April 29, 1941. V. J. SIGODA 2,239,743

TRIMMING DEVICE FOR SEWING MACHINES

Filed Jan. 31, 1938 3 Sheets-Sheet 1

Fig. 1.

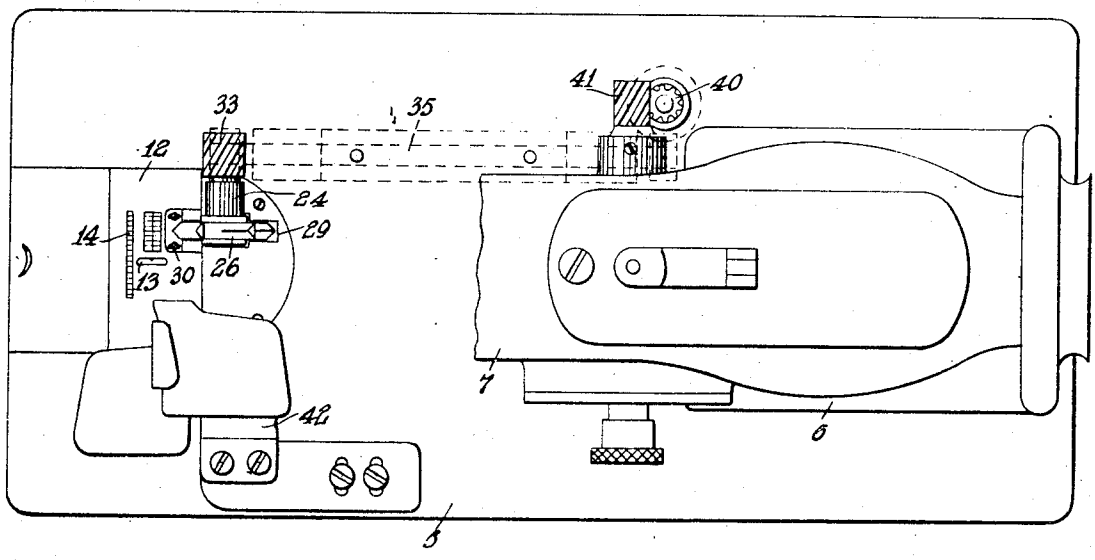
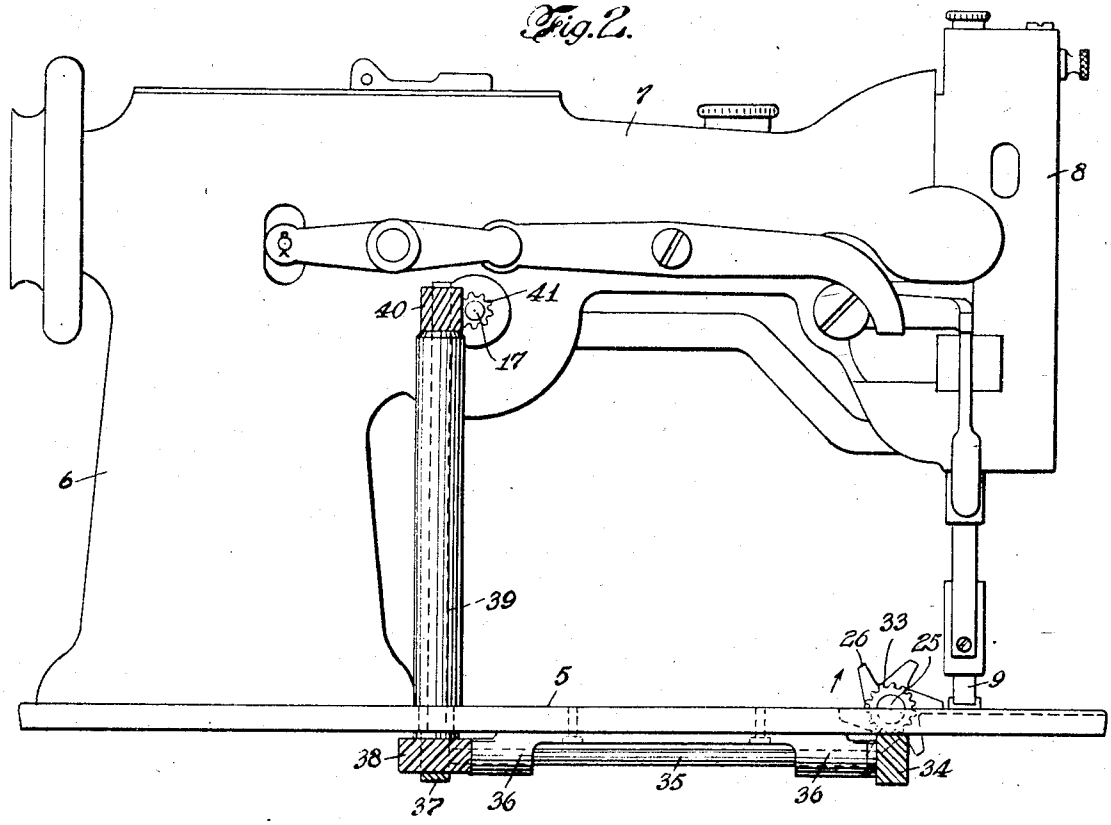


Fig. 2.



INVENTOR.
VICTOR J. SIGODA

BY M. C. Lyddane

ATTORNEY.

April 29, 1941. V. J. SIGODA 2,239,743

TRIMMING DEVICE FOR SEWING MACHINES

Filed Jan. 31, 1938 3 Sheets-Sheet 2

Fig. 3.

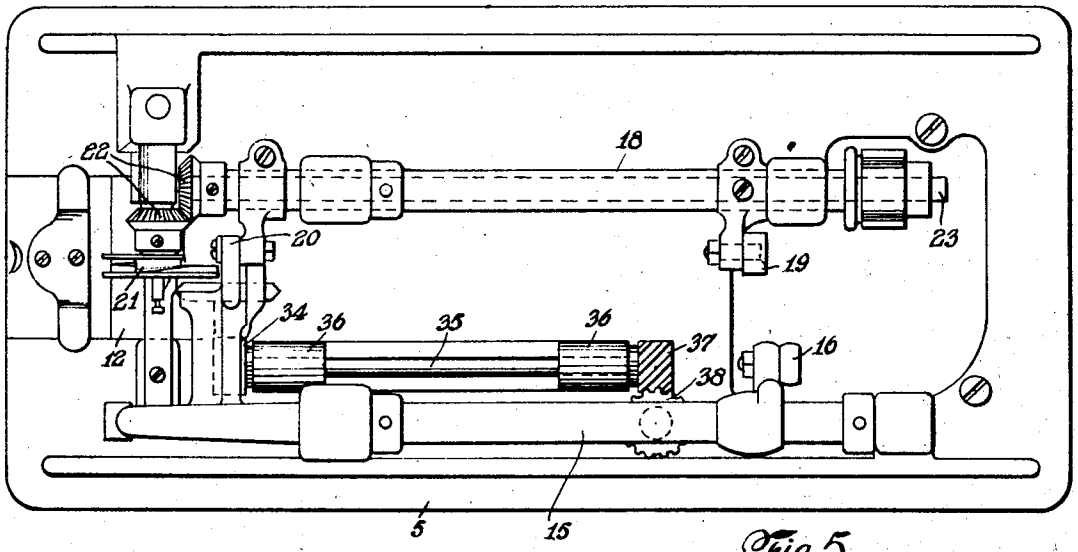


Fig. 4.

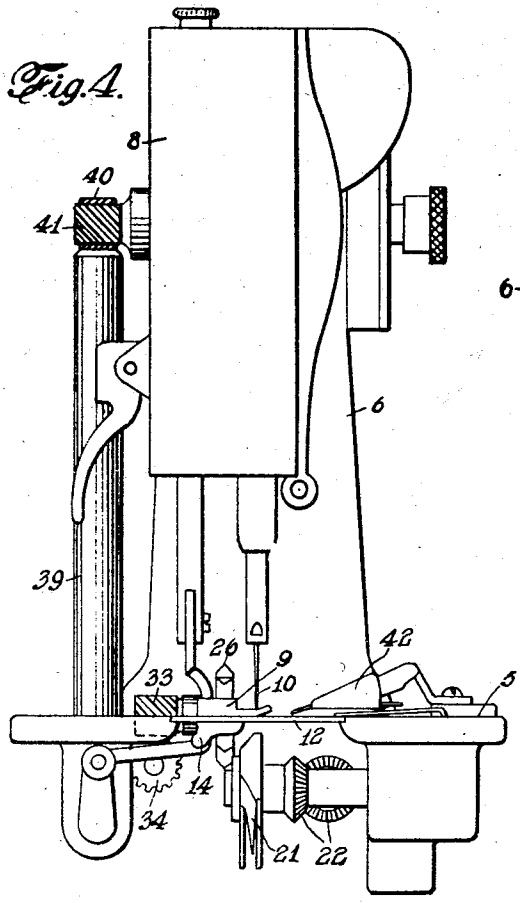


Fig. 5.

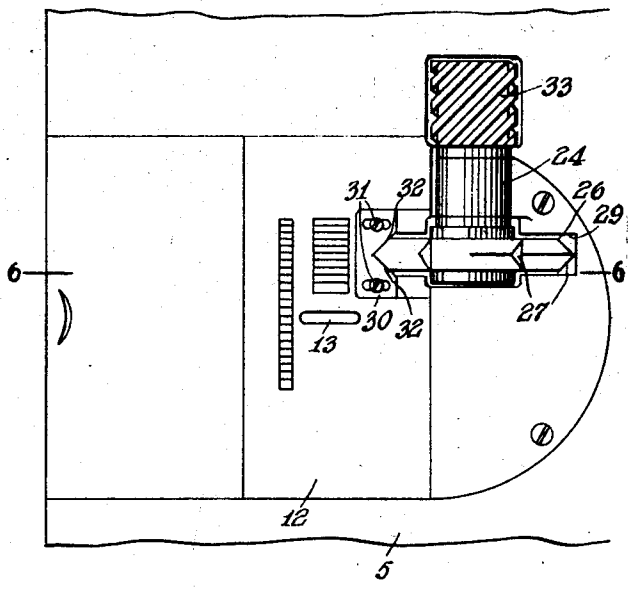
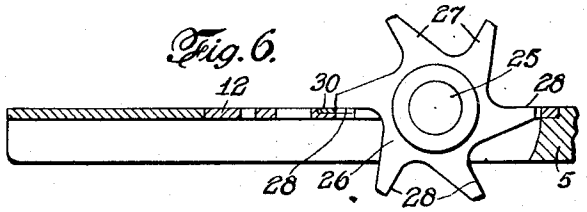


Fig. 6.



INVENTOR.
VICTOR J. SIGODA

BY M. C. Sydance

ATTORNEY.

April 29, 1941. V. J. SIGODA 2,239,743

TRIMMING DEVICE FOR SEWING MACHINES

Filed Jan. 31, 1938 3 Sheets-Sheet 3

Fig. 7.

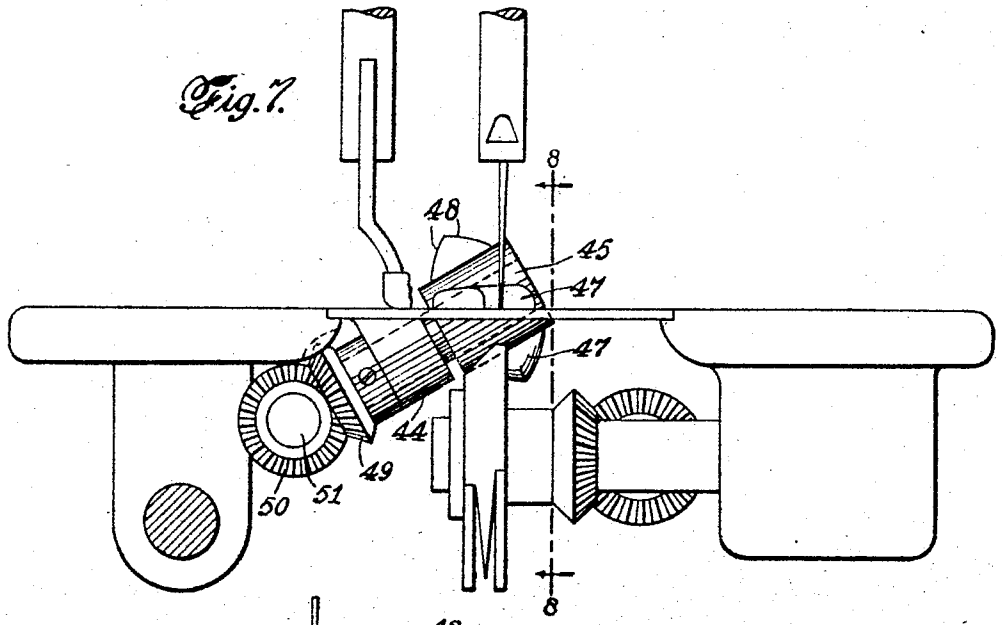


Fig. 8.

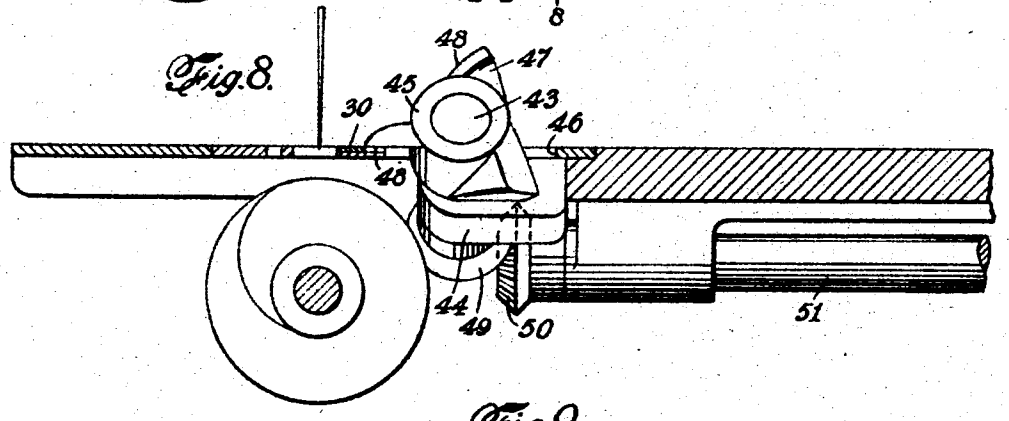
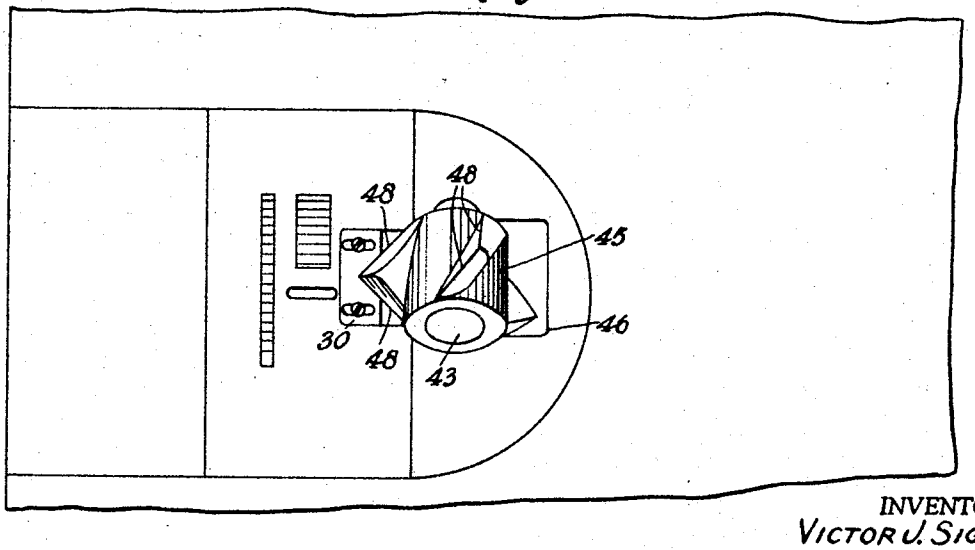


Fig. 9.



INVENTOR.
VICTOR J. SIGODA

BY M. C. Lyddane

ATTORNEY.

Patented Apr. 29, 1941 2,239,743

UNITED STATES PATENT OFFICE

2,239,743

TRIMMING DEVICE FOR SEWING MACHINES

Victor J. Sigoda, Brooklyn, N. Y., assignor to Man-Sew Pinking Attachment Corp., New York, N. Y., a corporation of New York

Application January 31, 1938, Serial No. 187,847

10 Claims. (Cl. 112—124)

This invention relates to trimming devices for sewing machines, and has for its general object and purpose to provide a simply constructed and efficiently operating device, readily adaptable to standard makes of sewing machines, for pinking or trimming the edges of the fabric as it is sewed.

Heretofore, such devices have been provided with horizontally or vertically rotating cutters mounted above or below the bed plate of the machine and provided with cutting or trimming teeth upon which the fabric is forcibly pressed by a roller or other cooperating element. It has also been suggested to provide a vertical reciprocating type of cutter having a single cutting tooth or blade to cooperate with a stationary shear plate. Most of these prior art devices are comparatively complicated and occupy considerable space, obstructing the vision of the worker and the free manipulation of the fabric material over the surface of the bed or cloth plate of the machine.

It is therefore, the primary object of my present invention to provide a trimming device which obviates these objections, eliminating the use of pressure rollers or the like and with a minimum of projection of the cutting or trimming member and its operating means above the surface of the machine bed.

A more particular object is to provide a cutting or trimming member in the form of a multi-toothed element rotatable about a stationary axis, and the teeth thereof having a chopping or cutting action on the fabric material, in cooperation with a stationary shear plate attached to the throat plate.

In one embodiment of the invention, I mount said rotary cutter or chopper with its axis disposed in a horizontal plane which is substantially coincident with the plane of the upper surface of the bed or cloth plate of the machine while in another embodiment thereof I may position the axis of said cutting or trimming member at an oblique angle intersecting the plane of said bed plate and with the operating means for the cutter located wholly below the plane of said plate.

It is also another object of my invention to provide a trimming device as above characterized in which said rotary cutting or chopping member may be either continually or intermittently actuated independently of the feed dog operating mechanism of the machine and in synchronized relation therewith.

With the above and other objects in view, the invention consists in the improved trimming device for sewing machines and in the form, construction and relative arrangement of its several parts, as will be hereinafter more fully described, illustrated in the accompanying drawings and subsequently incorporated in the subjoined claims.

In the drawings wherein I have illustrated several simple and practical embodiments of my invention and in which similar reference characters designate corresponding parts throughout the several views:

Fig. 1 is a plan view, with certain parts broken away, illustrating one practical embodiment of the present invention,

Fig. 2 is a side elevation, the feed dog operating shaft being omitted,

Fig. 3 is a bottom plan view of the bed plate of the machine and the mechanism mounted thereon,

Fig. 4 is a front end elevation,

Fig. 5 is a fragmentary plan view on an enlarged scale showing the throat plate and relative arrangement of the trimming cutter,

Fig. 6 is a sectional view taken substantially on the line 6—6 of Fig. 5, the feed dog being omitted,

Fig. 7 is a detail elevation showing a slightly modified form of the invention,

Fig. 8 is a sectional view taken substantially on the line 8—8 of Fig. 7, and,

Fig. 9 is a fragmentary top plan view similar to Fig. 5 showing the modified form of cutter.

Referring in detail to the drawings, in which I have illustrated only such parts of a standard make of sewing machine, as is necessary to a clear understanding of the present invention, 5 indicates the bed or cloth plate of the machine and 6 the hollow pedestal at one end thereof, provided at its upper end with the laterally extending hollow arm 7 in which the actuating shaft for the needle and presser-foot operating mechanism in the guide head 8, is suitably mounted. 9 indicates the presser-foot and 10 the vertically vibrating needle movable through the slot or opening 13 in the throat plate 12, which is removably secured in flush relation with the upper surface of the bed plate 5. The throat plate is provided with suitable openings for the four-motion feed dog, shown at 14, to which longitudinal motion is imparted from the shaft 15, journalled on the underside of the bed plate 5, in the usual manner, and actuated by the connecting bar or rod 16 from an eccentric on the transverse shaft 17 which is suitably geared to the needle actuating shaft in the arm 7 of the

machine. A second eccentric on said shaft actuates the tubular shaft 18 by the vertical connecting bar 19, said shaft having an arm on one end connected with the feed dog as at 20, to vertically oscillate said dog.

The stitch forming mechanism includes the rotary hook 21 driven through gearing 22 from shaft 23 extending through the tubular shaft 18 and operatively connected in any suitable manner with the needle actuating shaft.

All of the parts above described are of standard construction and well-known in the art, and it will, of course, be understood that my invention, as hereinafter explained, is also applicable to other standard makes of sewing machines, in which the corresponding or equivalent elements for performing similar functions may be otherwise constructed and arranged than as herein described.

In one embodiment of my invention I provide the throat plate 12 with a suitable bearing 24 in which the shaft 25 having the cutter 26 fixed to one of its ends is journalled. This cutter is provided with a desired number of suitably spaced teeth 27. Each of these teeth has cutting edges 28 disposed in a common plane intersecting the axis of the shaft 25. These cutting teeth are suitably shaped at their outer ends to form pinking cuts in the edge of the fabric of a predetermined ornamental design.

The cutter 26 is operable through an opening 29 in the throat plate and, at one end of this opening, a shear plate 30 is counter-sunk in the upper surface of the throat plate and adjustable with respect thereto and with relation to the cutter 26 by the screws 31 threaded in the throat plate and extending through slots in said shear plate. This shear plate is provided with the cutting edges 32 corresponding in form with the cutting edges 28 of the teeth 27.

Upon the other end of the shaft 25 a spiral or worm gear 33 is suitably fixed and is in mesh with a similar gear 34 fixed to one end of the shaft 35 journalled in suitably spaced bearings 36 on the underside of the machine bed 5. The other end of the shaft 35 carries a worm gear 37 engaged with the worm 38 on the lower end of a vertical shaft 39 mounted in the machine bed 5. The upper end of this shaft carries a spiral or worm gear 40 in mesh with the worm 41 on one end of the shaft 17 projecting beyond the shaft bearing on one side of the arm 7. The gear ratios are such that the rotation of the cutter 26 will be properly synchronized with the operation of the stitch forming mechanism and the feed dog 14 so that each tooth 27 will engage and form a pinked cut in the fabric only while the fabric is held stationary by the presser-foot 9 during each stitch forming operation and immediately after the stitched fabric passes rearwardly of the vertically vibrating needle 10. It will be understood that, if desired, conventional means of an approved type may be incorporated in the driving connections between the cutter and shaft 17 for the purpose of transmitting an intermittent instead of a continuous rotary motion to said cutter, whereby a series of pinking cuts will be made in the fabric at suitably spaced intervals.

As illustrated in Fig. 1 of the drawings, I have shown a standard type of folder 42 adjustably mounted upon the bed plate of the machine for the purpose of forming a fold in the edge of one piece of fabric and guiding the same into superimposed relation upon an underlying piece of fabric to thereby form a connecting seam as the two pieces of fabric are fed rearwardly to the stitch forming mechanism and beneath the presser-foot 9.

In the operation of the trimming device above described, as the stitches are successively formed by the cooperative action of the needle 10 and hook 21, after the formation of each stitch and while the single or multiple layers of fabric are securely gripped or held between the presser-foot 9 and feed dog 14, one of the teeth 27 of the rotating cutter moves downwardly upon the fabric, and as its cutting edges 28 engage the fabric, they cooperate with the cutting edges 32 of the shear plate 30 and cut sections from the edge or edges of the fabric, conforming in shape or design to the ends of the teeth 27. In this manner it will be clear that the teeth of the rotary cutter have a vertical cutting or chopping action upon the fabric to produce regularly spaced pinking cuts therein which will be uniformly accurate as to size and shape. It will be observed that by reason of the construction and mounting of the rotary cutter and its operating means, a very simple and compact relation of the parts is obtained with a minimum of projection of the cutter above the surface of the bed plate. The elimination of a roller or other equivalent element and its mounting or supporting means for pressing the fabric upon the teeth of the cutter, enables the worker to have a clear and unobstructed vision of the work, which may be manipulated and fed with greater ease and facility to the stitch forming mechanism of the machine.

In Figs. 7, 8 and 9 of the drawings I have illustrated a slightly modified form of my invention, in which all of the operating parts for the cutter are mounted wholly beneath the bed plate of the machine, while at the same time, a minimum of projection of said cutter above the surface of the bed plate is obtained. In this case, the axis of the cutter shaft 43 is disposed at an angle of substantially 30 degrees with respect to the plane of said plate, and, as herein shown, is journalled in a suitable bearing 44 on the underside of the throat plate. Upon one end of said shaft, which intersects the plane of the throat plate, the cutter 45 is suitably fixed and operates in an opening 46 in the throat plate. This cutter is provided with a plurality of spaced triangularly shaped cutting teeth 47 which are helically or spirally arranged upon the periphery of the cutter so that their cutting edges 48 are respectively positioned in a plane intersecting the axis of the cutter and shaft 43 at an oblique angle, as clearly seen in Fig. 7 of the drawings. Therefore as the teeth 47 successively approach the shear plate 30 and engage the fabric, they will be disposed in a true horizontal plane to properly cooperate with the cutting edges of the shear plate and thus insure a clean sharp pinking cut.

Upon the lower end of the obliquely inclined cutter shaft 43 the beveled gear 49 is fixed and in constant mesh with a similar gear 50 on one end of the cutter drive shaft 51, the latter shaft being driven from the transverse shaft 17 of the sewing machine, in the manner above described. It will thus be seen that the major portion of the cutter shaft 43 as well as one-half of the cutter 45 is disposed entirely below the plane of the upper surface of the bed plate of the machine, so that a very minimum of obstructive parts to the vision or the movements of the worker's hands in guiding and directing the work is made possible. Also by the use of this type of cutter and mounting therefor, it becomes possible to cut or

trim the work along a line very close to the line of stitching.

In both forms of my invention as above described, it will be understood that the cutter elements may be of any desired size or diameter and provided with a greater or less number of cutting teeth than illustrated in the accompanying drawings. Also, while I prefer to drive the rotary pinking cutter or chopper independently of the feed dog operating mechanism, it is also within the scope of my invention to provide driving means for said cutter operatively connected with one of the operating elements for the feed dog and actuated in synchronized relation with the latter. Various other changes or modifications in the construction and relative arrangement of the several cooperating elements are possible, without materially affecting the functional operation and advantageous results of my invention as herein described. Accordingly it is to be understood that I reserve the privilege of incorporating my present improvements in such other alternative structural forms that may fairly be considered to be within the spirit and scope of the appended claims.

I claim:

1. In trimming mechanism for sewing machines, a rotatable cutter having a plurality of spaced cutting teeth, and means for mounting said cutter with the teeth thereof moving in a path which intersects an edge of the fabric material at an angle relative to the path of feeding movement of the material to the stitch forming mechanism of the machine.

2. In trimming mechanism for sewing machines, a cutter shaft and means for rotatably mounting said shaft upon the bed plate of the machine, and a toothed cutter fixed to said shaft having spaced teeth movable in a path which intersects the edge of the fabric to be trimmed at an angle with respect to the path of movement thereof, and driving connections between said cutter shaft and the needle actuating shaft of the machine.

3. In combination with the throat plate of a sewing machine, a toothed cutter rotatably mounted on said throat plate, with the orbital path of its cutting teeth intersecting the plane of the throat plate, a shear plate, and means for adjustably securing said shear plate on the throat plate in cooperative relation to the teeth of the cutter.

4. In combination with the throat plate of a sewing machine, a trimming cutter mounted upon said throat plate in intersecting relation therewith and for rotation about an axis obliquely inclined to the plane of said plate.

5. In combination with the throat plate of a sewing machine, a trimming cutter mounted upon said throat plate for rotation about an obliquely inclined axis and in intersecting relation to the plane of said plate, said cutter having spaced teeth each provided with cutting edges disposed in a plane angularly intersecting the cutter axis.

6. In combination, a sewing machine throat plate provided with a shaft bearing, a shaft disposed transversely of the throat plate and journalled in said bearing with one of its ends in the plane of said throat plate, a trimming cutter connected to said end of the shaft and rotating in a path intersecting the plane of the throat plate, the other end of said shaft being disposed wholly below the throat plate, and a driving member connected to the latter end of the shaft.

7. In combination with the throat plate of a sewing machine, a cutter shaft and means for rotatably mounting said shaft upon the throat plate, a toothed cutter fixed to said shaft having spaced teeth movable in a plane transverse to the line of feed of the fabric through the machine, and shearing means coacting with the cutting edges of said teeth.

8. In combination with the throat plate of a sewing machine, a trimming cutter and drive means for said cutter including a shaft mounted upon and in intersecting relation to said throat plate.

9. In combination with the throat plate of a sewing machine, a cutter shaft, and means for mounting said shaft upon the throat plate with its axis disposed at an angle relative to the plane of said plate, and a toothed cutter fixed to said shaft having its cutting teeth spirally disposed relative to said axis.

10. In combination with the throat plate of a sewing machine, a cutter shaft, and means for mounting said shaft upon the throat plate with its axis disposed at an angle relative to the plane of said plate, and a toothed cutter fixed to said shaft having spaced teeth each provided with cutting edges disposed in a plane angularly intersecting the cutter axis.

VICTOR J. SIGODA.