(No Model.)

C. H. WILLCOX.

TRIMMING DEVICE FOR SEWING MACHINES.

No. 365,716 Patented June 28, 1887.

Fig. 1.

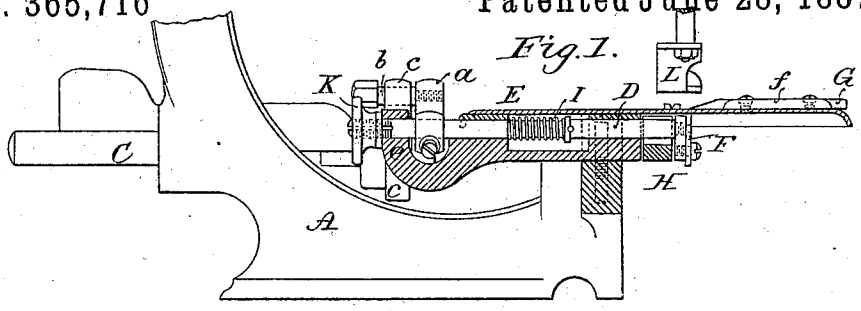


Fig. 2.

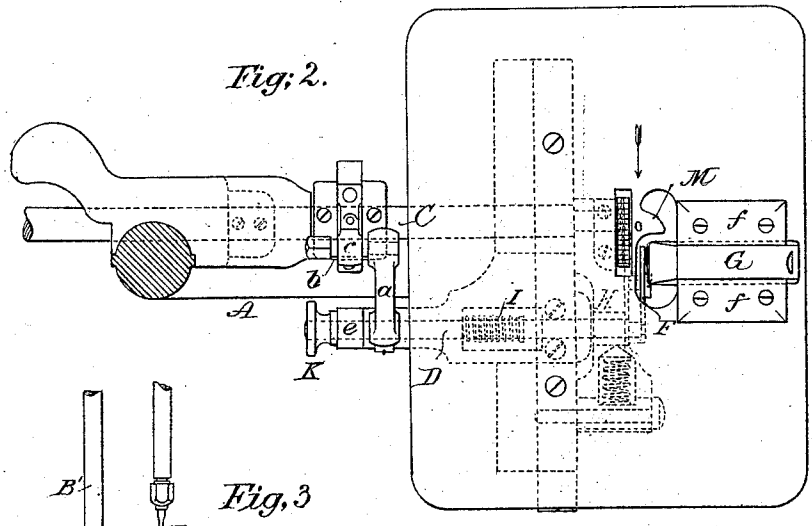


Fig. 3

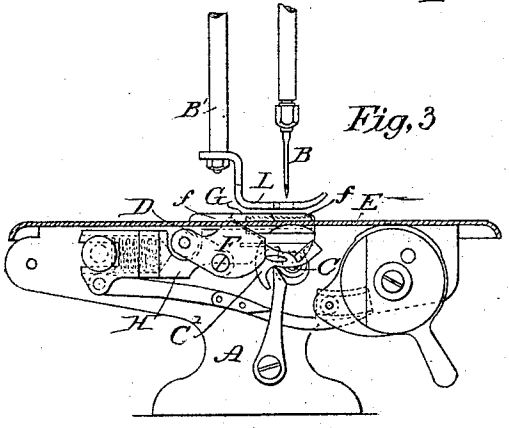


Fig. 4

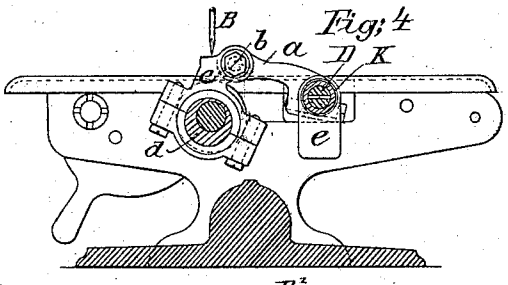


Fig. 5

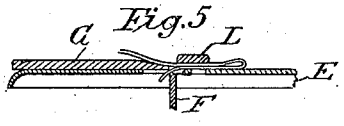


Fig. 7

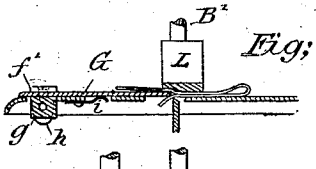


Fig. 6



Fig. 9,

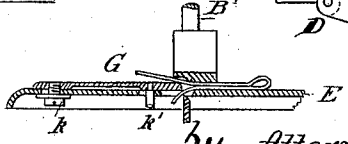
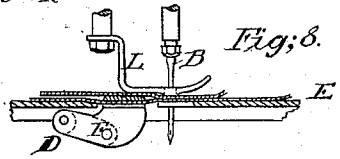


Fig. 8.



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UNITED STATES PATENT OFFICE.

CHARLES H. WILLCOX, OF NEW YORK, N. Y., ASSIGNOR TO THE WILLCOX & GIBBS SEWING MACHINE COMPANY, OF SAME PLACE.

TRIMMING DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 365,716, dated June 28, 1887.

Application filed May 26, 1882. Serial No. 62,516. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. WILLCOX, of New York city, in the county and State of New York, have invented a new and useful Improvement in Trimming Attachments for Sewing-Machines, which improvement is fully set forth in the following specification.

This invention has reference to trimming attachments for sewing-machines for trimming the edge of a plain or single-turn welt or hem simultaneously with the sewing. In a single-turn welt or hem the fabric is folded back upon itself to form a hem of the desired width, and the folded-over layer is sewed to the body of the goods by one or more lines of stitching through both layers. The object of the attachment is to trim the edge of the folded-over layer close to and parallel with the line of stitching without cutting or being liable to cut the main body of the fabric. It is designed more particularly for trimming the hems or welt on knit fabric, although it is applicable to other goods.

It may be observed that heretofore trimming attachments adapted to trim one of two superposed layers have been combined with sewing-machines; but they are not designed nor are they well adapted to trim plain single-turn welts or hems, nor to operate on knit fabric.

The accompanying drawings, which form a part of this specification, illustrate the construction of trimming attachments in accordance with the invention and the manner of applying the same to sewing-machines.

Considering the terms "longitudinal" and "cross" to refer to the direction of the main shaft and goose-neck of the machine, Figure 1 is a view in vertical longitudinal section and rear elevation of a trimming attachment constructed in accordance with the invention and applied to a Willcox & Gibbs single-thread chain-stitch sewing-machine; Fig. 2, a plan view of the same; Figs. 3 and 4, views in vertical cross-section and end elevation, looking in opposite directions; Figs. 5 and 6, partial views in longitudinal section in different planes; Figs. 7 and 8, partial views in longitudinal and cross section of another and in some respects improved form of machine, and Fig. 9 a longitudinal section of a modification of this last form.

The arrow, Fig. 2, indicates the direction of the feed.

A is the machine-frame, B the needle and needle-bar, B′ the presser-bar, C the main shaft, and C′ the looper, all of the customary construction.

D is a rock-shaft journaled in bearings of the machine-frame below the cloth-plate or work-plate E. The feed-bar H is recessed to receive it, the recess being sufficiently large to allow the usual four motions to be imparted to said bar in any ordinary or suitable way.

At the outer end of the rock-shaft D is attached a blade or cutter, F, which works in an opening in the cloth or work plate and co-operates with an auxiliary cutter or blade, G, carried by the work-plate. Near the inner end (left in Figs. 1 and 2) is an arm, *a*, connected by a pin, *b*, with the link *c*, which encircles an eccentric, *d*, on the main shaft C, so that by the revolution of said shaft C and eccentric *d* a rocking movement is imparted to the shaft D and cutter or blade F, which acts, therefore, upward (see Fig. 3) against the stationary cutter or blade G to sever the material inserted between them. The eccentric is preferably placed so that the upward movement of the cutter F takes place when the needle is descending and after the feed-bar H has finished its forward movement. The blades or cutters should be so arranged that the heel or rear end of the cutting-edge of the vibratory blade F never descends below the horizontal plane of the cutting-edge of the cutter or blade G, although this is not absolutely essential to working.

On the rock-shaft D, in a recess in the machine-frame, is a spring, I, bearing at one end against the side of the recess, at the other against a collar on the rock-shaft, and tending to move the rock-shaft longitudinally, (to the right, Figs. 1 and 2,) so as to press the edge of the cutter F into contact with that of cutter G. On the threaded and split inner end (left hand, Figs. 1 and 2) of the rock-shaft is a set-nut, K, which, by bearing against a lug, *e*, on the machine-frame, limits the endwise movement of the rock-shaft and takes the pressure of the spring I, except when the cutter F and rock-shaft are pressed back by the contact of the

edge of cutter F with that of cutter G. The edges of these cutters are slightly oblique to each other, so that at every rise the vibratory cutter and its rock-shaft are moved laterally against the pressure of spring I. As shown, the lower cutting-edge is parallel with the line of feed and the upper inclined thereto; but the positions may be reversed, or both cutting-edges may be oblique. When the cutter F is in the lowest position, it is intended that it shall be out of contact with the cutter G, and by turning the set-nut K the contact may be made to commence at any desired point; or the cutters may be allowed to be always in contact with each other. The cutter G consists of a bar or plate having its end ground to form a cutting-edge in the plane of its lower surface. As shown in Figs. 1 to 3, it is rigidly held between guide-pieces *f*, attached by screws to the cloth or work plate. The sides of the cutter are beveled, and the edges of the guide-pieces have a reverse bevel, so that the cutter is held in a dovetail. By loosening one of the guide-pieces *f* the cutter may be adjusted to any desired position by sliding between the pieces *f*, or it may be removed for sharpening or other purpose. In Figs. 7 and 8 it is attached to a block, *g*, hinged to lugs *h*, depending from the cloth or work plate, and is combined with a spring, *i*, tending to throw the cutter upward.

The presser-foot L, instead of being entirely cut away above the cutter G, as shown in Figs. 1 and 5, is recessed to receive the end thereof, so that in operation the cutting-edge is held down against the pressure of spring *i* by the presser-foot, and when the presser-foot is lifted it is also raised (although not to the same height) by spring *i*.

The cutter G is adjustably and detachably secured to the block *g* by guide-pieces *f'*, similar to those marked *f* in the former figures, or by other suitable means. Instead of pivoting the cutter to the cloth or work plate, as in the arrangement just described, the cutter may be formed of a spring-bar, as shown in Fig. 9, and be adjustably fastened to the cloth-plate by suitable means, such as a set-screw, *k*, and pin *k'*, passing through slots in the cloth-plate. The cutters F G are arranged on the opposite side of the needle from the goose-neck, (of which the lower part is shown to the left, Figs. 1 and 2,) and preferably just behind the needle, as shown in all the figures.

In front of the cutters, and alongside of the needle-hole, is a projection, M, hereinafter called a "share" from the resemblance of its action to a plowshare. The share is attached to or carried by the cloth or work plate, being, as shown, made in one piece therewith by cutting away the plate. It is curved in front and operates to turn out the curled edge of the fabric so as to flatten it.

In order to sew and trim a single-turn hem, the fabric is folded so as to give a hem of the desired width with a slight margin beyond, and is then introduced under the presser-foot with the end of the bar or cutter G between the two layers. When the bar or plate G is hinged and combined with a spring, as shown in Figs. 7 and 8, or itself forms a spring, as in Fig. 9, the end being raised when the presser-foot is up, the folded fabric can be more readily inserted than with a cutter bar or plate held rigidly, as in Figs. 1 to 3. In the case of knit goods the curled edge is flattened out on the share M, and the presser-foot, being let down, clamps the whole in position. The curl in the goods naturally hugs the edge of the share, as shown in Fig. 6. By the action of the share and presser-foot the curl is taken out in advance of the bar G and blade F, which form the cutting part of the attachment, so that the fabric is presented thereto in a flattened condition adapted to be readily severed. The machine being started, the sewing and trimming proceed simultaneously. The bar or cutter G, as shown in Figs. 7, 8, and 9, being vertically yielding, adapts itself to the feed motion.

The cutting-edges of the trimming attachment are arranged on the side of the needle away or opposite from the goose-neck. This is very important for trimming single-turn welts or hems, as described, in order that the body of the work may lie outside the goose-neck. If the ordinary arrangement of trimmer, with the cutting-edge inside the needle or line of seam, were used, it would be very inconvenient, if not in some cases impossible, to welt or hem garments, since the body of the work would have to be manipulated in the confined space under the goose-neck. It may be that trimmers have been arranged outside the needle; but, if any there be, none of them, when so arranged (it is believed,) have been adapted to trim one of two superposed layers.

It is obvious that modifications may be made in the details of construction without departing from the spirit of the invention, and that portions of the invention may be used separately. For example, a share-trimmer comprising a vibratory and a stationary blade has been described and illustrated. It is obvious, however, that other trimming devices may be arranged in the manner explained, in order to adapt them to trim single-turn welts or hems.

In pending applications numbered, respectively, 62,517, 62,518, 63,046, and 63,047, I have described certain arrangements of trimming devices designed particularly for trimming single-turn hems, and differing in some respects from the shear-trimmer herein shown and described. In the aforesaid applications I have claimed only the special new features and combinations therein severally described and shown, claiming in this present application all features common to the latter and to one or more of the above-mentioned applications.

Some of the improvements and combinations herein set forth are applicable to trim-

ming attachments having the cutting part arranged on the same side of the needle with the goose-neck, for various purposes other than sewing single-turn hems.

Having now fully described my said invention and the manner of carrying the same into effect, what I claim is—

1. In a trimming attachment for sewing-machines, the combination, with a stationary cutter and means for supporting the same, so that it can enter between superposed layers of fabric, of a movable co-operating cutter for trimming one of said layers and means for operating the movable cutter, substantially as described.

2. The combination, with a sewing-machine having a presser-foot recessed or cut away on the side opposite the goose-neck, of a trimming attachment having its cutting part arranged in close proximity to the needle and adjacent to the recessed portion of the presser-foot, and comprising a device for entering or working between the layers of superposed fabric, substantially as described.

3. The combination, with the trimming attachment having a device for entering or working between superposed layers, of a share or device carried by the cloth-plate of the machine for uncurling the edge of the layer to be trimmed, substantially as described.

4. The combination, with the sewing-machine, of a bar or plate, supporting means for said bar or plate, enabling it to enter between superposed layers of fabric, a co-operating cutter supported from below and working upwardly, and operating devices for said cutter, substantially as described.

5. The combination, with a sewing-machine, of a bar or plate arranged on the side of the needle away from the goose-neck, means for supporting the same so as to leave a free space for the passage of fabric across the end thereof both above and below, a cutter, and devices for supporting and operating the cutter so as to sever the fabric between it and said bar or plate, substantially as described.

6. In a sewing-machine with trimming attachment, an adjustable bar or plate having a cutting-edge at the end, and means for supporting the same, so that its cutting-edge may enter between superposed layers of fabric, in combination with a co-operating shear-blade and mechanism for operating the latter, substantially as described.

7. The combination of a recessed presser-foot, a spring bar or plate extending under said foot into said recess, and a movable co-operating cutter, substantially as described.

8. In combination with the sewing-machine and trimming devices, a share or device for uncurling the edge of knit goods attached to or carried by the cloth or work-plate of the sewing-machine, substantially as described.

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

CHAS. H. WILLCOX.

Witnesses:
E. A. RACE,
S. A. SWART.