(No Model.)

E. STEIN.

NEEDLE CLAMP FOR SEWING MACHINES.

No. 437,944. Patented Oct. 7, 1890.

Fig. 1

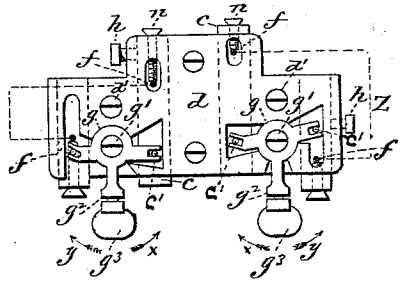


Fig. 3

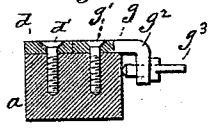


Fig. 2

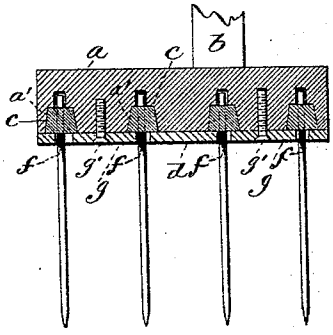


Fig. 4

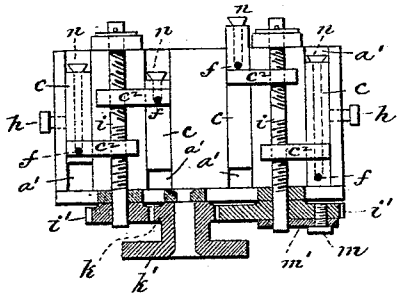


Fig. 5

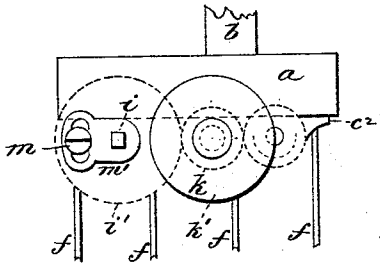
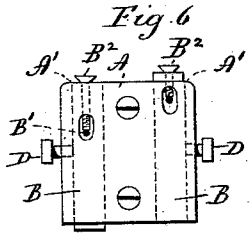


Fig. 6



Witnesses.
J. H. Shumway
Lillian D. Kelley

Emil Stein,
Inventor
By atty.
Earle Seymour

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EMIL STEIN, OF BERLIN, GERMANY, ASSIGNOR TO JULIUS M. COHN, OF NEW YORK, N. Y.

NEEDLE-CLAMP FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 437,944, dated October 7, 1890.

Application filed June 2, 1890. Serial No. 353,970. (No model.) Patented in France May 9, 1888, No. 190,517; in Germany November 1, 1888, No. 47,586, and in Belgium November 6, 1888, No. 83,855.

To all whom it may concern:

Be it known that I, EMIL STEIN, a subject of the King of Prussia, Germany, residing in Berlin, Kingdom of Prussia, Germany, have invented certain new and useful Improvements in Sewing-Machines, (for which I have obtained a patent in France, No. 190,517, dated May 9, 1888; in Belgium, No. 83,855, dated November 6, 1888, and in Germany, No. 47,586, dated November 1, 1888;) and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a reverse plan view of a needle-head carrying four needles and provided with means for adjusting the same independently in pairs. Fig. 2 is a view thereof in vertical section on the line *a b* and looking toward the adjacent end of the head. Fig. 3 is a view of the device in vertical section taken on the irregular line *z* of Fig. 1. Fig. 4 is a view in horizontal section of a needle-head carrying four needles arranged in two pairs which are coupled together for operation, so that the needles are adjusted simultaneously; and Fig. 5 is a view in rear elevation of the device shown by Fig. 4, with the two outer pinions indicated by dotted lines. Fig. 6 is a plan view of a needle-head carrying two needles arranged to be relatively adjusted independently.

My invention relates to an improvement in multiple-needle sewing-machines, the object being to provide simple and convenient means for the adjustment of one or more needles transversely to the path in which the fabric is fed to change their relative positions, and so vary the distances between the lines of stitching formed by them, as may be desired.

With these ends in view my invention consists in certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

As shown by Figs. 1 to 3 of the drawings, the needle-head consists of a flat irregular block *a*, having the needle-bar *b*, by which it is vertically reciprocated, secured to its upper face. Its under face is provided with four parallel grooves *a'*, arranged to extend transversely across the path in which the fabric is fed. Each of the grooves receives a needle-slide *c*, having at its inner end a vertical perforation to receive a needle *f*, and each is traversed by a longitudinal threaded opening receiving a screw *n*, impinging at its inner end upon the needle and holding the same in place, and projecting at its outer end from the outer end of the slide, so as to be readily reached for operation. All of the slides are held in the slots before mentioned by means of a horizontal plate *d*, conforming in shape to the shape of the head, and secured against the lower face thereof by means of screws *d' d'*. The said plate supports but does not itself bind the slides which are coupled together for simultaneous adjustment in pairs by means of two three-armed couplers *g*, fulcrumed to the lower face of the head between the respective pairs of slides by means of screws *g' g'*, which pass through the plate *d* aforesaid. The two inner arms of each coupler extend in opposite directions, and have their outer ends slotted to embrace pins *c'*, projecting downwardly from the slides. The outer arm g^2 of each coupler is bent upwardly to stand in front of the forward edge of the head, and carries a set-screw g^3, which is adjusted to gage the limit to which the coupler may be moved in either direction, the coupler being arrested in movement by the engagement of the inner end of the screw with the forward edge of the head. It will be seen that by moving the arm g^2 of either coupler in the direction of the arrows *x* on Fig. 1 of the drawings the slides will be moved away from each other and the needles separated, while by moving the arm in the direction of the arrows *y* the slides will be moved toward each other and the distance between the needles reduced. It will thus be seen that under the construction described the needles are adjusted in pairs and that very readily. After the needles have been adjusted the slides are secured in place by means of screws *h*, mounted in the head and impinging against them.

In the construction shown by Figs. 4 and 5 of the drawings the slides are coupled together

in pairs, and then the two pairs coupled or connected by gearing, so that all of the needles will be moved simultaneously. To this end each slide of each pair of slides has rigidly secured to it an arm c^2, the arms of the same pair receiving at their inner ends an independent right and left hand horizontal screw-shaft i, journaled below the head. The forward ends of these shafts are provided, respectively, with pinions i' i', meshing into a pinion k, formed upon the hub of a hand-wheel k', also projecting from the forward edge of the head, to which it is journaled. It will be readily understood that through the said hand-wheel and pinions the shafts may be rotated so as to cause the needles to approach toward or separate from each other. When the needles are properly adjusted, the slides are secured in place by set-screws h impinging against them and mounted in the ends of the head. The pinions i' i' may correspond to each other in size, in which case all of the needles will be given equal movement, or they may be of different sizes, as herein shown, in which the same movement will adjust the needles of one pair more than those of the other.

As a means of bringing the two pairs of needles into the right relations, the larger of the two pinions i' is loosely mounted on its shaft, and coupled therewith by means of an arm m', rigidly attached thereto, and provided at its outer end with a segmental slot receiving a screw m, entering the pinion and clamping the arm thereto, so that by removing the screw the pinion may be turned without moving its shaft. Then after the two pairs of needles have been brought into their right relations the screw is restored, to again connect the shaft and pinion. A fine adjustment may be effected by shifting the screw within the limits of the segmental slot.

As shown by Fig. 6 of the drawings, the needle-head A has two grooves A′, extending transversely to the path in which the fabric is fed, formed in its lower face. These grooves respectively receive two needle-slides B, carrying a needle B′, and held in place in the grooves by a plate C, secured to the lower face of the head. Set-screws D, mounted in the said head, are arranged to respectively impinge upon the slides to lock the same in any position into which they may be moved. Each slide is provided with a screw B^2 for holding its needle in place.

I have thus shown that under my invention the needles may be adjusted independently or simultaneously in pairs or in larger groups, and I would therefore have it understood that I do not limit myself to the exact construction shown and described, but hold myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of my invention.

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

1. In a multiple-needle sewing-machine, the combination of a head having independent parallel grooves formed in its under face to extend transversely to the line on which the fabric is fed, needle-slides located in the said grooves and adjustable therein, and means for adjusting them and securing them in place, substantially as described.

2. In a multiple-needle sewing-machine, the combination of a head having independent parallel grooves formed in its under face to extend transversely to the line on which the fabric is fed, needle-slides located in the said grooves, and means for coupling two or more slides together for simultaneous adjustment, substantially as described.

3. In a multiple-needle sewing-machine, the combination, with a head, of four needle-slides mounted therein and arranged in two pairs, an independent coupler for the slides of each pair, and means for operating the two couplers together, whereby the four slides and needles are adjusted in unison, substantially as described.

4. In a multiple-needle sewing-machine, the combination of a head having parallel grooves formed in its under face to extend transversely to the line in which the fabric is fed, needle-slides located in the said grooves, a plate secured against the lower face of the head for holding the slides in place, a coupler for each pair of slides, and means for securing the slides from movement after they have been set, substantially as described.

5. In a multiple-needle sewing-machine, the combination of a head having independent parallel grooves formed in its under face to extend transversely to the line on which the fabric is fed, needle-slides located in the said grooves, right and left hand screws for coupling the slides together in pairs, and pinions connecting the screws together for simultaneous operation, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EMIL STEIN.

Witnesses:
P. DEMHARTER,
GEO. H. MURPHY.