

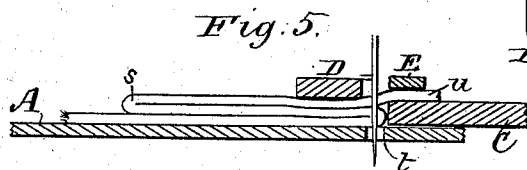
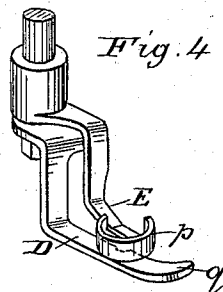
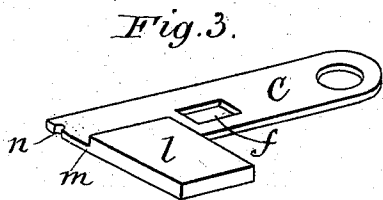
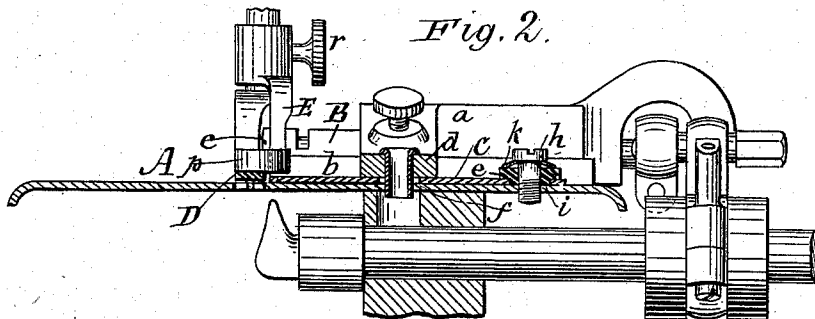
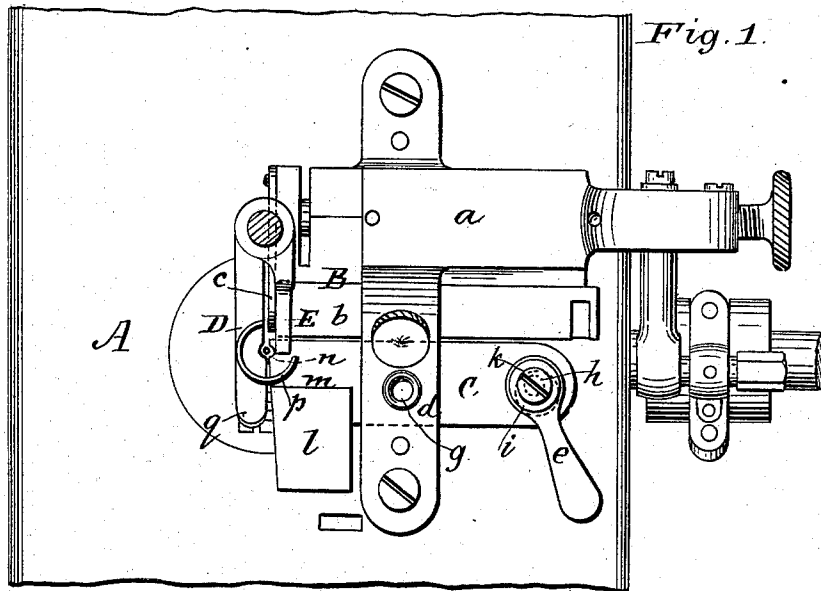
(Model)

S. BORTON & C. H. WILLCOX.

MACHINE FOR SEWING WELTS OR HEMS ON FABRICS.

No. 255,576.

Patented Mar. 28, 1882.



Witnesses:
 E. E. Masson.
 C. J. Hedrick

Inventors:
 Stockton Borton &
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 their attorneys.

UNITED STATES PATENT OFFICE.

STOCKTON BORTON, OF PHILADELPHIA, PENNSYLVANIA, AND CHARLES H. WILLCOX, OF NEW YORK, N. Y., ASSIGNORS TO THE WILLCOX & GIBBS SEWING MACHINE COMPANY, OF NEW YORK, N. Y.

MACHINE FOR SEWING WELTS OR HEMS ON FABRICS.

SPECIFICATION forming part of Letters Patent No. 255,576, dated March 28, 1882.

Application filed July 8, 1881. (Model.)

To all whom it may concern:

Be it known that we, STOCKTON BORTON, of Philadelphia, county of Philadelphia, State of Pennsylvania, and CHARLES HENRY WILLCOX, of New York city, in the county and State of New York, have invented a new and useful Improvement in Machinery for Sewing Welts or Hems on Knit Goods or other Fabrics, which improvement is fully set forth in the following specification.

This invention has reference more particularly to devices for enabling a welt or hem to be sewed upon knit goods with great rapidity and regularity by means of an ordinary sewing-machine with trimming attachment, so that the seam is visible only on one side of the goods; but it is also applicable to the sewing of welts or hems upon other goods, and to the formation of other seams, and may be employed in part independently of trimming mechanism.

In cut hose and other knit goods, in the manufacture of which it is desired to avoid the labor and expense of uniting the hem to the body of the goods loop by loop, as in the so-called "regular-made" goods, it has heretofore been customary, after folding the welt or hem, to run the goods through a sewing-machine and make a seam visible on both sides of the fabric at such a distance from the edge as to prevent raveling. It has been found that by folding the main body of the goods on the line where the seam was to be made, and sewing through the hem and the thickness of the folded edge and trimming close to the line of stitching, a closely-trimmed welt or hem with the seam visible on one side only of the fabric can be produced. This welt or hem approximates in appearance and comfort the welts or hems of regular-made goods without requiring a tithe of the labor and expense in its production, and it is to the manufacture of said welt or hem that the present invention has particular reference.

The present invention consists in the method of hemming or welting fabrics by folding the fabric automatically—i.e., mechanically—guiding the folded fabric to sewing mechanism, and simultaneously sewing and trimming the hem or welt, and also in the mechanical de-

VICES for guiding the goods to be hemmed or welted to the sewing and trimming mechanism, and for holding the same in position to be acted upon by said mechanism. An edge-guide is arranged between the line of stitching and the line of trimming, so that the folded edge is guided to the needle, while the margin of the hem extending beyond the guiding-edge is cut off by the trimmer.

The edge-guide is made adjustable toward and away from the needle to regulate the distance of the seam from the folded edge in accordance with the thickness of the goods. It is preferably secured to the cloth-plate of the machine, on which it is held by friction, and is made adjustable by means of a lever. The presser-foot is cut away on one side of the needle-hole to allow the edge-guide and the cutters of the trimming attachment to be adjusted close to the needle. A projection from the presser-foot extends over the top of the guide (when this is secured to the cloth-plate, as shown herein) to hold down the margin that is to be trimmed off. As in sewing very thin fabric the guiding-edge should be adjusted nearly or quite to the axis of the needle, it is notched for the passage of the needle. The folded edge, on account of the elasticity of the goods, will moreover spring somewhat into the notch, so as to be pierced by the needle, even when the guiding-edge is in line with its point. It is found advantageous, also, to have the guiding-edge in advance of the needle oblique to the line of feed, so as to crowd the fold somewhat on its way to the needle.

Heretofore guides of various kinds have been devised for use on sewing-machines; but none, so far as we are aware, are adapted to the purposes of this invention. The novelty of this portion of the invention resides in special combinations of the edge-guide with the stitching and trimming mechanism, and with the presser-foot and other elements of a sewing-machine or combined sewing and trimming machine, and also in the peculiar construction of the edge-guide itself.

The margin of the hem which is to be trimmed off is clamped during the cutting operation by

a holding-finger that is raised and lowered with the presser-foot. Such a holding-finger has heretofore been used by us, and is described and claimed in our application for improvement in trimmers for sewing-machines, filed October 14, 1880. In that case, however, the holding-finger is connected permanently with the presser-foot, being preferably made in one piece with it. In the present invention the holding-finger is made adjustable with reference to the presser-foot. This is done so that the holding-finger may properly clamp both thick and thin goods, for since in making a welt or hem there will be ordinarily three layers under the presser-foot to one under the holding-finger, the latter, if set for use on thin fabric, would, if thick fabric were introduced, be raised by the three layers under the presser-foot so high as not to clamp at all the single layer beneath, and if set for use on thin fabrics would prevent the presser-foot from clamping the work beneath. The adjustment is most conveniently made by securing the holding-finger to the presser-bar by means of a set-screw. The requisite adjustment could also be obtained by raising and lowering by suitable means the surface against which the holding-finger acts. The adjustment could be made automatic by combining with the holding-finger a spring carried by the presser-foot.

In our aforesaid application of October 11, 1880, a self-adjusting holding-finger is shown; but in that case the holding-finger, being entirely independent of the presser-foot and presser-bar, is not so convenient as one connected therewith and adapted to be lifted at the same time, as in the present invention.

The independent adjustable holding-finger can, it is obvious, be employed in connection with the other parts of the improved machine.

The accompanying drawings represent the principal parts of a sewing and trimming machine embodying the invention.

Figure 1 is a plan view, showing the various parts in position on the cloth-plate of the machine; Fig. 2, a sectional view; Fig. 3, a perspective view of the edge-guide detached, and Fig. 4 a view of the presser-foot and holding-finger. Fig. 5 is an enlarged sectional view, illustrating the operation of the machine.

A is the cloth-plate; B, the trimming mechanism; C, the guide for the folded material; D, the presser-foot, and E the holding-finger.

The trimming mechanism in itself forms no part of this invention, and may be of any ordinary or suitable construction. As shown, it embodies the improvements set forth in our aforesaid application, and consists generally of a frame, *a*, fastened to the cloth-plate, a stationary cutter, *b*, formed of a bar with the cutting-edge at one end, and a vibrating cutter, *c*, attached to a rock-shaft which is operated by a connection into the main shaft of the machine. Both of said cutters are adjustable toward and away from the needle.

The edge-guide C consists of a bar which

is held upon the cloth-plate by an arm, *d*, of the frame *a*, and is adjustable lengthwise by means of the lever *e*. In the middle of the bar is a slot, *f*, through which projects the tube *g* from the arm *d*. The tube limits the longitudinal and prevents lateral movement of the bar. A pin would answer the same purpose; but the tube having been before employed to facilitate the oiling of the main shaft, advantage is taken of it, so that an additional pin is not required. The adjusting-lever *e* is held in place by the screw *h*, which engages in a threaded hole in the cloth-plate, and serves as the fulcrum for the lever.

On the under side of the lever is an eccentric boss, *i*, that fits in a circular hole in the right hand or rear end of the guide C, and when the lever is turned moves said guide endwise. A spring-washer, *k*, is fitted beneath the head of the screw *h*, and by its elastic pressure allows the lever *e* to be shifted, while furnishing sufficient friction to retain it in whatever position it may be placed.

The guide C is provided at its front or left-hand end with a lateral extension, *l*, that is made thicker than the rest of the bar. The extra thickness extends into the line *m*. The guiding-edge is provided with a notch, *n*, for the passage of the needle, and from this notch outward toward the front of the machine is oblique to the line of feed, being inclined to the right, as shown. The presser-foot D is cut away to the right of the needle-hole, so as to allow the guide C and the vibratory cutter *c* to be adjusted close to the needle. A projection, *p*, from the upper surface of the presser-foot partially surrounds the needle-hole and extends over the adjacent end of guide C. It is located just behind the line *m*—that is, behind the rear wall of the thick portion of the guide. The toe *q* of the presser-foot extends beyond the line *m* alongside of the thick portion of the guide, where the guiding-edge, owing to the increased thickness, is of greater depth than it is opposite the needle-hole. When the guide is in its most advanced position a space is left between it and the presser-foot for the passage of the fabric.

The holding-finger E is adjustable, so as to receive between itself and the clamping-surface against which it acts fabrics of different thickness. It is shown as fastened to the presser-bar by the aid of a set-screw, *r*, and arranged to clamp the fabric partly on the stationary cutter *b* and partly on the guide.

The operation of the machine to form a welt or hem is as follows: The guide C and the cutters *b c* being adjusted at the proper distance from the needle, the fabric is folded at *s* to form a hem of the desired width and leave a small margin to be trimmed off, and is again folded at *t* on the line at which the hem is to be secured. It is then introduced beneath the presser-foot of the machine. The folded edge *t* is placed in contact with the edge-guide C, and the margin *u* extends over the top of the guide

and under the projection *p* and holding-finger *E*. The presser-foot being lowered, the machine is started. The folded edge, by reason of the shape of the guide and its arrangement with reference to the presser-foot, is crowded slightly to the left and is retained firmly in position, so that the needle passes through the thickness of said folded edge, as clearly represented in Fig. 5. As the margin *u* is advanced by the feed of the machine the curl is taken out by the projection *p*, which also prevents the fabric from being caught by the needle above the presser-foot. During the action of the cutters the margin is clamped and held stationary by the holding-finger; but the pressure of the latter is relieved during the advance of the feed, being lifted with the presser-foot by the action of the feed-bar.

Modifications may be made in the details of construction without departing from the spirit of the invention, and portions of the invention may be used without the others. For example, any known or suitable means of adjustment, such as an ordinary thumb or set screw, could be used instead of the lever shown. The holding-finger might be adjustably connected with the presser-foot itself instead of with the presser-bar. Instead of or in addition to having the edge-guide of greater thickness opposite the toe of the presser-foot, a separator projecting horizontally in front of the presser-foot could be employed. The edge-guide might be attached to or made in one piece with the presser-foot instead of being attached to the cloth-plate, and various other changes and alterations which will readily suggest themselves could be made.

The machine shown embraces the invention in what is deemed the best mode of carrying the same into effect.

Having now fully described our said invention, we would observe in conclusion that we do not claim herein the welt or hem with concealed stitch, nor the method of folding, sewing, and trimming a welt or hem irrespective of mechanical devices employed for guiding the welt or hem; but

What we do claim, and desire to secure by Letters Patent, is—

1. The combination, with a sewing and trimming machine, of a guide having its guiding-edge between the line of stitching and the line of trimming, substantially as described.

2. The combination, with a sewing and trimming machine, of an adjustable edge-guide capable of adjustment toward and away from the needle between it and the line of trimming, substantially as described.

3. An edge-guide for sewing-machines, notched for the passage of the needle, and having the guiding-edge in advance of the needle oblique to the line of feed, substantially as described.

4. An edge-guide for sewing-machines, having the guiding-edge in advance of the needle oblique to the line of feed, in combination with a presser-foot cut away opposite the guiding-edge to allow it to act in close proximity to the needle, substantially as described.

5. The combination, with the cutters of a sewing-machine trimmer and an edge-guide, of a presser-foot cut away to the right of the needle-hole to allow said cutters and guide to act in close proximity to the needle, substantially as described.

6. The combination of an adjustable edge-guide secured to the cloth-plate of a sewing-machine, with its guiding-edge in advance of the needle oblique to the line of feed, and a presser-foot cut away opposite the guiding-edge of said guide to permit its adjustment close to the needle-hole, substantially as described.

7. The combination of an edge-guide secured to the cloth-plate, a presser-foot, and a projection from the said foot extending laterally over said guide, substantially as described.

8. The combination of the edge-guide, the presser-foot cut away to the right of the needle-hole opposite the said guide, and the projection of the presser-foot partly surrounding the needle-hole and extending laterally over said guide, substantially as described.

9. An edge-guide for attachment to the cloth-plate of a machine, having the guiding-edge of greater depth opposite the toe of the presser-foot than opposite the needle-hole, substantially as described.

10. A holding-finger adjustably connected with the presser-bar of a sewing-machine, substantially as described.

11. The combination of the cutters of a sewing-machine trimmer, a holding-finger, presser-foot, and edge-guide, substantially as described.

12. The method of hemming or welting fabrics by folding the fabric, automatically guiding the folded fabric to sewing mechanism, and simultaneously sewing and trimming the welt or hem, substantially as described.

13. In a sewing-machine, the combination, with means for guiding a fold of material to the stitch-forming mechanism, so that the needle will pass through the said fold, of a trimming mechanism for trimming off the edge of the surplus material extending beyond the fold simultaneously with the sewing, substantially as described.

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

STOCKTON BORTON.
CHAS. H. WILLCOX.

Witnesses:

PHILIP MAURO,
C. J. HEDRICK.