

(No Model.)

C. H. WILLCOX & S. BORTON.
SEWING MACHINE NEEDLE.

No. 472,096.

Patented Apr. 5, 1892.

FIG. I.

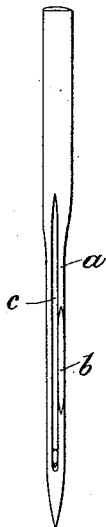


FIG. II.

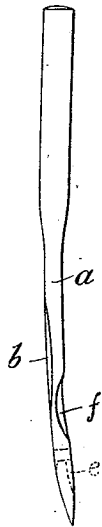


FIG. III.

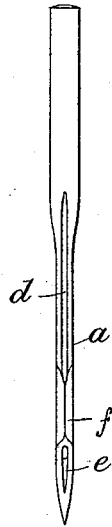
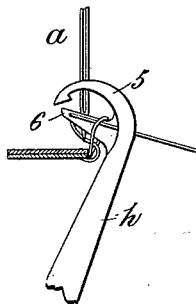


FIG. IV.



Attest:

Geo. T. Smallwood.
Raper L. Hogue

Inventors:

Charles H. Willcox
and Stoughton Borton
by Pollock & Mauro
their attorneys.

UNITED STATES PATENT OFFICE.

CHARLES H. WILLCOX, OF NEW YORK, N. Y., AND STOCKTON BORTON, OF PROVIDENCE, RHODE ISLAND, ASSIGNORS TO THE WILLCOX & GIBBS SEWING MACHINE COMPANY, OF NEW YORK, N. Y.

SEWING-MACHINE NEEDLE.

SPECIFICATION forming part of Letters Patent No. 472,096, dated April 5, 1892.

Application filed May 27, 1890. Serial No. 353,341. (No model.)

To all whom it may concern:

Be it known that we, CHARLES H. WILLCOX, of New York city, in the county and State of New York, and STOCKTON BORTON, of Providence, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Needles for Overedge Sewing-Machines, which improvement is fully set forth in the following specification.

10 This invention relates to the construction of sewing-machine needles, and more particularly to needles designed for co-operation with a looper in the production of an overedge seam. In the formation of an overedge stitch
15 through the co-operation of a needle and a looper which oscillates around the edge of the work it has been customary heretofore to give the looper, after it has come above the cloth, a motion backward in the direction of
20 the seam, in order to present a loop in such position that the descending needle may go between it and the looper, and then a motion forward, in order that it may clear the needle in returning to its position beneath the plate.
25 In another application filed May 24, 1890, Serial No. 353,091, we have described a machine organized to make a double-thread overlock stitch, in which the looper has a movement in one plane only, this plane intersecting the path of motion of the needle at an
30 oblique angle. The needle herein described is designed especially for use in such machines, though its use is not confined thereto. Its blade on the front side, or side adjacent to
35 the looper, when both are above the cloth, is recessed or cut away above the eye. This recess permits the looper to pass the needle on its (the looper's) return movement without being diverted from its normal plane of move-
40 ment. In the formation of a single-thread overedge stitch by means of a looper, which brings a loop of the thread around and over the work and spreads it in the path of the descending needle, it is equally desirable that
45 the looper should hold the thread so far back as possible to insure the passage of the needle through the loop. Consequently the recess in the blade above the eye is a useful feature in needles designed to be used in sin-
50 gle-thread overedge-machines.

The improved needle is further furnished with grooves on opposite sides of the blade above the eye and with a short groove on one side extending from the eye into the point, the
55 object being to reduce to a minimum the friction on the thread as it is drawn up and down through the work.

The construction of the improved needle can best be explained in connection with the accompanying drawings, in which—

60 Figure I is an enlarged view of the front of the needle; Fig. II, a side elevation; Fig. III, a rear view, and Fig. IV a perspective view showing the relative positions of the needle and looper when the former is about
65 to pass through the loop of the under thread.

The looper *h* is constructed and operates as described in our application already referred to. It has an upper hooked jaw *5*, which takes
70 a loop from the needle when beneath the cloth, and a lower eye-pointed member *6*, which carries the under thread into the path of the needle as the latter descends between the
75 looper and thread. The relative positions of these devices at the moment referred to is shown in Fig. IV, the looper having reached the end of its movement to the left. In its
80 return movement, the needle being down, the looper would come in contact with it if the needle were of ordinary construction. To
85 avoid this the blade *a* of the needle is on the front side, Fig. I, cut away, forming a recess or depression *b* above the eye. Thus the
90 looper clears the needle on its return movement. On the same side the needle has the
95 usual long thread-groove *c*, leading to the eye. It has also a similar groove *d* on the back of the blade, the object being to permit the thread to move freely between the goods and
100 needle when the latter is beneath the cloth. On this side (the rear) the needle has also a short groove *e*, leading from the eye toward the point, so that the thread passes freely
105 through the eye and out through the groove *e* downward toward the cloth. The thread
110 runs in this groove *e* and is shielded thereby from friction while the part of the needle below the eye is passing through the cloth on its ascending movement.

The recess or depression *b* on the front of

the needle must be distinguished from the recess commonly formed on the blades of needles at or near the eye on the rear or side opposite the long thread-groove for the purpose of permitting a looper or other stitch-forming device to enter between the needle and its thread. Such recess is a common device, and the needle herein shown is provided with it at the point *f* just above the eye at the rear of the blade. Its function is quite different from that of recess *b* on the long-groove side, which permits the looper when above the cloth to retreat and does not interrupt the continuity of the long groove *c* or expose the thread to contact with the looper. On the rear of the needle there is no groove between the eye and the recess *f*, in which the looper passes to take the loop, the additional thickness of stock at the upper end of the eye enabling us to provide a better surface around which to pull the thread in drawing up the stitch by the descent of the needle.

In the manufacture of sewing-machine needles it has been common, in order to facilitate the punching or drilling of the eye, to reduce the thickness of the stock at that point, using for this purpose a circular cutter whose diameter is so large that it cuts a groove both above and below the eye. Such groove does not enter the point of the needle and does not answer the purpose of the groove *e*, but forms an edge or angle where the groove meets the plane of the blade, over which the thread must run, whereas the groove *e* extends into the point and at its deepest part approaches close to the axis of the needle, so that the thread lies in a passage and is shielded from the cloth, running as nearly as possible in a

straight line upward through groove *e*, through the eye, and then into the long thread-groove *c*.

Although we have illustrated the improved needle in connection with a threaded looper designed to form a double-thread overedge seam, it will be understood that a needle having the recess above the eye may be used with advantage in a machine making a single-thread overedge stitch.

We claim as our invention—

1. A sewing-machine needle having on one side of its blade a long thread-groove and being recessed or cut away above the eye on the side having said long thread-groove, substantially as described.

2. A sewing-machine needle having on one side of its blade a long thread-groove leading to the eye and on the other a groove above the eye terminating in a recess for entrance of the looper between the needle and thread, and a short groove leading from the eye into the point, forming a passage for the thread between the needle and goods, substantially as described.

3. A sewing-machine needle having on one side a long thread-groove leading to the eye and a recess or depression in the blade above the eye, and on the opposite side a short groove leading from the eye toward the point, substantially as described.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

CHAS. H. WILLCOX.
STOCKTON BORTON.

Witnesses:

CHARLES E. HAVENS,
JOSEPH B. CURTIS.