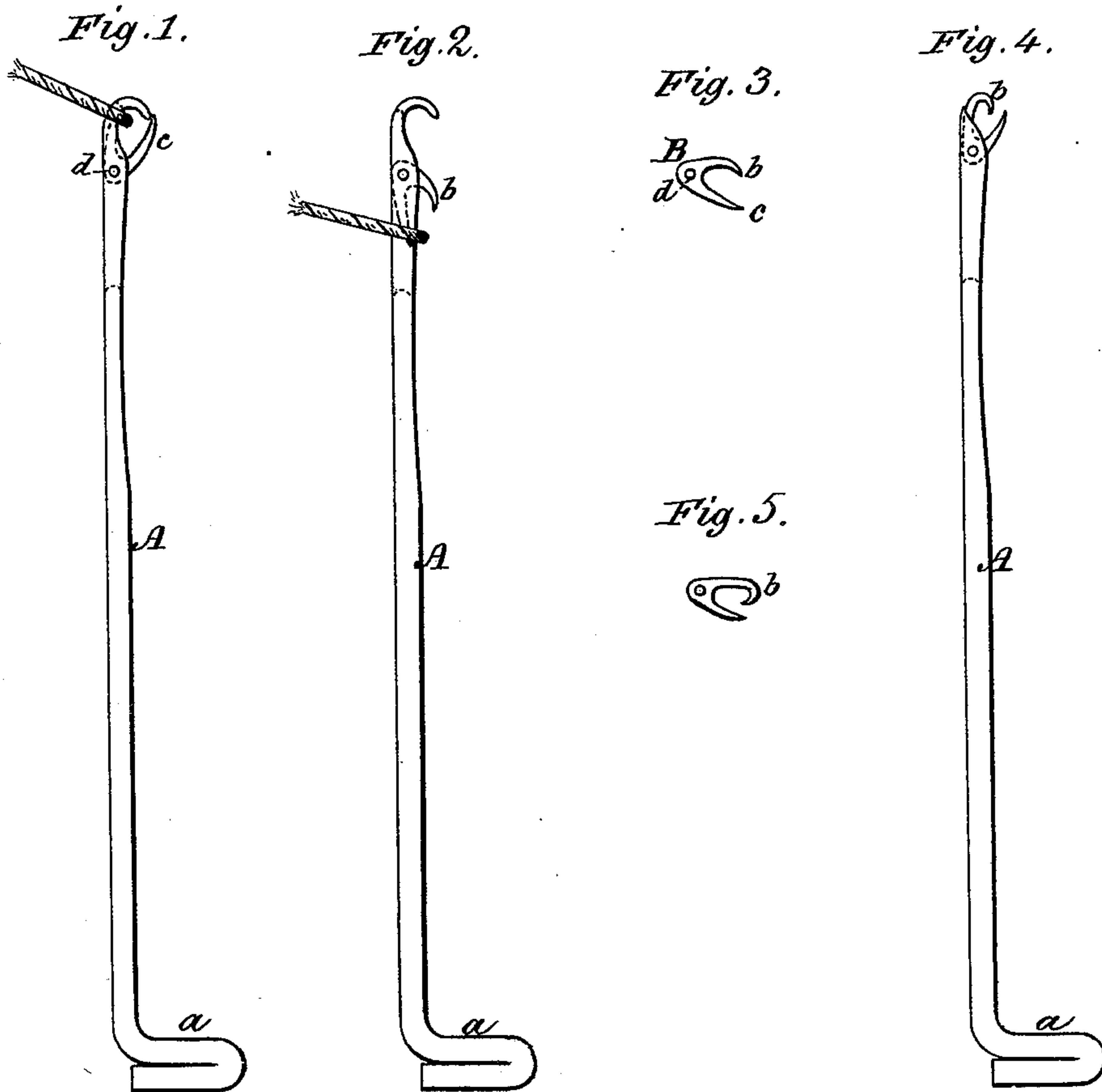


L. E. SALISBURY.

KNITTING-MACHINE NEEDLES.

No. 189,502.

Patented April 10, 1877.



Witnesses:
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UNITED STATES PATENT OFFICE.

LEVI E. SALISBURY, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN KNITTING-MACHINE NEEDLES.

Specification forming part of Letters Patent No. **189,502**, dated April 10, 1877; application filed November 7, 1876.

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 exact description thereof.

Needles embodying my improvements resemble somewhat those generally known as latch-needles, in that a hook is employed in connection with a guard, which, like the latch, practically closes the hook, and enables it to pass downward through a loop carrying the yarn which has been fed to it. My needles, however, differ from the latch-needles in that when the yarn is not fed to a needle the latter cannot cast off or drop the stitch, thus obviating one of the principal practical difficulties encountered in operating knitting-machines with power, and rendering a stop-motion of comparatively little, if any, importance. In other words, by reason of my invention, I attain by an improvement in the needles practically the same or better results than would be attained by a practically-perfect stop-motion.

My invention consists in the combination, with the shank of the needle, of a combined hook and guard, preferably constructed of one piece and pivoted to the shank, and this hook and guard may be employed with a simple shank, or a shank having the usual hook at the head, with similar operative results.

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

Figure 1 represents, in side view, one of my improved needles with the hook closed and a yarn occupying the hook. Fig. 2 represents the same with the hook open. Fig. 3 represents the combined hook and guard detached from the needle. Fig. 4 represents a needle having a combined hook and guard without the usual needle-hook. Fig. 5 represents the combined hook and guard of Fig. 4 detached from the shank.

A denotes the shank of the needle, which is usually provided with the heel at *a*, whereby it is operated by contact therewith of the

cams in a manner well known. The needle is slitted at its upper end in a manner similar to latch-needles. B denotes the combined hook and guard. Although constructed in one piece, its two members are distinct and perform separate functions. The hook is shown at *b* and the guard at *c*. Whether used with a shank having a hook or no hook, the hook *b* performs the same function in that when the needle descends in contact with a thread or yarn at its front side, the hook is turned upon its pivot at *d*, which elevates the guard *c*, and allows the needle to pass through the loop last formed in knitting; and if, on the other hand, no thread or yarn be fed to the needle, the same hook, when the needle descends, is engaged by the loop last formed, is turned on its pivot, and the guard raised, as before. In both instances, as the needle ascends through a loop, the yarn composing it engages with the guard, and forces it downward and backward into the slit, and places the hook forward in proper position to again receive the newly-fed yarn, or, in case that fails, to again receive the loop last formed, and prevent it from being cast off the needle.

When the combined hook and guard is used with a shank which has no hook of the usual form, as shown in Fig. 4, the hook *b* performs not only the function previously recited, but also performs the additional service of wholly controlling the yarn during the descent of the needle. When thus used the hook *b* is rounded, so as to afford a reliable seat for the yarn, and the guard at its tip is extended beyond the curve of the hook, but sufficiently far removed therefrom to afford ample space for the entrance of yarn to the hook, as is clearly indicated in the drawings, Figs. 4 and 5.

When the combined hook and guard is used with a shank having the usual or main hook, as in Figs. 1 and 2, said combined hook and guard is pivoted at such a point below the usual hook that the hook *b* will, when elevated by the yarn, retreat into the main hook, it having an inner contour generally corresponding with that of the rear inner portion of the main hook, while the guard will extend across the opening of the hook, occupying the same position with relation thereto, and performing the same function as the latch of an ordinary latch-needle.

Although the guard, as stated, performs the function of a latch, it will be seen that instead of the guard being raised by contact therewith of the loop last formed by the needle, as in the case of the latch in latch-needles, it is raised by the yarn as it is fed to the needle in contact with the hook *b*; or, in case there is no fresh yarn, the loop last formed, being in contact with said hook, will elevate the guard, retain the loop within the hook, and prevent the stitch from being dropped.

In feeding yarn to latch-needles, it is laid at a point adjacent to the latch-pivot, and in feeding yarn to my improved needles it is laid below the hook *b*, so that as the needle descends said hook will be properly engaged by the yarn.

The tip of the guard may be spoon-shaped after the manner of the tip of the well-known latch, in which case it will, of course, be essential that a cup-shaped receptacle therefor be provided in the shank, so that it will not present any abutting surface with which the newly-fed yarn or the loop last laid can engage.

I am well aware that the combined hook and guard may be variously proportioned with relation to the shank of the needle, and the hook and the guard, considered as separate elements, which are united so as to co-operate with each other, may be constructed with va-

riations not herein shown, and I do not, therefore, limit my invention to any precise construction, because any needle which embodied a combined hook and guard so connected that the movement of the hook will also cause the guard to perform its requisite function, will be embraced within the spirit of my invention; and

I therefore claim as new and of my own invention, to be secured to me by these Letters Patent—

The combination, in a knitting-machine needle, of a suitable shank with a combined hook and guard, connected with each other and pivoted to the shank, substantially as described, whereby yarn, when fed to the needle below the hook, will, when the needle descends, by contact with the hook, cause the guard to be elevated and afford free passage through the loop last formed, and also whereby, when no yarn is fed to the needle, the loop last formed, by contact with said hook, will cause the guard to be elevated, and prevent the loop from being cast off by retaining said loop within the hook, substantially as set forth.

LEVI E. SALISBURY.

Witnesses:

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