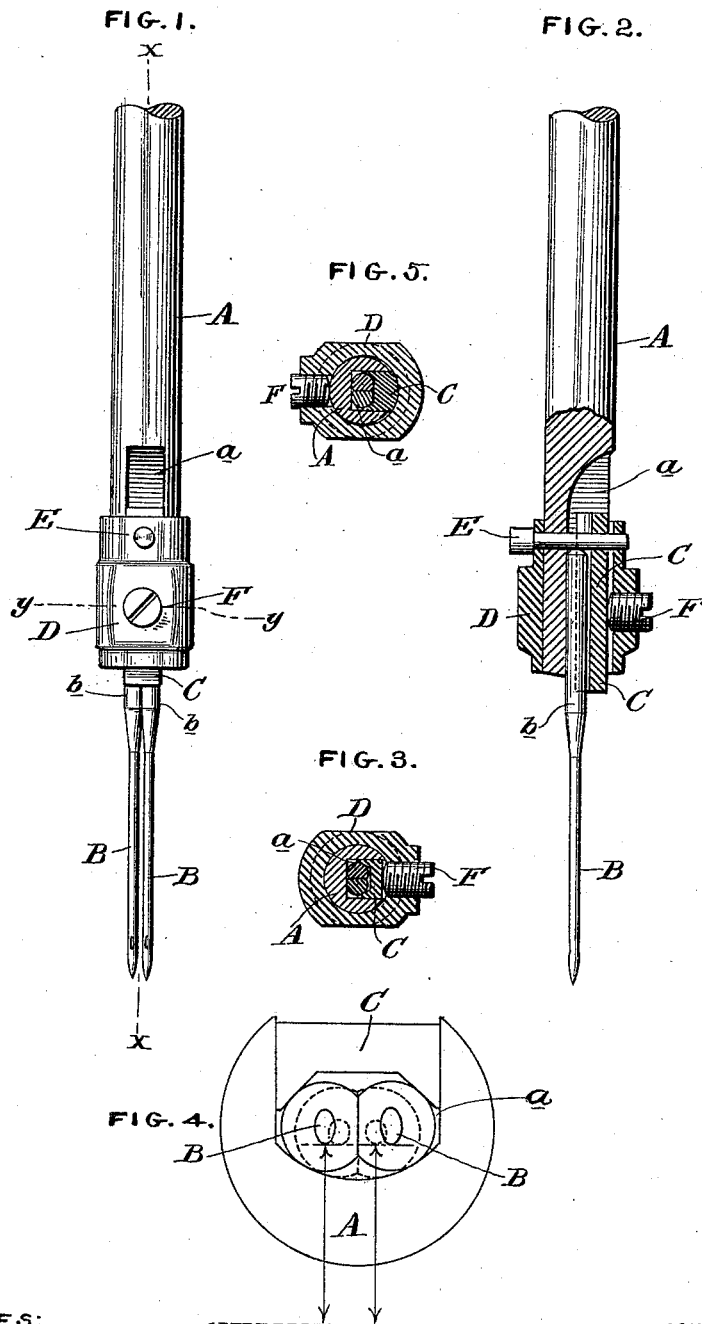


(No Model.)

L. MUTHER.
NEEDLE CLAMP FOR SEWING MACHINES.

No. 418,049.

Patented Dec. 24, 1889.



WITNESSES:

David S. Williams
John J. Lewis

INVENTOR:

Lorey Muther
By his atty
[Signature]

UNITED STATES PATENT OFFICE.

LORENZ MUTHER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE UNION SPECIAL SEWING MACHINE COMPANY, OF SAME PLACE.

NEEDLE-CLAMP FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 418,049, dated December 24, 1889.

Application filed April 11, 1889. Serial No. 306,869. (No model.)

To all whom it may concern:

Be it known that I, LORENZ MUTHER, of Chicago, county of Cook, and State of Illinois, have invented an Improvement in Needle-Bars for Sewing-Machines, of which the following is a specification.

My invention relates to needle-clamps for sewing-machines; and it consists of certain improvements which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

More particularly my invention relates to that class of needle-clamps which carry two needles for double rows of stitching; and it consists of improvements in the clamping devices by which the needles are held to the bar.

It has been one of the greatest difficulties met with in sewing-machines employing two needles to construct a needle-clamp suited to different sizes of needles, so that in all cases the needles will be firmly clamped or secured within the bar in proper relation to each other and also to the shuttle or looper of the sewing-machine. Bars which are suited to needles of one size are not usually suited to needles of another size without some change or adjustment in the clamping devices of the bar.

It is the object of my invention to overcome this difficulty and to construct a needle-clamp suited to different sizes of needles, so that the needles may easily be changed from one size to another, and will in all instances be firmly held or clamped within the bar and in proper relation to each other. This object I accomplish by means of a clamping-piece within the needle-bar adapted to be forced upon the shanks of the needles to force their flattened sides against each other and to secure them firmly within the bar, and also in proper relation to the shuttle or looper.

The nature and operation of these devices are more fully explained in the description of the drawings, in which—

Figure 1 is a side elevation of a needle-bar embodying the principles of my invention. Fig. 2 is a side view of the same on the line xx of Fig. 1, with part in section. Fig. 3 is

a horizontal sectional view on the line yy of Fig. 1. Fig. 4 is an inverted plan view of my improved needle-bar on an enlarged scale; and Fig. 5 is a horizontal sectional view illustrating a modified arrangement of the clamping devices.

A is a needle-bar proper, which is provided on its lower end with a groove a , preferably U-shaped in cross-section, within which the shanks b of the needles B are placed. These shanks b are flattened or cut away upon one side, and these flattened sides are placed in contact with each other. These sides of the shanks are more or less cut away or flattened according to the size of the needle, as it is necessary to bring the points of the finer needles closer together than those of the coarser needles.

C is a clamping-piece adapted to fit within the U-shaped groove a , and having inclined inner surfaces.

D is a collar loosely secured to the end of the needle-bar A by means of a pin E, which extends also through a hole in the clamping-piece C, securing it to the needle-bar. F is a screw extending through the collar D, and adapted to press upon the clamping piece or die C, to force it more deeply within the groove a . The shanks b of the needles are inserted within the groove a , having their flat sides in contact, and, as heretofore described, the clamping-piece C is now forced inwardly by tightening the screw F, and the inner inclined sides of this clamping-piece press upon the shanks b of the needles, on the principle of a wedge, forcing the flattened sides tightly against each other and clamping the shanks within the needle-bar. If now it is desired to substitute needles of a smaller size for those first used, the screw F is loosened and the needles B B are taken out and replaced by a second pair of smaller needles, which, as heretofore explained, have their shanks more cut away or flattened, so as to bring the points of the needles nearer together. The clamp C is now tightened up and extends a greater distance into the groove a , owing to the smaller space occupied by the two shanks $b b$, in consequence of the increase in the amount cut away. The inclined surfaces of

the clamping-piece C press upon these shanks and force them together in a similar manner to that above described.

The operation of the clamping device with my preferred shape of groove in the needle-bar and with needles of different sizes is illustrated in Fig. 4, in which the larger needles and the first position of the clamping-piece C are shown in full lines and the smaller needles and the second position of the clamping-piece in dotted lines. The inner surface of the U-shaped groove *a* may be made curved, as shown in this figure, so that the points of the needles will always be kept the same distance from the line of the movement of the shuttle or looper. (Shown in dotted lines in Fig. 4.) The inclined surface of the clamping-piece C always presses upon the shanks *b*, and as the size of the shanks is decreased for smaller needles, owing to the larger amount which is cut away, this inclined surface presses upon the shanks at points higher up or nearer the middle, but, owing to the inclination, always in such a manner that the lines of the force exerted at these two points of contact tend to meet, and consequently have the effect of forcing the flat sides of the shanks against each other.

The object and effect of forming the groove *a* with its inner surface curved are shown in Fig. 4. As the size of the needles is decreased and the shanks are more and more cut away, the space occupied by the shanks is diminished and the shanks sink deeper into the curve of the groove *a*, or farther in toward the line of motion of the shuttle or looper of the machine, sufficiently to compensate for the actual difference in size of the needles, so that the distance from the plane in which the edges of the needles move to the line of motion of the shuttle or looper will be exactly the same no matter what the size of the needles may be. The inclined grooves in the clamping-piece and needle-bar may, if desired, be curved or V-shaped.

It is apparent that instead of forcing the clamping-piece C down upon the shanks of the needles by the action of screw directly upon the clamping-piece the screw may press against the needle-bar to draw the collar down upon the clamps, as shown in Fig. 5.

While I prefer the details of construction here shown, it is apparent that they may be modified without departing from the principles of my invention.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a needle-bar having a groove on its end forming a socket for the shanks of the needles, two needles having their shanks in contact with each other within said socket, a clamping-piece fitting into said groove and having its center in line with the needle-shanks and depressed below the edges, forming a groove having inclined faces, and clamping devices carried by the needle-bar for pressing said clamping-piece into the groove upon the needles.

2. A needle-bar having a groove at its end, two needles having the flattened sides of their shanks in contact within said groove, in combination with a clamping-piece carried by said needle-bar and having inclined inner surfaces, and means to press said clamping-piece into said groove to clamp the shanks of the needles therein and press their flattened sides together.

3. A needle-bar having a groove at its end, two needles having the flattened sides of their shanks in contact within said groove, in combination with a clamping-piece carried by said needle-bar and having inclined inner surfaces, and an adjustable pressure-point to press upon said clamping-piece to force it into said groove to clamp the shanks of the needles therein and press their flattened sides together.

4. A needle-bar having a groove at its end formed with its base curved, two needles having the flattened sides of their shanks in contact within said groove, in combination with a clamping-piece carried by said needle-bar, and means to press said clamping-piece into said groove to clamp the shanks of the needles therein and press their flattened sides together.

5. The needle-bar A, provided with the groove *a* at one end, in combination with the clamping-piece C, carried by said bar and fitting into the groove *a* and having inclined inner surfaces, two needles B B, having their shanks *b b* fitting within the groove *a*, with the flattened sides thereof in contact, and the collar D, carried by said needle-bar and provided with a clamping-screw F, adapted to press upon said piece C to force its inclined inner surface upon the shanks *b b* of the needles, substantially as and for the purpose specified.

In testimony of which invention I hereunto set my hand.

LORENZ MUTHER.

Witnesses:

AZEL F. HATCH,
MART A. MAYO.