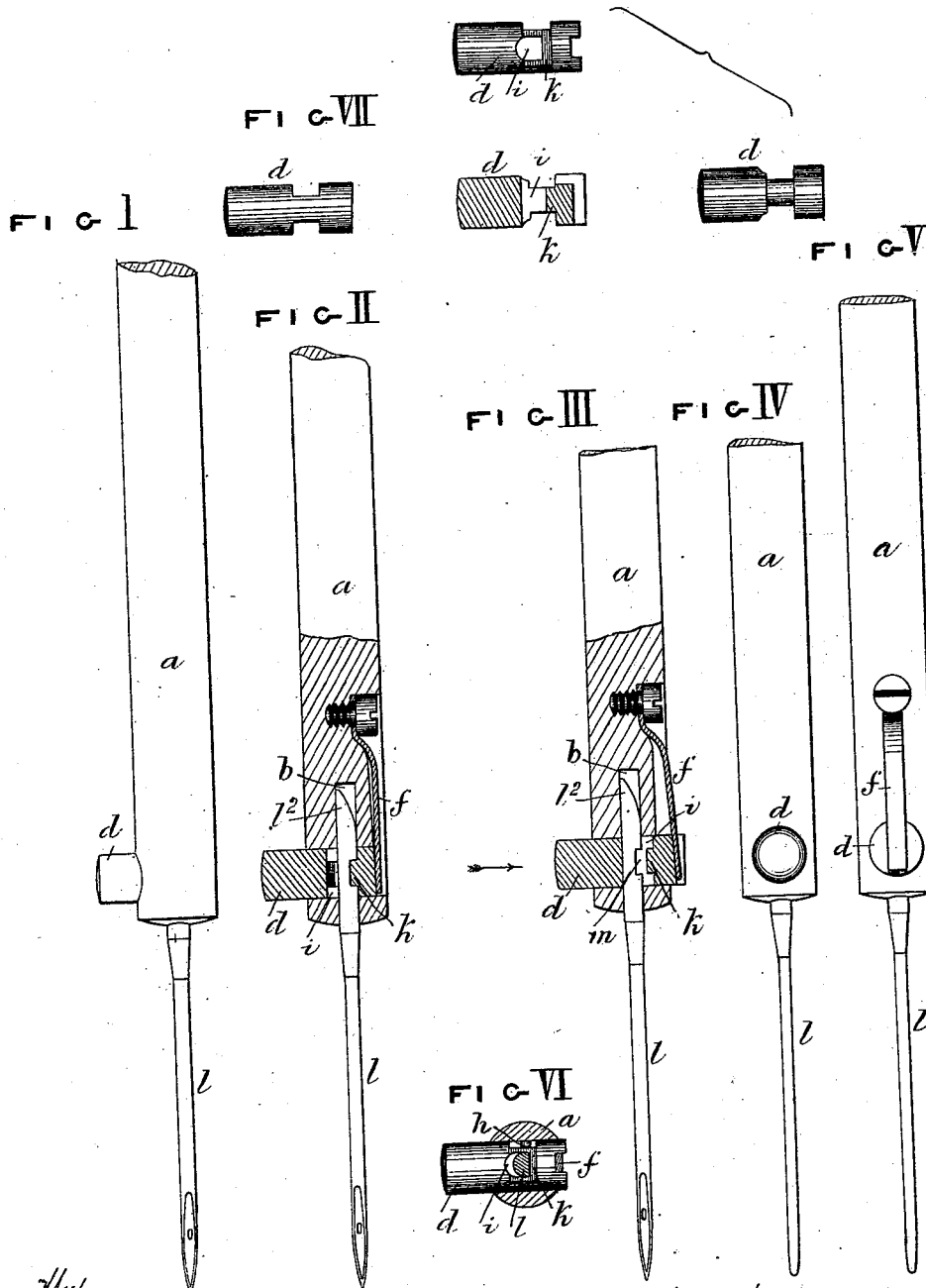


W. COOK & S. HILL.
Needle-Bar for Sewing-Machine.

No. 204,294.

Patented May 28, 1878.



Witnesses,
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Richard Bennett

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FIG VIII

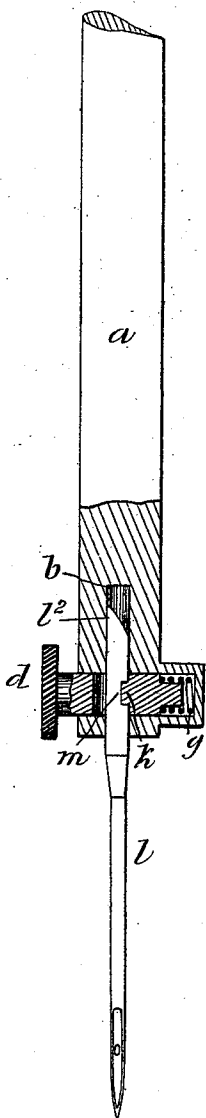


FIG XI

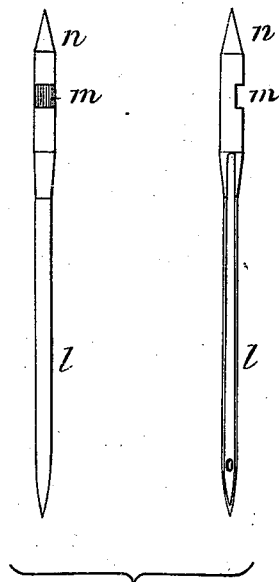


FIG IX

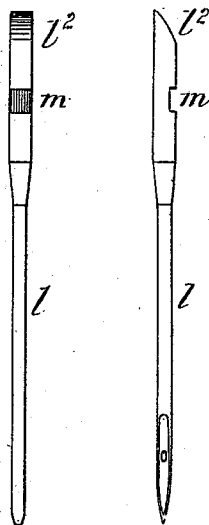
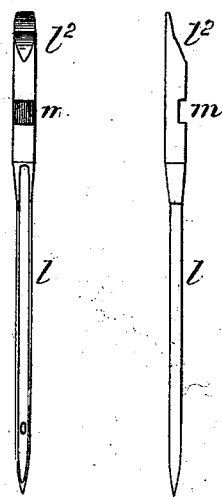


FIG X



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UNITED STATES PATENT OFFICE.

WILLIAM COOK AND SAMUEL HILL, OF REDDITCH, ENGLAND.

IMPROVEMENT IN NEEDLE-BARS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. 204,294, dated May 28, 1878; application filed May 1, 1878; patented in England, December 4, 1877.

To all whom it may concern:

Be it known that we, WILLIAM COOK, of Redditch, in the county of Worcester, machinist, and SAMUEL HILL, of Redditch aforesaid, machinist, have invented new and useful Improvements in the Needle-Bars of Sewing-Machines, and in needles to be used with the said needle-bars, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings.

The objects of our invention are to effect the ready and secure connection of the sewing-machine needle to, and its disconnection from, the needle-bar of the sewing-machine, as well as to effect the "setting" of the needle in the bar—that is, the fixing of the needle in its proper position with respect to the said bar.

We effect these objects by constructing the needle-bars and the sewing-machine needles to be used with the said bars in the manner hereinafter described, and illustrated in the accompanying drawings.

In constructing the said needle-bars and needles according to our invention, we apply to the holding end of the needle-bar a small cylindrical bolt, pressed into its fastening position by a spring. This bolt works across the axial hole in the bar which receives the head or shank of the needle. The head of the needle is beveled or tapered, and below the beveled or taper head is a cross-groove. The spring-bolt in the needle-bar is furnished with an opening, through which the needle may pass, and on one side of the said opening is a cross rib or shoulder. When the needle is introduced into the needle-bar in the proper position for setting the said needle, its beveled or taper head, acting on the rib or shoulder of the spring-bolt, pushes back the latter, and when the needle has been fully pushed home in the bar the rib or shoulder of the spring-bolt snaps into the cross-groove in the needle, and thereby fastens the needle in its proper position in the bar.

Figure 1 represents, in side elevation, a portion of the needle-bar of a sewing-machine and a needle connected thereto, the said needle-bar and needle being constructed according to our invention. Figs. 2 and 3 represent the same, partly in section, Fig. 2 showing the needle fixed in the bar, and Fig. 3 the needle

released therefrom and ready to be withdrawn. Figs. 4 and 5 represent back and front elevations of the same; and Fig. 6 is a cross-section of the same, taken through the spring-bolt. Fig. 7 represents a plan, section, and elevations of opposite sides of the spring-bolt separately. Fig. 8 represents, partly in elevation and partly in section, a modification of the needle-bar. Figs. 9, 10, and 11 represent our improved sewing-machine needles to be used with the needle-bars represented.

The needle-bars and needles represented are drawn double the ordinary size; but the sizes of the said bars and needles vary with the sizes of the machines with which they are used.

The same letters of reference indicate the same parts in the several figures of the drawings.

In the holding end of the needle-bar *a* a cylindrical axial hole, *b*, is made, of a size proper to receive the head or shank of the sewing-machine needle. Working in a hole across the end of the needle-bar *a* is a small cylindrical bolt, *d*, pressed upon either by a flat spring, *f*, as represented in Figs. 2, 3, and 5, or by a coiled spring, *g*, working in a box or case, as represented in Fig. 8. A portion of the bolt *d* projects from one side of the needle-bar *a*, and constitutes a pusher for releasing the said bolt; or a knob or head may be made on the projecting end of the bolt, as represented in Fig. 8. A stop, *h*, taking into a hole in the bolt *d*, limits its motion. (See Fig. 6.) In the said spring-bolt *d*, and near one end, is an opening, *i*, the said opening, when the bolt is in its normal or fastening position, coinciding with the axial hole *b* in the needle-bar *a*. At that side of the opening *i* in the bar *d* most distant from the push or projecting head of the said bolt is a cross rib or shoulder, *k*, which, when the bolt is in its normal or fastening position, projects a short distance across the axial hole *b* in the needle-bar. (See Fig. 2.) At the head or shank of the sewing-machine needle *l* a bevel or incline, *l'*, is made, and below the said beveled part of the head, and on the side of the needle, a cross-groove, *m*, is made, of a size proper to take upon or engage with the rib or shoulder *k* in the opening *i* of the spring-bolt *d* in the needle-bar.

In connecting the needle *l* to the needle-bar

a, and setting or fixing it therein in the proper position, the needle is introduced into the axial hole *b* in the needle-bar in such a position that its beveled head *l*² is presented to the rib or shoulder *k* on the bolt *d*. When the needle *l* is introduced into the needle-bar in the position described, the beveled head *l*² of the needle, bearing against the rib or shoulder *k* in the cross-bolt, presses back the said bolt, and the said bolt is held in that position until the cross-groove *m* in the needle comes opposite the said rib or shoulder, when the bolt advances by the action of its spring *f* or *g*, and the rib or shoulder in the said bolt snaps into the said groove *m* in the needle, and fixes the needle securely in the needle-bar in the required position for use, as best seen in Figs. 2, 6, and 8. Should the needle be introduced into the needle-bar otherwise than in the position described and represented, the cross-bolt *d* cannot be forced back by the needle, as the head of the needle will abut against the bottom of the shoulder *k*, and the entrance of the needle is thereby prevented. Hence the fixing and setting of the needle in the needle-bar are effected by one and the same action.

In order to release the needle from the needle-bar, it is only necessary to press upon the push or projecting head of the bolt *d* to

withdraw its shoulder or rib *k* from the cross-groove *m* in the needle, as represented in Fig. 3, when the needle is unfastened, and may be removed from the needle-bar.

Instead of an incline or bevel, *l*², at the head of the needle having either of the forms represented in Figs. 9 and 10 for pushing back the cross-bolt in the needle-bar, the extreme end of the head of the needle may be made conical for the same purpose. This modification of the head of the needle is represented in Fig. 11, where the conical head is marked *n*.

Having now described the nature of our invention, and the manner in which the same is to be performed, we wish it to be understood that we claim as our invention—

The combination, with the bevel or cone headed needle, grooved transversely, as shown and described, of the needle-bar, provided with spring, sliding bolt, and knob or stud, to be operated for the release of the needle from without said needle-bar, substantially as shown and set forth.

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Witnesses:

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