

UNITED STATES PATENT OFFICE.

ORIN L. HOPSON, OF WATERBURY, AND HEMAN P. BROOKS, OF WOLCOTTVILLE,
CONNECTICUT, ASSIGNORS TO THE EXCELSIOR NEEDLE COMPANY.

IMPROVEMENT IN NEEDLES FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. 116,594, dated July 4, 1871.

To all whom it may concern:

Be it known that we, ORIN L. HOPSON, of Waterbury, in the county of New Haven, and HEMAN P. BROOKS, of Wolcottville, in the county of Litchfield, both in the State of Connecticut, have invented, made, and applied to use a certain new and useful Improvement in Sewing-Machine Needles; and we do hereby declare the following to be a full and clear description of the said improvements and of the features which distinguish our needles from those heretofore made.

The needles for sewing-machines are formed with a shank that is of larger diameter than the needle itself; this enables the needles to be secured into the machine. In order to reduce the needle itself from the size of wire required for the shank, various devices have been employed such as milling-tools or grinding-wheels, and also turning-tools, that reduce the wire to the size which the parts may be adjusted to produce; but in consequence of the wear upon the tools there is no reliability in the sizes of the needle-blanks; besides this, it is well known that a steel bar or wire is not entirely homogeneous, that the compression in drawing the wire makes the surface more dense than the core; hence the turning or milling removes the best portion of the metal, leaving the needle of an inferior quality.

In all sewing-machine needles heretofore made the surface has to be polished by hand, increasing the cost of manufacture and rendering the size of the needle uncertain. In grooving the hand-made needles great inequality exists in the depth of the groove, resulting from the tools being set for a given size of needle; but from the lack of a uniformity in size the groove is too deep or else not deep enough in the needle. Efforts that have heretofore been made to reduce needles by rolling have not been successful, as the wire is liable to split when rolled cold, and the size precludes their being manufactured while sufficiently hot.

In order to manufacture our improved needles we make use of a compressing-die, closed or pressed together rapidly around the steel wire as said wire or the dies are revolved; thereby there is a series of compressions and a gradual extension

of the steel, which brings the same down to the proper size for the needle. The machines which we prefer to use for this purpose are similar to those patented by us August 9, 1864, reissued December 12, 1865, and to us as assignees February 6, 1866. It will be understood that by this mode of manufacture the stock is saved, because there is none lost by turning or milling, and that a much shorter blank is required for making the same length of needle by our plan than is required for the same length of needle made by the former modes. The dies in our machine, presenting such a large surface for wear, are very durable, and hence every needle is brought to a definite and uniform size, according to the character of the die or adjustment of the machine.

Needles made by our machine or method possess properties not heretofore found in sewing-machine needles, and are hence new and much more useful and durable than others heretofore made. The peculiar properties of our needles may be set forth as follows: The needles are of a uniform density and size. They are free from flaws, hard specks, and inequalities always existing in steel that is turned or ground down from a drawn wire. They are very tough and cannot easily be broken. They have a surface that is very dense and perfectly smooth, requiring no polishing by hand. They can be grooved with uniformity, being themselves of a regular size, and the steel, by the compression, is more uniform and the grooving-tools will wear much longer than in grooving ordinary needles. The needles are not injured in the hardening and tempering, as less heat is required to bring the needles to the required spring, hardness, or temper.

What we claim, and desire to secure by Letters Patent, is—

A sewing-machine needle possessing the peculiarities specified, and forming a new article of manufacture.

In witness whereof we have hereunto set our signatures this 3d day of August, A. D. 1866.

ORIN L. HOPSON.

HEMAN P. BROOKS.

Witnesses:

L. SANFORD DAVIES,
P. W. POWELL.