(No Model.) 2 Sheets—Sheet 1.

C. H. WILLCOX.

TRIMMING ATTACHMENT FOR SEWING MACHINES.

No. 390,109. Patented Sept. 25, 1888.

Fig. 1.

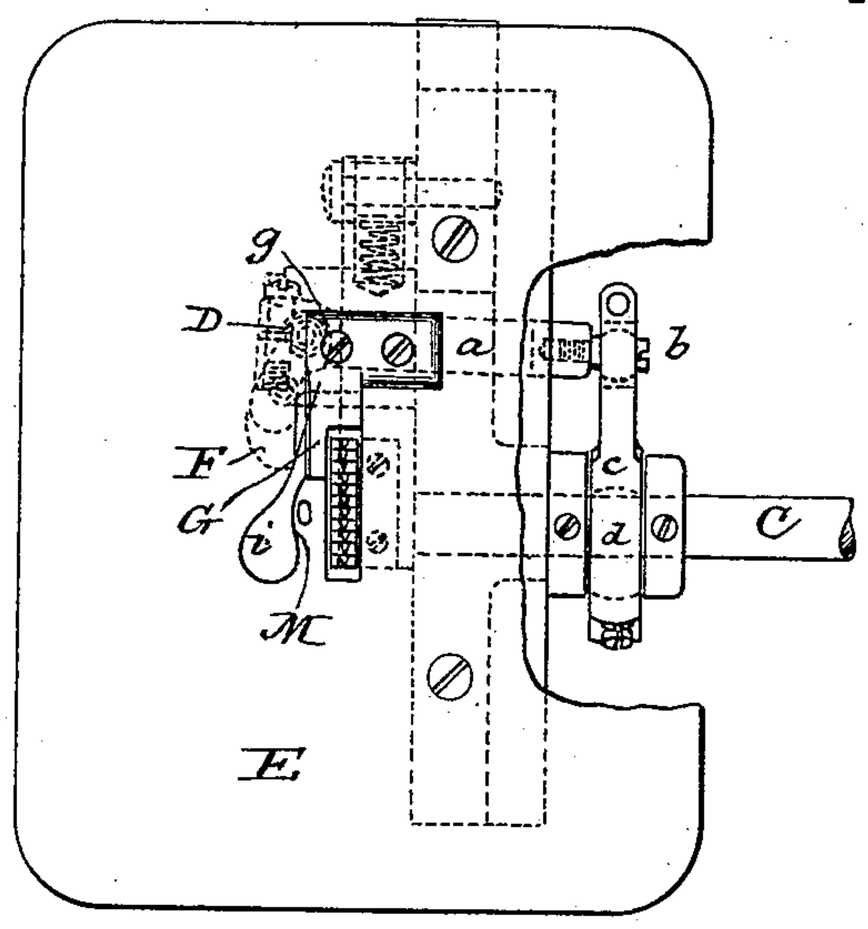


Fig. 2.

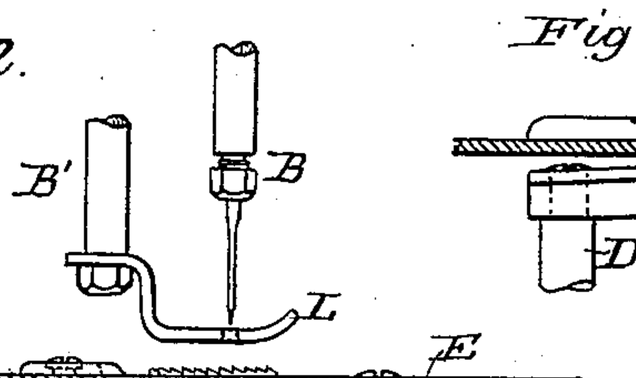


Fig. 6.

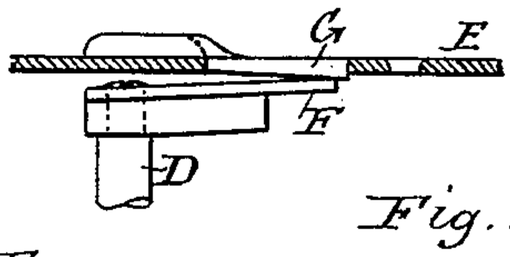


Fig. 7.

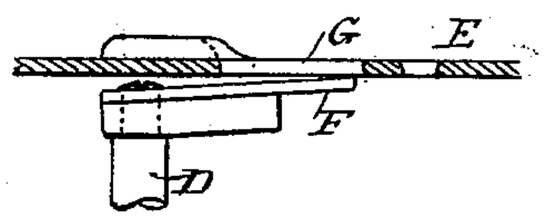
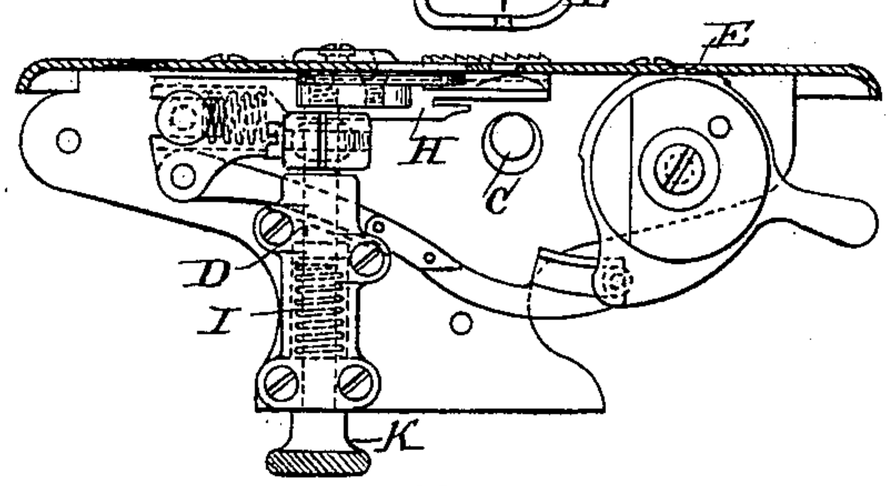


Fig. 3.



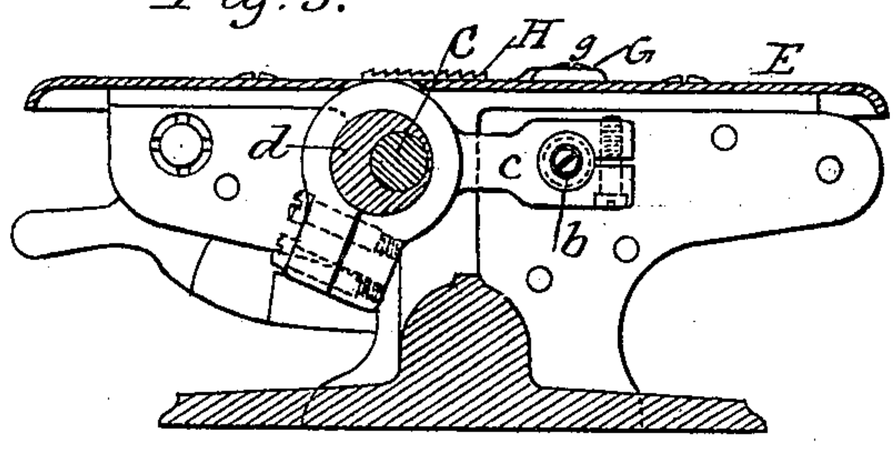


Fig. 4.

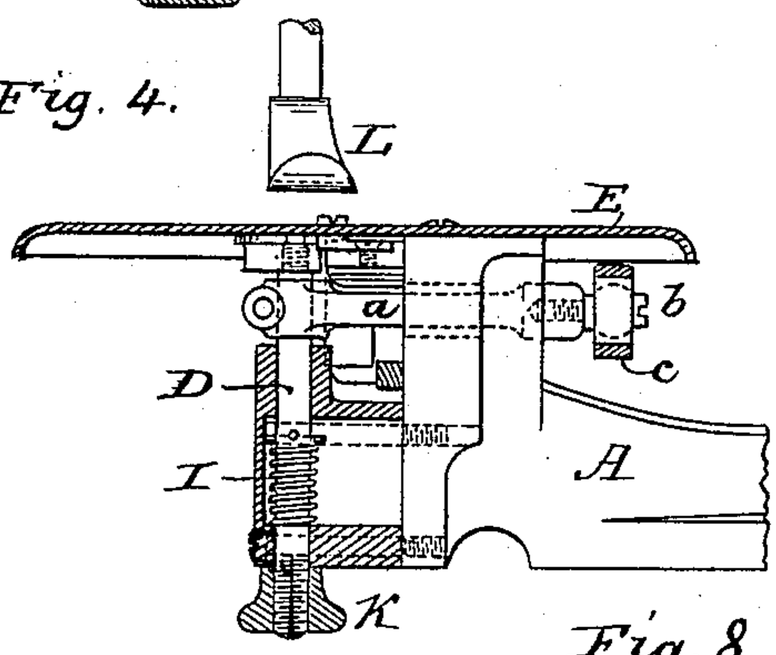


Fig. 5.

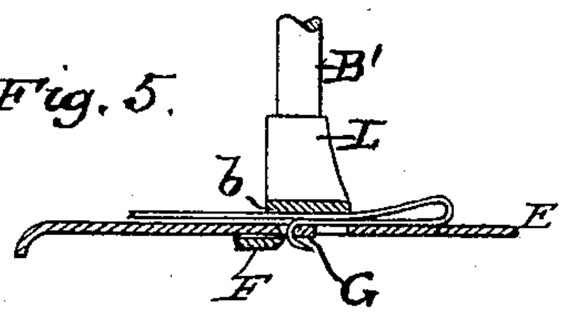
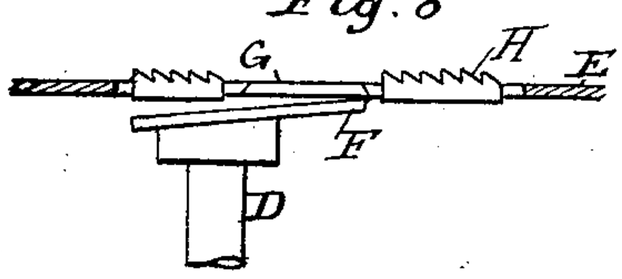


Fig. 8



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

Inventor:
Charles H. Willcox
by A. Pollok
his attorney.

(No Model.)

2 Sheets—Sheet 2.

C. H. WILLCOX.

TRIMMING ATTACHMENT FOR SEWING MACHINES.

No. 390,109. Patented Sept. 25, 1888.

Fig. 9.

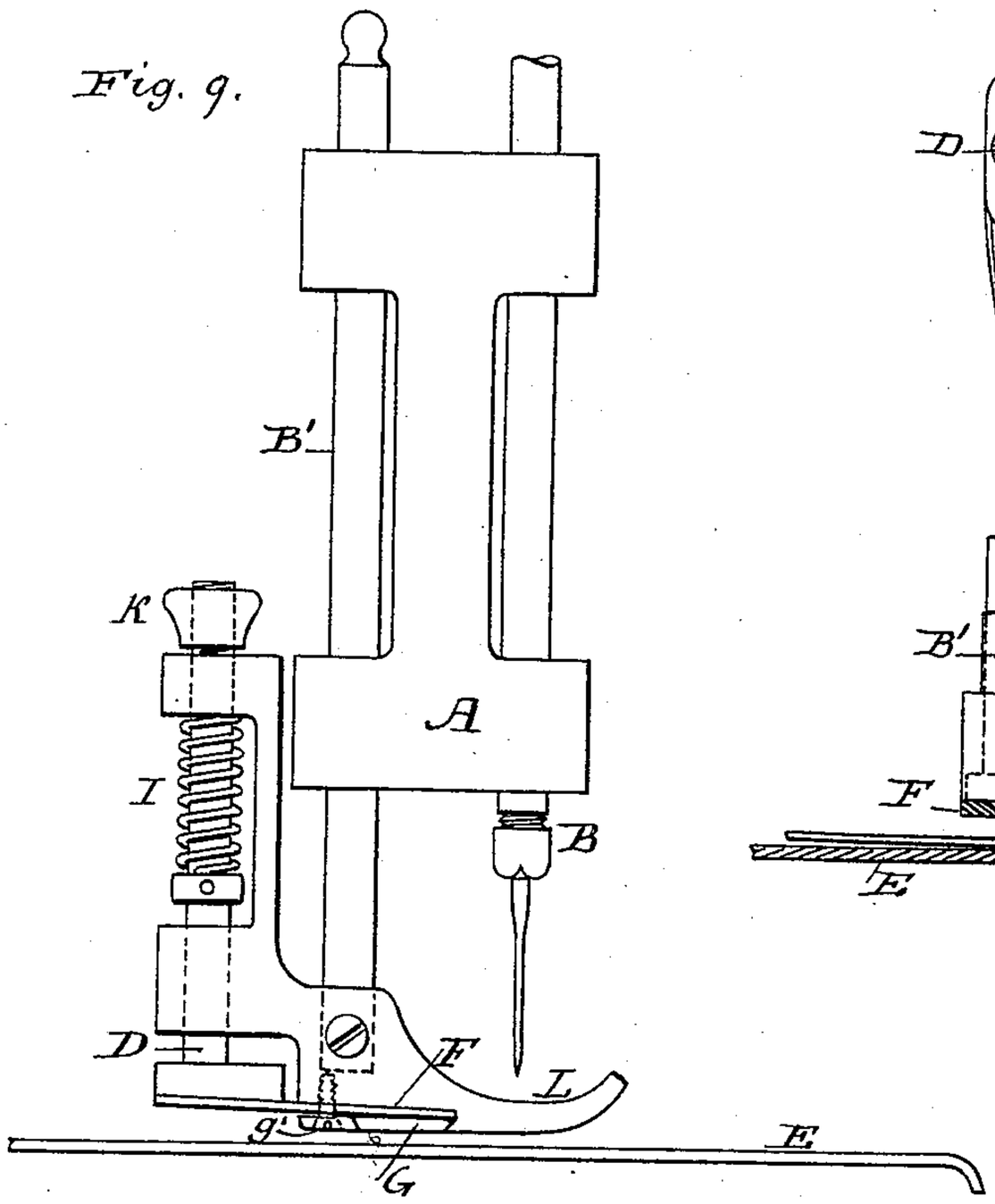


Fig. 11.

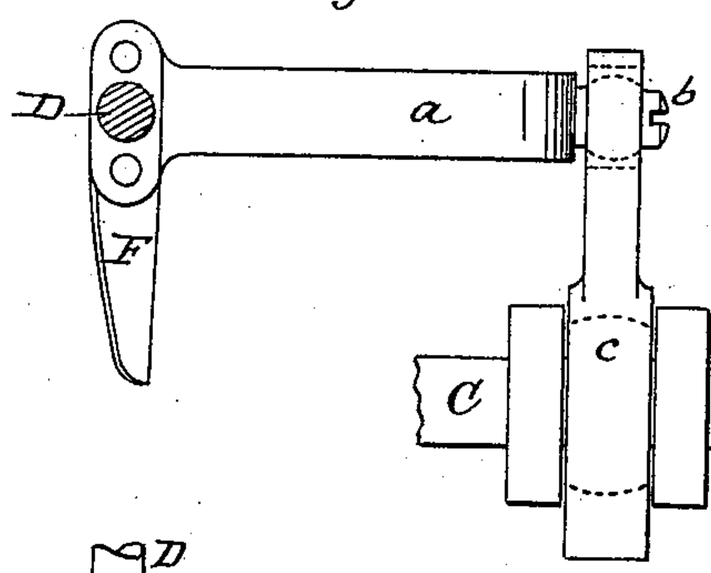


Fig. 10.

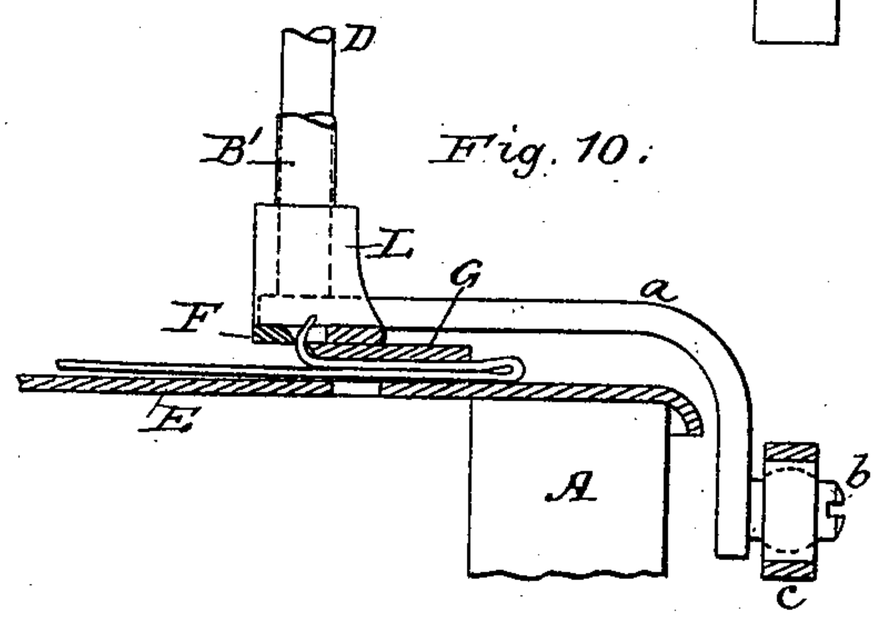


Fig. 12.

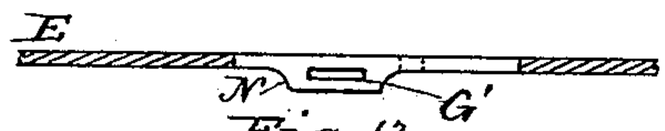


Fig. 13.

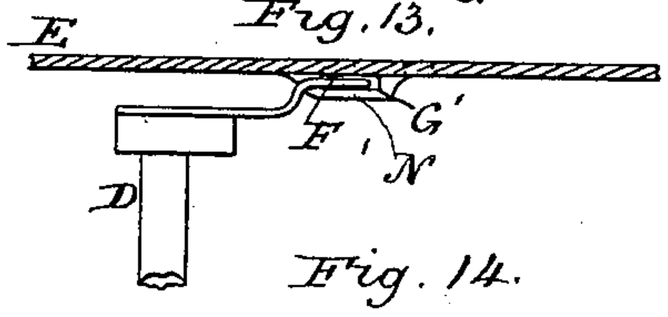
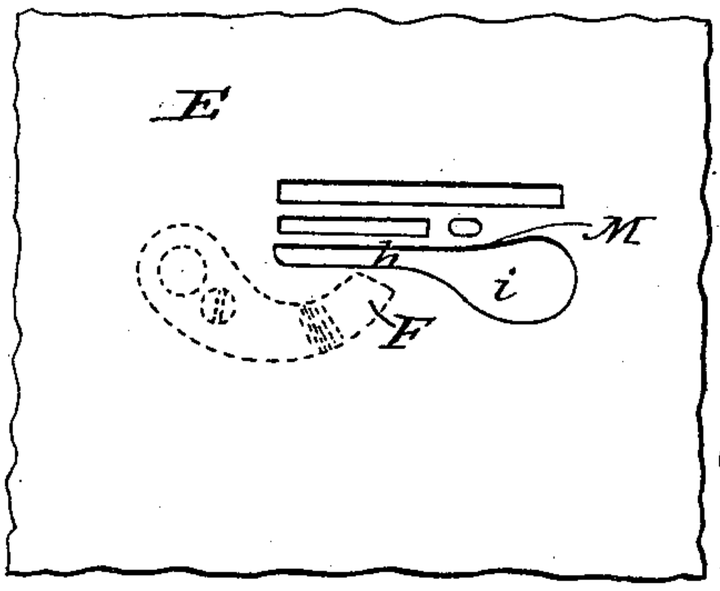


Fig. 14.



Witnesses:

E. E. Masson

C. J. Hedrick

Inventor:

Charles H. Willcox

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his attorney.

UNITED STATES PATENT OFFICE.

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

TRIMMING ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 390,109, dated September 25, 1888.

Application filed June 2, 1882. Serial No. 63,047. (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 more particularly to trimming attachments for removing the surplus margins in plain or single-turn hems or welts or knit goods simultaneously with the sewing of said welts or hems; but it is applicable in whole or in part to other purposes.

The invention consists in an arrangement of the cutter or cutters of the trimmer so as to act upon the fabric when bent at right angles to the plane of the cloth-plate or work-plate, or, in other words, when bent out of the normal plane of the work. For this purpose the cutter or cutters have what may be called a "horizontal disposition" parallel with the cloth or work plate. In the case of knit goods the edges have a natural tendency to curl, which is utilized to bring the edge to be trimmed into the position for severing by the horizontal cutter or cutters.

The invention further consists in special constructions and combinations of parts, as hereinafter indicated.

In the accompanying drawings, which form a part of this specification, are represented several forms of sewing-machine trimmers constructed in accordance with the invention.

Figure 1 is a plan view with the needle-arm and other parts above the cloth-plate removed; Figs. 2 and 3, sectional side elevations looking in opposite directions; Fig. 4, a vertical section, partly in front elevation; and Figs. 5, 6, 7, and 8, detail views, these figures illustrating a shear-trimmer supported on or under the cloth-plate. Fig. 9 is a side elevation; Figs. 10 and 11 detail views, showing a shear-trimmer supported above the cloth-plate; and Figs. 12, 13, and 14 are detail views illustrating a knife-trimmer having a knife or cutter working through a slot.

The sewing-machine represented is the well-known "Willcox & Gibbs single-thread chain-stitch machine," A being the machine-frame; B, the needle and needle-bar; B′, the presser-bar; C, the main shaft; E, the cloth or work plate; H, the feed-bar, and L the presser-foot.

D is a rock-shaft carrying a vibratory cutter, F, which co-operates with a stationary cutter, G, Figs. 1 to 10, or works through a slot, G′, in an opposing surface, Figs. 12 to 14. The sharp edge of cutter F moves in a horizontal plane, so as to trim the fabric resting in a vertical position against the stationary cutter G or across the slot G′.

Referring to Figs. 1, 2, 3, and 4, the rock-shaft is supported vertically in bearings, and is operated from an eccentric, *d*, on the main shaft C, through the link *c*, pin *b*, and arm *a*. It is capable of a slight movement endwise in its bearings, and is combined with a spring, I, which tends to force it toward the cloth-plate or work-plate and to hold the edges of the cutters F G in contact with each other. These cutters are preferably arranged with their cutting-edges slightly oblique to each other, so that at each vibration of the cutter F it and the rock-shaft D have a slight vertical reciprocation under the action of the oblique edges in one direction and of the spring I in the other. A set-nut, K, limits the movement of the rock-shaft under the action of the spring, and permits by suitable adjustment the contact of the cutters F G at any desired point in the vibration of the cutter F. In order to allow the vibratory and longitudinal motion to the rock-shaft, the pin *b* is connected with the link *c* by a ball-joint. A ball-eccentric, *d*, is used. The cutter G is adjustably and detachably secured to its support.

In Figs. 1 to 7 the rock-shaft is journaled in bearings of the machine-frame below the cloth-plate, and the cutter G is attached by set-screws *g* on the cloth-plate, passing through slots in said cutter.

In Figs. 9 to 11 the rock-shaft is journaled in a frame attached to and carried by the presser-bar, so as to be raised and lowered with the presser-foot, and the cutter G is secured in a groove in the bottom of the presser-foot, being clamped therein by the removable piece *g′*.

The cutter G, Figs. 1 to 7, is shown as L-shaped, with the portion provided with the cutting-edge below the body of the cutter, so

as to extend through the opening in the cloth or work plate. Instead of this form of cutter, a straight bar could be set in a groove in the cloth-plate, as shown in my application filed of even date herewith and numbered 63,046. This form is represented in section in Fig. 8. The obliquity of the cutting-edges to each other may be obtained in various ways, either by properly shaping the stationary cutter, as in Fig. 6, or by setting the vibratory cutter obliquely on its shaft, as in Figs. 7 and 8, or by arranging the rock shaft slightly out of the vertical.

In front of the cutters F G is a projection, M, formed by the curved edge of the slot or opening *i* in the cloth-plate, the object of which is to smooth the curled edge of the knit goods, so that it will fit snugly to the edge of cutter G.

In Figs. 1 to 8 the operation is improved by the slot *h*, extending alongside the stationary cutter, and starting from a large opening, *i*, opposite the needle-hole, as best shown in Fig. 14.

Before proceeding to describe the other figures the operation of trimming a single-turn welt or hem will be explained.

Referring to Fig. 5, the fabric is folded upon itself and is introduced between the presser-foot and cloth-plate of the machine, with the fold on the cloth-plate. The free edge is arranged smoothly in the slot *h* and the opening *i* around the projection M and edge of cutter G. The machine being started, the folded portion is stitched to the main body of the goods, and the surplus margin is removed simultaneously by the cutters F G, leaving a margin equal to the distance of the cutting-edges below the top of the cloth-plate.

When the trimmer is supported from above, as in Figs. 9 to 11, the fabric should be inserted under the presser-foot with the fold uppermost; otherwise the sewing and trimming proceeds as before. When the fold is uppermost, however, the chain with single-thread sewing-machines then appears upon the right side of the article, which may not always be desirable.

In order to facilitate the handling of the fabric to be welted or hemmed, the cutters are arranged on the side of the needle opposite from the goose-neck of the machine; but, if desired for any purpose, the cutters may be placed on the same side of the goose-neck.

In the machine shown in Figs. 12, 13, and 14, the cutter F is a knife working through a slot, G′, made either in a depending lip, N, on the cloth-plate or in the side of the presser-foot. As there are no shear-blades to be held in contact, the spring I and set-nut K are or may be dispensed with. No change in the operating mechanism is necessary. Instead of using a vibratory knife, various other styles of trimmer could be used.

The operation of sewing and trimming is as before explained—that is to say, the layer or margin to be trimmed is bent out of the plane of the body of the work and trimmed simultaneously with the sewing. It is preferred to have the trimming take place when the feed-surface is out of action and the fabric stationary, although it is possible and practicable to operate on the fabric during the advance of the feed-surface. It is also preferred to use the shear-trimmer first described, as being more efficient in cutting than other forms; but the invention includes sewing-machine trimmers generally adapted to operate in the manner described—that is to say, upon a layer or layers of fabric bent out of the plane of the cloth or work plate or normal plane of the body of the work.

The term "cutting portion" of a trimmer as herein employed is designed to include the means for cutting, whether comprising one or more cutting devices.

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

1. The combination, with the stitch-forming mechanism and feed mechanism of a sewing-machine having a cloth-plate upon which the fabric rests while being sewed, of a trimming attachment having a cutting-blade located in a plane approximately parallel to said cloth-plate, with its cutting-edge located and moving in a plane approximately parallel to said cloth-plate, and means for operating said blade, whereby fabric resting on said plate is stitched by the needle, and its margin beyond the line of stitching, while standing at an angle to the body of the fabric, is separated therefrom by said trimmer, substantially as described.

2. In combination with the stitch-forming mechanism of a sewing-machine, a trimming attachment comprising a stationary blade having a horizontal cutting-edge and located in a horizontal plane, and a movable blade, also having a horizontal cutting-edge and located in a horizontal plane, said movable blade being adapted and designed to be moved across the stationary blade, the edges of both blades passing, whereby a horizontal shear cut is obtained, substantially as described.

3. In combination with the stitch-forming mechanism of a sewing-machine, a vertical shaft carrying a cutter with a horizontal cutting-edge, a stationary cutter also having a horizontal cutting-edge, both said cutters being located in horizontal planes, and a vibrating arm adapted and designed to be moved in a horizontal plane, whereby the movable cutter is moved horizontally past the edge of the stationary cutter, substantially as described.

4. The combination, with the stitch-forming devices and feed mechanism of a sewing-machine having a horizontal cloth-plate, of a movable cutter, a vertical shaft carrying said cutter, a co-operating stationary blade, and connections for operating said cutter so that its cutting-edge moves in a plane approximately parallel to that in which the work is advanced by said feed, substantially as described.

5. The combination, with the stitch-forming devices and feed mechanism of a sewing-ma-

chine and the presser-foot and cloth-plate thereof, of a horizontally-located trimmer and means for imparting thereto movement in a plane parallel to said cloth-plate, whereby fabric resting upon said plate is stitched by a vertically-moving needle and its edge or part outside of or beyond the line of stitching, while turned or standing at an angle to the body of the fabric, is separated from the latter by a horizontal cut, substantially as described.

6. The combination, with a sewing-machine having a horizontal cloth-plate, of a trimming attachment comprising a cutting-blade located and moving in a horizontal plane and having its cutting-edge in such horizontal plane, said cutting-edge being disposed and arranged on the side of the needle away from the goose-neck, whereby the fabric is stitched by a vertically-moving needle and the surplus edge is severed from the main portion of the fabric by a horizontal cut while standing at an angle to said cloth-plate, 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.