

*D Bickford,*  
*Knitting-Needle.*

*Nº 84,472.*

*Patented Dec. 1. 1868.*

*Fig. 1.*



*Fig. 2.*



*Witnesses:*  
*Philip J. Don Jr.*  
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*Inventor:*  
*Dana Bickford*  
*by Crosby Kelsted & Gould*  
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# UNITED STATES PATENT OFFICE.

DANA BICKFORD, OF BOSTON, MASSACHUSETTS.

## IMPROVEMENT IN NEEDLES FOR KNITTING-MACHINES.

*Specification forming part of Letters Patent No. 84,472, dated December 1, 1868.*

*To all whom it may concern:*

Be it known that I, DANA BICKFORD, of Boston, in the State of Massachusetts, have invented certain Improvements in Knitting-Machine Needles; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

My improvement relates to that class of knitting-machine needles known as latch-needles; and consists in two specific alterations in their form, and for specific purposes.

Figure 1 represents my improved needle, and Fig. 2 the ordinary latch-needle in common use.

The parts marked *a* and *b* indicate the improvements I have made.

The groove of the needle-cylinder in which needles of this class reciprocate is always made considerably deeper than the thickness of the needles, and in order to have a true and steady movement in right lines without wabbling, it is customary and necessary to have some means of preserving its perpendicularity; moreover, it is important that, as much as possible, it should be prevented from being torqued or turned upon its axis by means of the action of the cam-groove upon its bottom projection, which rides in the groove to cause the needle to rise and fall. A bend for the latter purpose merely has, however, heretofore been given to needles. The means which I employed in my machine patented September 10, 1867, to give a firm support to the needle were an annular groove on the exterior of the needle-ring, cutting each of the needle-grooves transversely and for about half its depth, and a jointed metal hoop, which, being placed around the needle-ring, within the annular groove, and then locked, served, by bearing against the shanks of all the needles, to steady them.

By giving, however, to the needle a bend, such as shown at *a* in Fig. 1, the swell of which is in the same outward direction as the barb or hook of the needle, and making this sufficient to allow its outer surface to come about flush with the needle-ring, I find it is amply supported for successful action by the walls of the vertical grooves and the face of

the revolving portion of the frame. I therefore dispense with the necessity of cutting the annular groove, which requires nice and accurate workmanship, and also dispense altogether with the hinged ring or bend, saving the expense of both, and the liability of the latter to get broken or out of order, and I also give greater strength to the shank of the needle.

It is often found in practice that the latch of the needle, when thrown back, will allow a loop which ought to be discharged to ride over the point of the latch instead of under it, the consequence of which is, that instead of its turning the latch over so as to bridge the hook and allow the discharging loop to embrace the one last made, and now being within the hook and under the latch, it catches in the hook and is not discharged or cast off, so that two or more loops come together, in which case a stitch is dropped or lost, and a flaw or defect made in the work.

By giving, however, a swell to the needle, as shown at *b*, so that the angularity between the latch and the shank shall thereby be increased, the above difficulty is avoided, and the yarn, whether fine or coarse, will ride under, lift up, and close the latch. My mode of doing this is not by cutting away any of the shank below the pivot of the latch, so as to weaken the needle where it is already weakened by the latch-slot and pivot-hole; but I retain the whole size and thickness of the shank and of the wire of which the needle is made, and, to produce the swell *b*, give a bend to the shank at the proper point for this purpose.

I claim—

1. A knitting-machine latch-needle made from a wire, and having a swell, *b*, thereon, as and for the purpose set forth, formed by giving a bend to the wire, and without cutting away or reducing the same.

2. A knitting-machine latch-needle having a swell, *a*, thereon, located between the latch and the end projection, and whose elevation is on the same side with the hook, as and for the purpose set forth.

DANA BICKFORD.

Witnesses:

A. M. LAWSON,  
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