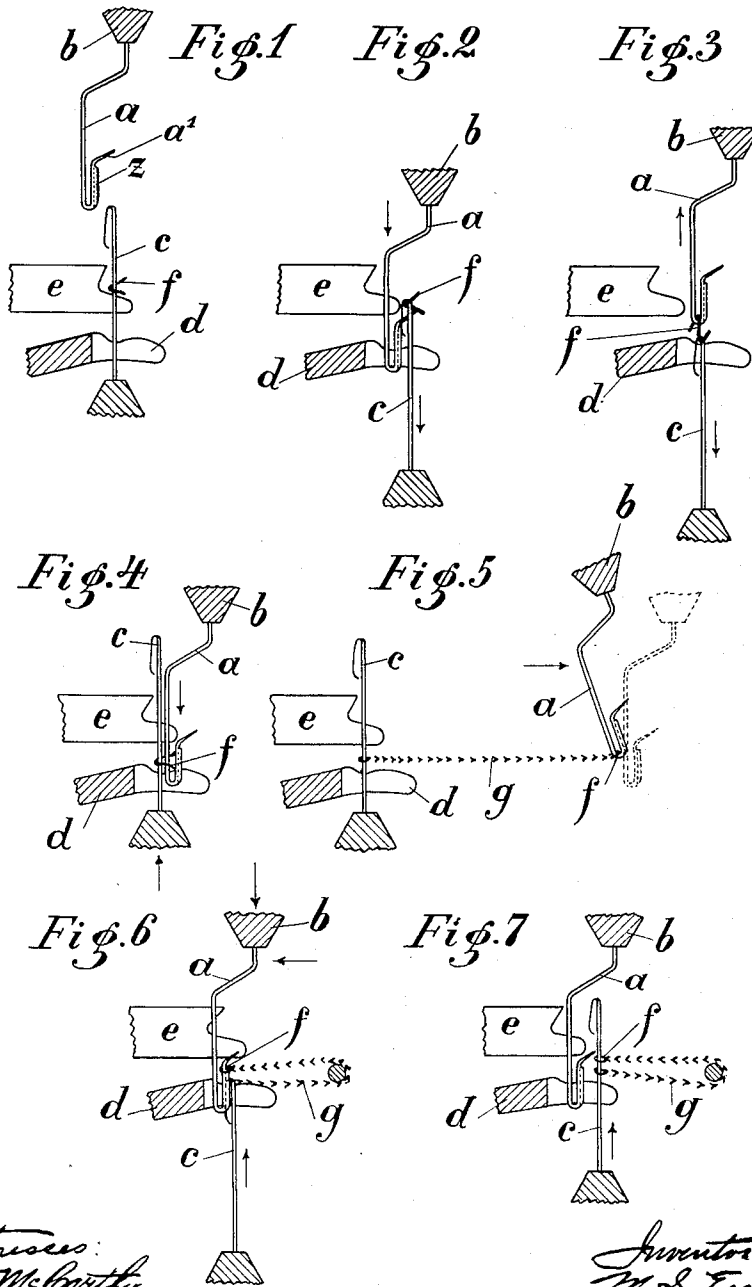


M. S. ESCHÉ.
 WELTING MECHANISM FOR FLAT HOSIERY FRAMES.
 APPLICATION FILED MAY 17, 1909.

1,024,842.

Patented Apr. 30, 1912.

3 SHEETS—SHEET 1.



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3 SHEETS-SHEET 2.

Fig. 8

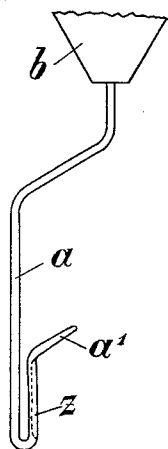


Fig. 9

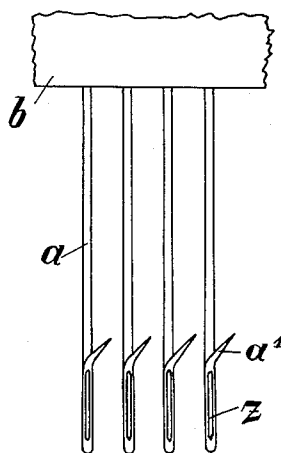


Fig. 10

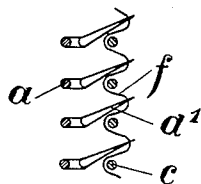


Fig. 11

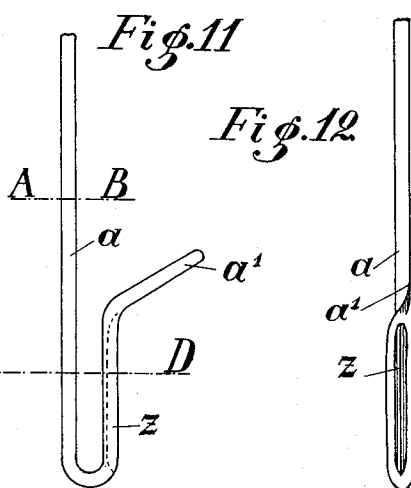


Fig. 12

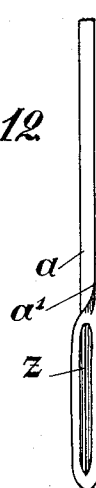


Fig. 14

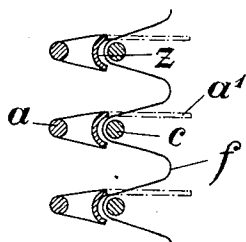


Fig. 13



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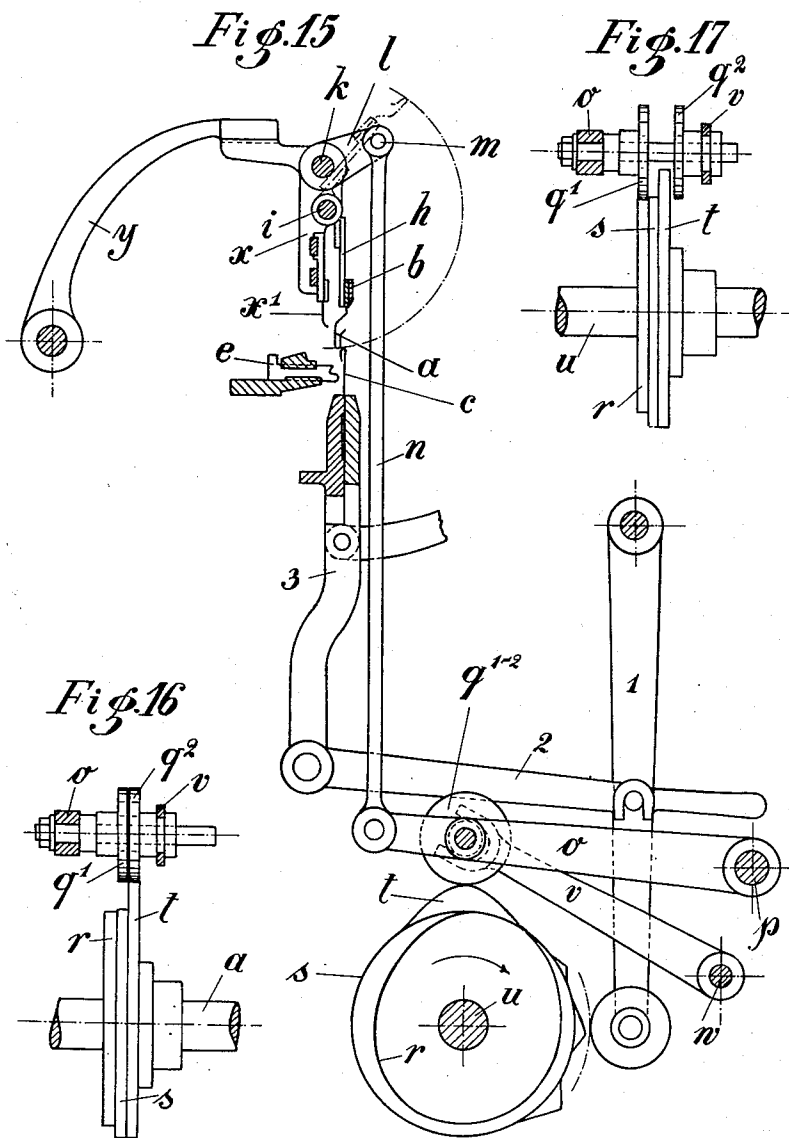
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

MORITZ SAMUEL ESCHÉ, OF CHEMNITZ, GERMANY.

WELTING MECHANISM FOR FLAT HOSIERY-FRAMES.

1,024,842.

Specification of Letters Patent.

Patented Apr. 30, 1912.

Application filed May 17, 1909. Serial No. 496,492.

To all whom it may concern:

Be it known that I, MORITZ SAMUEL ESCHÉ, a subject of the Emperor of Germany, residing at Chemnitz, Saxony, in the Empire of Germany, have invented certain new and useful Welting Mechanism for Flat Hosiery-Frames, of which the following is a specification.

The invention relates to an improved mechanism for use in flat hosiery frames for producing a doubled welt on stockings, etc., and will be described in connection with the accompanying drawings, in which:

Figures 1 to 7 inclusive illustrate the several steps in the formation of a doubled welt according to the present invention; Fig. 8 illustrates in side view a hooked needle that may be employed in carrying out the invention; Fig. 9 is a front view of a group of needles of the form shown in Fig. 8; Fig. 10 is a view showing in section a series of such hooked needles as are illustrated in Figs. 8 and 9 and the relation thereof to the frame needles when the parts are in the position shown in Fig. 2; Fig. 11 is a side elevation of a slightly modified form of hooked needle; Fig. 12 is a front elevation of the same; Fig. 13 is a sectional view on the line A—B of Fig. 11; Fig. 14 is a sectional view, on the line C—D of Fig. 11, showing a series of hooked needles and frame needles in substantially the relation illustrated in Fig. 2; Fig. 15 illustrates in elevation and partial section portions of a flat hosiery frame with the improvements constituting the present invention applied thereto; Fig. 16 illustrates in edge view some of the parts shown in side elevation in Fig. 15; Fig. 17 is a view similar to Fig. 16 showing a different adjustment of parts.

Reference will first be made to Figs. 15 to 17, wherein are illustrated such portions of a common form of flat hosiery frame as are essential to an understanding of the location of the particular devices constituting the present invention. In such figures *c* designates one of the frame needles the supporting bar for which is connected with the upper end of an arm 3 of a two armed lever the other arm, 2, of which is adapted to be engaged with a swinging arm 1 having at its lower end a roller that lies in the path of a cam on a suitable power shaft *u*. Means are also provided for reciprocating the frame needles as usual but it is not considered necessary to illustrate such means

and therefore only the connection thereof with the lever arm 3 is represented in Fig. 15.

A shaft *k* supported as at *y* carries the usual "narrowing" devices comprising a bar *x* and needles *x'* and a sinker *e* of ordinary form is also represented.

Supported in suitable bearings on the bar *x* is a shaft *i* which is connected, as at *h* with a bar *b* from which depend a series of hooked needles *a*. Said needles *a* correspond in number and arrangement with the frame needles and are adapted to cooperate directly with said frame needles to receive therefrom the first row of loops of that portion of the fabric which is to form the doubled welt.

The necessary reciprocating movement of the hooked needles *a* to effect a transfer of loops from the frame needles to said needles *a* or vice versa is provided by the means employed to reciprocate the narrowing needles *x'*. As shown the shaft *k* is provided with an arm *l* which by means of a link *n* is connected with a pivotally supported arm *o*. On a stud projecting laterally from said arm are mounted two disks *q'*, *q''*, the latter being directly supported by a sleeve adapted to move longitudinally of the stud so that by means of an arm *v* it may be moved to and from a position in the path of a cam *t* on the aforesaid power shaft *u*. The arms *o*, *v* are, respectively supported on rods *p*, *w*, the latter being longitudinally adjustable to shift the disk *q''* as above indicated.

When the disk *q''* is shifted into the position represented in Fig. 17 and the shaft *u* is in the position shown in Fig. 16 the disk *q'* will be in alinement with and bear against a circular disk *s* on the shaft *u*. With the parts in this relation, which is the position occupied while the body of a fabric is being produced, the shaft *k* and parts actuated thereby will be at rest. To actuate said shaft when the "narrowing" devices are to be operated the shaft *u* is shifted longitudinally to bring the disk *q'* into the path of a second cam *r* on said shaft.

The operation of the hooked needles *a* in forming a welt will now be described, reference being had particularly to Figs. 1 to 10.

As shown each needle *a* is bent to form a hook at its lower end and in the form illustrated in Figs. 8 and 9 the free end of the shorter limb is pointed and deflected lat-

erally so that when the bar *b* is lowered and the needles *a*, *c* occupy the relative positions shown in Figs. 2 and 10, the free end of each hooked needle is about midway between the adjacent needles *c*. A groove *z* is formed in the outer surface of the shorter limb of each hooked needle which groove is adapted to receive the barb on the cooperating frame needle *c* as said needles occupy the positions shown in Fig. 6 or move from the positions of Fig. 1 to those of Fig. 2 and from the latter to those shown in Fig. 3. Assuming that it is desired to form a doubled welt the several parts hereinbefore described will occupy the positions shown in Figs. 15 and 1. As the frame needles *c* descend the thread *f* will be engaged by the hooks at the upper end thereof and by the downward movement of the bar *b* and hooked needles *a* the parts will assume the positions shown in Figs. 2 and 10. While the downward movement of the frame needles continues the needles *a* begin to move in the opposite direction and the loops of thread will be drawn into the bends at the lower ends thereof as shown in Fig. 3 at which time the loops are immediately above the presser bar *d*. Then the bar *b* and needles *a* depending therefrom are shifted so that, as shown in Fig. 4, the needles *a* are in front of the needles *c* when the latter rise again. As the frame needles and cooperating parts continue the formation of the fabric the hooked needles *a*, as illustrated in Fig. 5 are moved transversely from the needles *c*, and such outward movement of said needles *a* continues until the amount of fabric *g* required to form the doubled welt has been produced. The bar *b* and needles *a* depending therefrom then resume their normal positions and, as indicated in Figs. 6 and 7 the hooked needles *a* are caused to transfer the loops previously engaged by them to the frame needles *c*. The formation of the doubled welt being thus completed the shaft *i* may be rocked to carry the bar *b* and hooks *a* to the positions represented by dotted lines in Fig. 15 in which they will not interfere with the operation of the narrowing devices and where they will be retained until it is again desired to form a doubled welt in the fabric.

Instead of making the hook needles *a* in the form hereinbefore described they may have the form illustrated in Figs. 11 to 14 in which the tongue *a'* at the termination of the short limb of the hook is in the vertical plane of the longer limb of the needle. The operation of needles of this form is however the same as that previously described.

Having thus described the invention what is claimed is:

1. The combination with the frame needles

of a flat hosiery frame, of a series of hooked needles supported above and adapted to be moved in the cross vertical planes of said frame needles, each of said hooked needles terminating in a lateral tongue normally on one side of the corresponding frame needle so as to be adapted to engage loops of the fabric and guide them from the frame needles into the bends in the hooked needles.

2. The combination with the frame needles of a flat hosiery frame, of a bar supported above said frame needles and adapted to be moved, and a series of hooked needles depending from said bar and movable in the cross vertical planes of said frame needles and each terminating in a lateral tongue normally on one side of the corresponding frame needle so as to be adapted to engage loops of the fabric and guide them from the frame needles into the bends in the hooked needles.

3. The combination with the frame needles of a flat hosiery frame, of a bar adapted to rock on the support for the narrowing needles of the frame, a mechanism for moving said bar, means for engaging and disengaging said mechanism, and a series of hooked needles depending from said bar and movable in the cross vertical planes of said frame needles and each terminating in a lateral tongue normally on one side of the corresponding frame needle so as to be adapted to engage loops of the fabric and guide them from the frame needles into the bends in the hooked needles.

4. The combination with the frame needles of a flat hosiery frame, of a series of hooked needles supported above and adapted to be moved in the cross vertical planes of said frame needles, each of said hooked needles having a longitudinal groove formed in the outer surface of the shorter limb of its hook adapted to receive the free end of a frame needle and each hook terminating in a lateral tongue normally on one side of the corresponding frame needle and adapted to engage loops of the fabric and guide them from the frame needles into the bends in the hooked needles, the parts being so arranged that such loops are adapted to be again transferred from the hooked needles to the frame needles solely by the relative movements of said needles.

5. The combination with the frame needles of a flat hosiery frame, of a bar supported above said frame needles and adapted to be moved, and a series of hooked needles depending from said bar and movable in the cross vertical planes of said frame needles, each of said hooked needles having a longitudinal groove formed in the outer surface of the shorter limb of its hook adapted to receive the free end of a frame needle and each hook terminating in a lat-

eral tongue normally on one side of the corresponding frame needle and adapted to engage loops of the fabric and guide them from the frame needles into the bends in the hooked needles, the parts being so arranged that such loops are adapted to be again transferred from the hooked needles to the frame needles solely by the relative movements of said needles.

- 10 6. The combination with the frame needles of a flat hosiery frame, of a bar adapted to rock on the support for the narrowing needles of the frame, a mechanism for moving said bar, means for engaging and disengaging said mechanism, and a series of hooked needles depending from said bar and movable in the cross vertical planes of said frame needles, each of said hooked needles having a longitudinal groove

formed in the outer surface of the shorter limb of its hook: adapted to receive the free end of a frame needle and each hook terminating in a lateral tongue normally on one side of the corresponding frame needle and adapted to engage loops of the fabric and guide them from the frame needles into the bends in the hooked needles, the parts being so arranged that such loops are adapted to be again transferred from the hooked needles to the frame needles solely by the relative movements of said needles.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

MORITZ SAMUEL ESCHÉ.

Witnesses:

WILLIAM J. KOUJETSUY,
WM. WASHINGTON BRUNSWICK.