J. H. BULLARD.

Manufacture of Knitting-Machine Needles.

No. 140,611. Patented July 8, 1873.

Fig. 1.

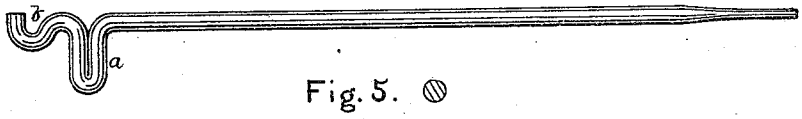


Fig. 5.



Fig. 2.

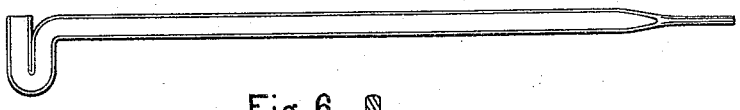

Fig. 6.



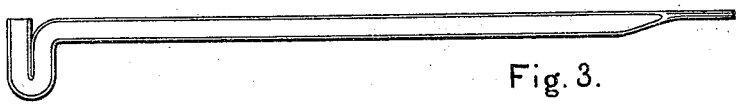

Fig. 3.

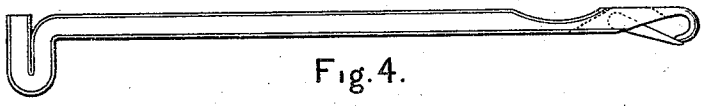

Fig. 4.

WITNESSES.

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# UNITED STATES PATENT OFFICE.

JAMES H. BULLARD, OF CHICOPEE FALLS, MASSACHUSETTS, ASSIGNOR OF ONE-HALF HIS RIGHT TO AMOS W. PAGE, OF SAME PLACE.

## IMPROVEMENT IN THE MANUFACTURE OF KNITTING-MACHINE NEEDLES.

Specification forming part of Letters Patent No. **140,611**, dated July 8, 1873; application filed April 19, 1873.

*To all whom it may concern:*

Be it known that I, J. HERBERT BULLARD, of Chicopee Falls, in the county of Hampden and State of Massachusetts, have invented a new and valuable Improvement in the Manufacture of Knitting-Machine Needles; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

The figures of the drawings are representations of my needle as it appears respectively during the process of construction.

This invention has relation to the manufacture of knitting-machine needles; and it consists in the process of drawing out the end of the needle to the small diameter required, then flattening the sides, then setting the small end which has been drawn out, from the center backward, so that it will be in line with the back of the needle, and finally finishing the needle in the ordinary manner.

Heretofore knitting-machine needles have been made by simply pressing or swaging the bars flat from side to side, and then forming the small ends by milling down the metal from front to back, an expensive manipulation which wastes the steel and does not produce as strong a needle as is produced by my method, in which the small end of the needle is first drawn and then pressed.

My mode of operation is to first draw out the point before the wire is flattened, thus bringing the point or small end exactly central. Secondly, the whole shank and bend of the needle are flattened.

These two operations are indicated respectively in Figs. 1 and 2 of the drawings, which illustrate the needle after the different stages of the manufacture.

The third step in the manufacture is to swage or press the point from front to back so that the point will be in line with the back, as indicated in Fig. 3 of the drawing. This step is the main feature of my process, and is regarded as a great improvement, as the needle is straightened thereby, and is provided by the pressure with a hard bearing-surface to run upon. Finally, the needle is finished in the ordinary manner, as illustrated in Fig. 4 of the drawing. By this process enough stock is saved to make thirteen needles where twelve were made by the old method of milling or grinding off the point. And my process is further designed to give greater uniformity to the hooks as well as greater strength.

For the purpose of making the needle wear longer it may be provided, in addition to the doubling *a* at the end of the shank, with a semicircular bend, *b*, this bend being designed to run in a groove of equal depth. In this manner the amount of bearing surface is greatly increased, while the process of manufacture is not more complicated than in the ordinary form of the shank.

What I claim as new, and desire to secure by Letters Patent, is—

The method herein described of making knitting-machine needles, namely, first, drawing the point; second, swaging the parallel sides; third, pressing the point and offsetting it in line with the back of the shank; and, fourth, finishing in the usual manner, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JAMES HERBERT BULLARD.

Witnesses:

GEORGE S. TAYLOR,

ANDREW GALE.