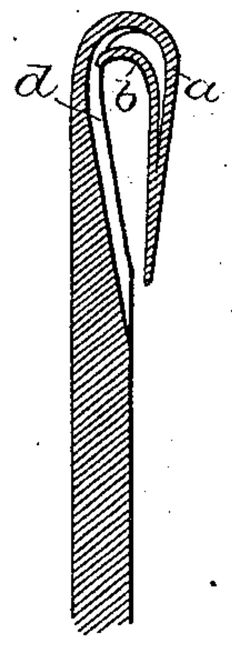


Fig. 3.

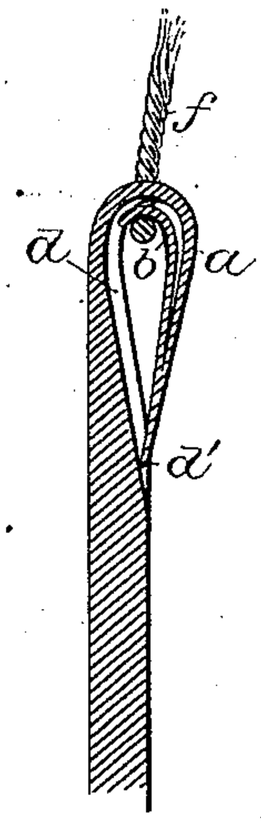
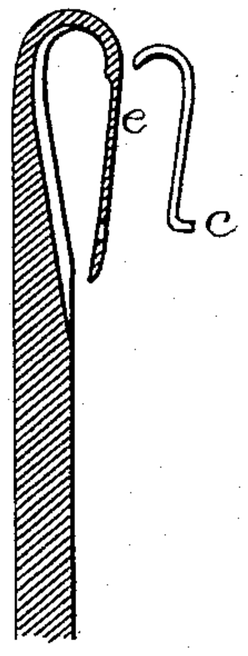


Fig. 4.



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UNITED STATES PATENT OFFICE.

LEVI E. SALISBURY, OF PROVIDENCE, RHODE ISLAND.

KNITTING-MACHINE NEEDLE.

SPECIFICATION forming part of Letters Patent No. 287,175, dated October 23, 1883.

Application filed January 31, 1883. (No model.)

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 of my invention.

Needles embodying my invention have the points of their barbs closed upon the stem for casting off by the tension on the yarn which occupies the hook of the needle in knitting, and, so far as my knowledge extends, I am the first to accomplish that result with a needle practically integral, or, in other words, one which does not contain, as heretofore, either a pivoted or a sliding latch of some kind.

The objects of my present improvement are rapid operation in knitting with a minimum liability of dropping stitches, the dispensing of stop-motions and of presser-wheels, and the obviation of objections as to wear and cost, which are well known to be incident to needles which embody pivoted or sliding latches. For accomplishing those ends I employ a normally-open spring barbed main hook, an auxiliary hook which is housed within the main hook, and is an integral or practically integral portion of the needle, and is united with the main hook near its point, so that when yarn occupying the auxiliary hook is under tension the point of the main hook is moved inwardly or toward the shank, thus closing said hook upon the stem for enabling the needle to cast off a loop.

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

Figure 1 is an enlarged side view of my novel needle. Fig. 2 is a vertical central section of the same with the hook open as in its normal condition. Fig. 3 is a similar view of the same with yarn in the hook and the latter closed as for casting off a loop. Fig. 4 is a sectional view of a needle embodying my invention, but having its auxiliary hook separately constructed, and also a side view of said auxiliary hook detached.

It is to be understood that as my improvement relates to the hook of the needle it is wholly immaterial whether the needles be otherwise constructed with reference to their vertical reciprocation or to their use in revolving cylinder machines without reciprocation, although it is with this latter class of machines that my novel needles have their prime value.

The needle shown in Figs. 1 to 3, inclusive, is necessarily enlarged for the purpose of illustration; but some of the smaller sizes of needles embodying my invention so closely resemble the ordinary spring-barb needle as to be undistinguishable therefrom, except on close inspection. The shank of the needle is as heretofore, and is varied in its construction according to the particular class of machine in which it is to be used.

The spring-hook or spring-barb is normally open, and, as shown, is novel, in that, in addition to the main hook *a*, it has the auxiliary hook *b*, which occupies a position beneath the main hook and has its point extended toward the shank of the needle. This auxiliary hook in Figs. 1 to 3, inclusive, is integral with the hook, being formed from a branch of metal which is integral and merges with the main hook near its point. In Fig. 4 the main and auxiliary hooks are shown to be separately constructed, but when united, as by a rivet, as shown at *c*, for instance, the auxiliary hook is practically integral with the point of the main hook, and while this construction, in accordance with my invention, is well suited for coarse needles, the strictly integral main and auxiliary hooks are generally deemed preferable by me. In its best form the needle is vertically recessed on its shank or stem at the front side thereof, as at *d*, so that the point of the auxiliary hook can be properly housed in said recess, to prevent its undue engagement with yarn, and also, as at *d'*, so that the point or tip of the main hook can be housed, to obviate liability of its engagement with a loop while passing over the closed hook. The auxiliary hook is sufficiently rigid to withstand all strains incident to tension on the yarn; but the main hook, at *e*, is sufficiently thin, flexible, and springy to enable the point of the hook to be moved inwardly in closing, and to promptly

resume its normal open position when free to do so. As seen in Fig. 2, the yarn *f* occupies the hook free from tension, and therefore said hook is open; but, as seen in Fig. 3, the yarn is supposed to be under tension, and therefore the auxiliary hook is lifted, which causes the point of the main hook to move inwardly and occupy a closed position, which it will maintain until from any cause the tension on the yarn is terminated. It is immaterial how this tension is produced, as it is obvious a heavy spring-tension, the lifting action of a take-up, or the depression of the needle, accompanied by resistance of the yarn, or the lifting action of the sinker-wheel, will each in like manner produce the desired result, and so close the needle-hook as to enable a loop to properly pass over the needle-hook in forming a stitch.

It will be seen that when the main hook is closed the top of the crown of the auxiliary hook is in contact with the under side of the crown of the main hook, and therefore the strength of the latter is rendered available in properly holding the yarn, regardless of the degree of tension thereon.

It will also be seen that if from any cause a needle fails to be supplied with yarn the hook remains open, thus enabling it to receive and retain the old loop, thereby obviating all liability of drop-stitches and rendering stop-motions practically unnecessary.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A normally-open spring-hook needle containing within the main hook an auxiliary hook which receives yarn in knitting, and merges with the main hook near its point, substantially as described, whereby tension on yarn in said auxiliary hook causes the main hook to move inward and to close, as set forth.

2. A spring-hook needle having integral main and auxiliary hooks, the latter being within the main hook and adapted to close said main hook by tension of the yarn upon the auxiliary hook in the operation of knitting, substantially as described.

3. A spring-hook needle having a main hook, an auxiliary hook for closing the main hook, and a vertically-recessed shank or stem for housing the points of both hooks, substantially as described.

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Witnesses:
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