G. SCOTT.

TRIMMING MECHANISM FOR SEWING MACHINES.

APPLICATION FILED OCT. 27, 1906.

1,117,607.

Patented Nov. 17, 1914.

4 SHEETS—SHEET 1.

Fig. 1.

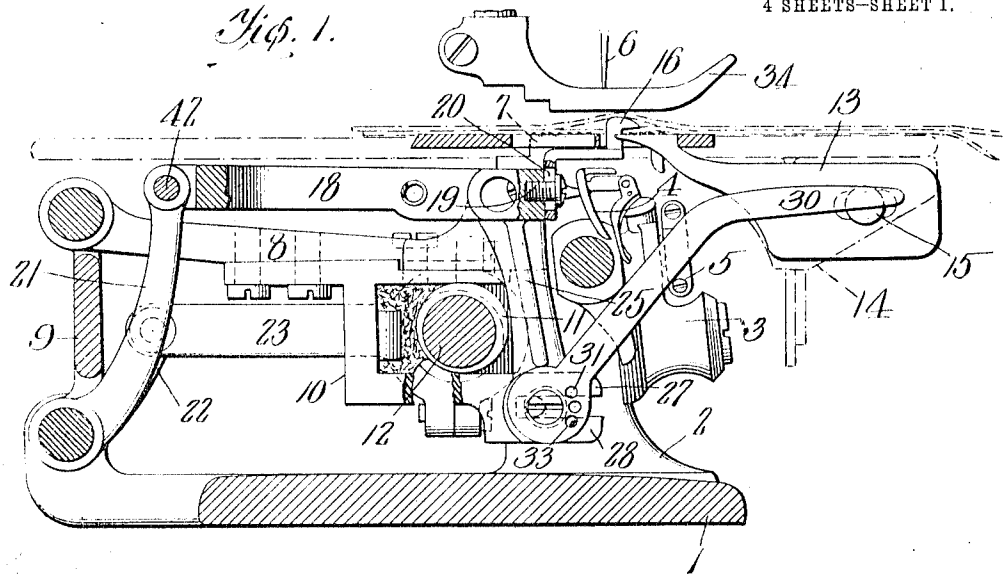
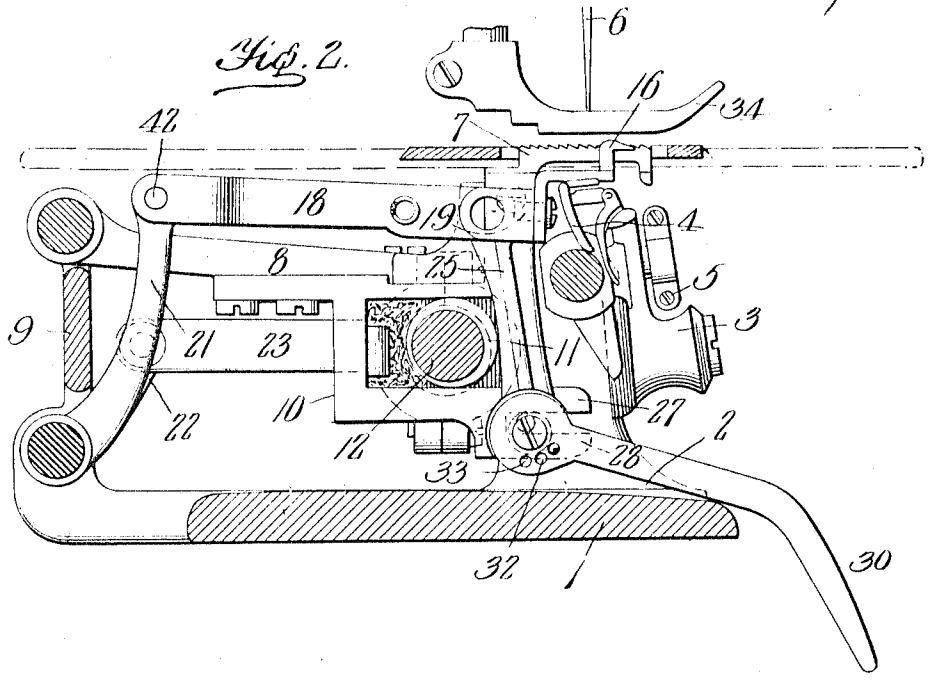


Fig. 2.



Witnesses

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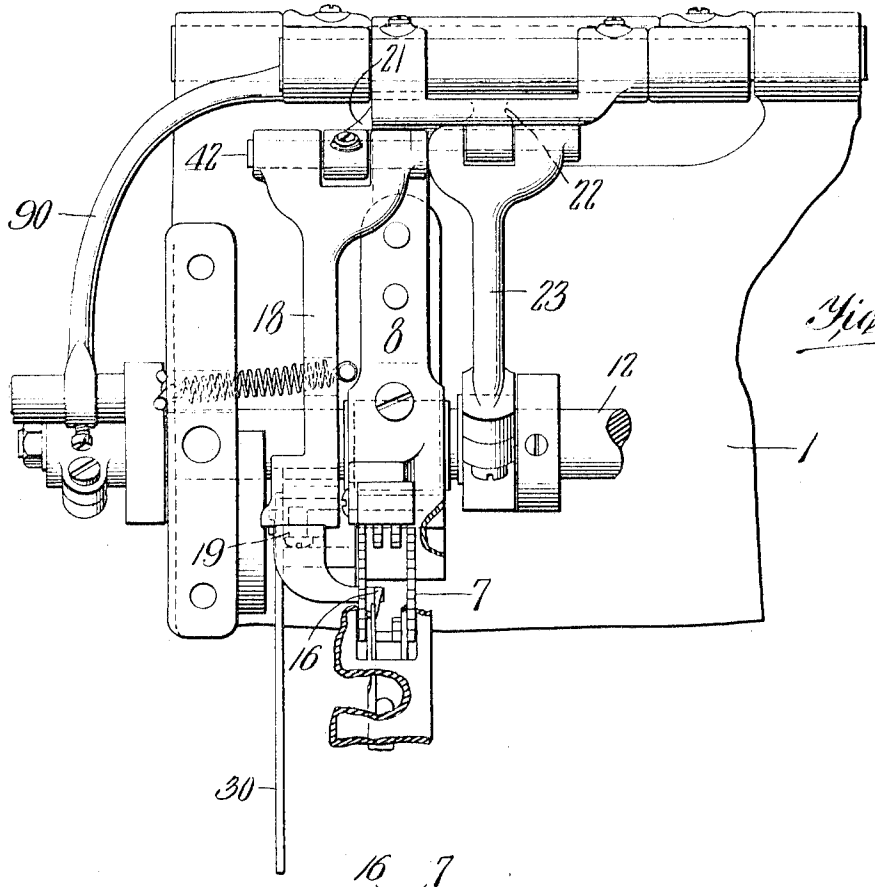


Fig. 3.

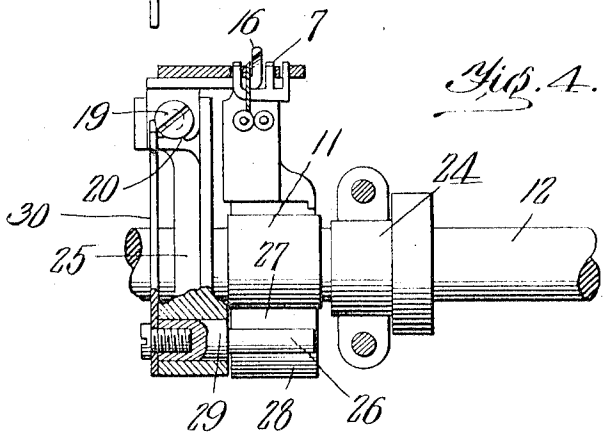


Fig. 4.

Witnesses

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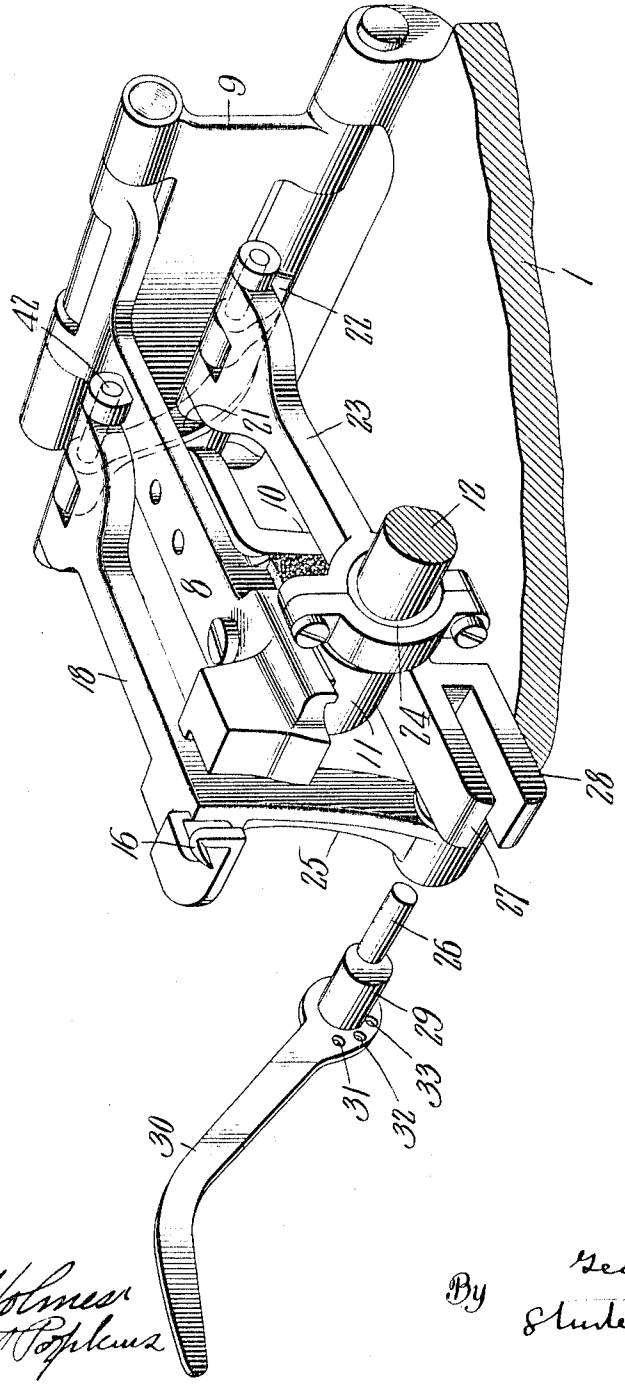
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4 SHEETS—SHEET 3.

Fig. 5.



Witnesses

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4 SHEETS—SHEET 4.

Fig. 10.

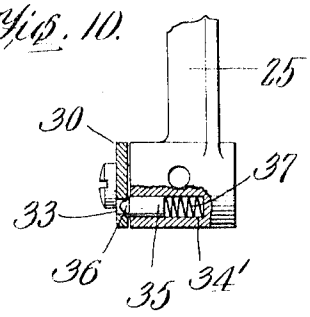


Fig. 9.

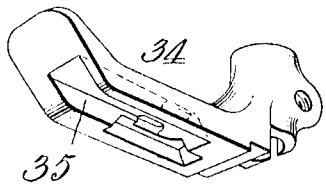


Fig. 6.

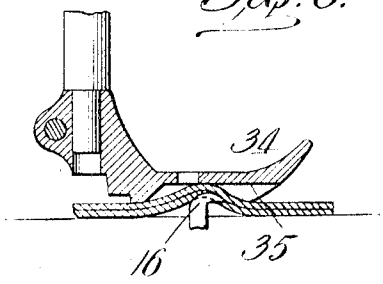


Fig. 7.

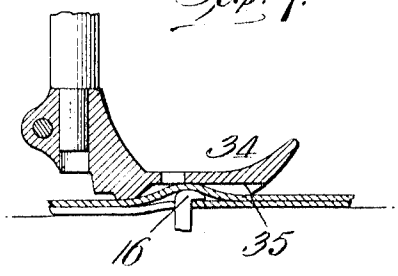
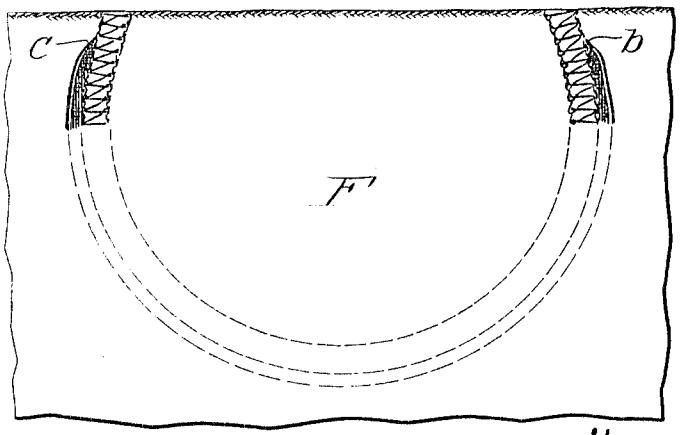


Fig. 8.



Inventor

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Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE SCOTT, OF AMSTERDAM, NEW YORK, ASSIGNOR TO THE UNION SPECIAL MACHINE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

TRIMMING MECHANISM FOR SEWING-MACHINES.

1,117,607. Specification of Letters Patent. Patented Nov. 17, 1914.

Application filed October 27, 1906. Serial No. 340,915.

To all whom it may concern:

Be it known that I, GEORGE SCOTT, a citizen of the United States, residing at Amsterdam, in the county of Montgomery, State of New York, have invented certain new and useful Improvements in Trimming Mechanism for Sewing-Machines, of which the following is a description, reference being had to the accompanying drawing and to the letters and figures of reference marked thereon.

My invention relates to certain new and useful improvements in cutting mechanisms for trimming machines, and while as to some of its features it may be used for various purposes, it is more particularly adapted to machines for cutting or trimming off one or more of a plurality of super-imposed layers of fabric prior to the stitching operation, guiding or deflecting one of the cutting edges so that it will not be stitched, and securing by stitching the undeflected edge of the layer or layers that have not been cut.

In this type of machine at present the cutting operation begins as soon as the fabric operated upon reaches the cutting position. In certain classes of work, it is very desirous to control this cutting operation so that a portion of the fabric may be first stitched before the cutting operation begins. For example, in necking underwear, when the cutting operation begins as soon as the fold reaches the cutting blade, the finished product is liable to give away at the top of the neck, where said cutting operation began. By controlling this cutting operation so that the point where the cutting blade enters the fabric is slightly beyond the edge of the fold, and the cutting operation ceases before the edge of the fold is reached on the other side of the neck portion, the resulting product is what may be termed "a turned-over neck" which has two plies of fabric at the top of the neck instead of one, thus giving greater strength and durability to said product.

An object of my invention is therefore, to provide means for controlling the cutting or trimming mechanism whereby the same at the will of the operator may be thrown into or out of effective operation.

A further object of my invention is to provide a cutting or trimming mechanism which includes a separating and severing blade with controlling mechanism whereby the working positions of said blade may be changed at the will of the operator and the cutting operation rendered ineffective.

These and other objects of my invention will in part be obvious and will in part be more fully hereinafter explained.

My invention consists in the novel parts improvements and arrangements herein shown and described.

In the accompanying drawings, I have illustrated one embodiment of my invention, the same serving in connection with the description herein to illustrate the principles thereof.

Figure 1 is a sectional view through the forward end of a sewing machine embodying my invention, showing the feed bar and presser foot in side elevation, and the cutting blade in operative relation to the fabric, the presser foot being slightly raised in order to more clearly show said cutting blade. Fig. 2 is a view similar to Fig. 1 with the cutting blade lowered so that its cutting operation is ineffective, the stationary cutter blade being omitted from this view. Fig. 3 is a top plan view of the forward end of a machine embodying my invention, the work plate being removed to more clearly show the cutting mechanism. Fig. 4 is a detail view partly in section of the illustrated means for raising or lowering the operative position of the cutter. Fig. 5 is a detail perspective view of the cutting or trimming mechanism, the operating means for throwing the cutter into and out of effective operation, being shown detached. Fig. 6 is a detail view showing the presser foot in section and the relation of the cutting blade to the layers of fabric as said cutting blade is thrown into operation and pierces the lower layer of fabric in order to separate the two layers and cut the lower one. Fig. 7 is a view similar to Fig. 6 showing the cutter blade between the layers of fabric. Fig. 8 is a bottom perspective view of a fabric stitched upon my machine and showing the points at which the trimming or cutting begins and ceases. Fig. 9 is a bottom perspective view of my preferred form of presser foot. Fig. 10 is

a detail view showing the manner of locking the cutting blade mechanism in its raised or lowered position.

Referring to the particular embodiment of the invention illustrated by way of example in the accompanying drawings the same will be seen to comprise a bed plate 1 from which rises a bracket 2, pivotally supporting a looper carrier 3, having a looper 4 of the ordinary construction. Said looper receives its oscillations in the usual manner from a link 5. Coöperating with said looper to form stitches is the well known needle mechanism, the needle of which is indicated by 6. This stitch forming mechanism may be the ordinary two needle mechanism having a single looper coöperating therewith to form cross stitches or of any other form which includes the necessary elements for securing a cut edge to a body fabric.

The feed dog 7 is carried by a feed bar 8 pivoted to an oscillating frame 9 which is given its oscillations in order to move the feed dog back and forward in the usual manner by a link 90 operated from the main shaft. Said feed bar carries a depending bracket 10 which embraces an eccentric 11, carried by the main shaft 12 and from said eccentric said feed dog is given its rising and falling movements.

My cutting mechanism in the present embodiment of my invention comprises a stationary cutting blade 13 which is adjustably secured to a bracket 14, supported by the cloth plate of the machine. The screw 15 serves to secure said stationary cutter blade in its proper position relative to the movable cutter. As shown in the drawings said stationary cutter extends to a point substantially flush with the top surface of the cloth plate. Coöperating with said stationary cutter is the movable cutter 16 which is adjustably secured to a bar 18, by means of a screw 19 passing through a slot 20 in the shank of said cutter. Said bar 18 is pivoted at its rear end to a bell crank lever 21 by a pivot bolt 42. Said bell crank lever is pivoted to the bed plate 1, and has its arm 22 pivotally connected to a link 23 which in turn embraces an eccentric 24 on the main shaft 12. It will be noted that as the main shaft rotates, the bell crank lever 21, will be oscillated, thus giving to the movable cutter a horizontal backward and forward movement. The timing of the eccentric 24 relative to the means for moving the feed dog back and forward is such that the cutter moves forward as the feed dog moves backward. Said cutter 16 is reciprocated across the plane of the work support and the face of the stationary cutter 13 by the eccentric 11, which gives the rising and falling movement to the feed dog. The cutter bar 18 is provided with a depending arm 25, which carries a pin 26 extending between forks 27, 28, formed on the end of the bracket 10. As the feed eccentric rotates with the main shaft and the feed bar rises and falls therewith, the cutter 16 through the pin 26 is given a corresponding rising and falling movement. The pin 26 is eccentrically mounted on a short shaft 29 fitted in a bearing in the lower end of the arm 25. Rigidly secured to said short shaft is an arm 30, by means of which said shaft may be oscillated. Said arm 30 has an enlarged end at its point of connection with the shaft 29 and said enlarged end is provided with recesses 31, 32 33. The bearing at the lower end from the arm 25, has a recess 34^1 in which slides a pin 35 carrying a detent 36. A spring 37 tends normally to force the pin 35 from the recess. The position of the arm 30 relative to the recess 34^1 in the bearing is such that the pin as it is pushed forward by the spring causes the detent to register with one or the other of the recesses 31, 32, 33. The purpose of the pin 35 and the detent 36 is to prevent the arm 30 from being accidentally moved as it requires some pressure on the arm in order to crowd the pin 35 back into its recess, to allow the detent 36 to slide from one recess to another in the arm 30.

It will be obvious that as the arm 30 is shifted from the position shown in Fig. 1 to that shown in Fig. 2 that the cutter bar 18 will be lowered so that the cutter 16, although reciprocated up and down by the eccentric 11, does not move above the cloth plate and consequently the operative end of the cutter is ineffective to cut the fabric passing through the machine. While the working or operative position of the cutter has been shifted by the movement of the arm 30 in the present embodiment of my invention, the cutter still continues to reciprocate and move backward and forward. Coöperating with the feed dog 7 and cutting members of my machine is a presser foot 34 which has a recess 35 extending a greater portion of the length of the presser foot. My movable cutter member is preferably provided with a sharp piercing point so that if a folded fabric be fed to my machine, said piercing point would penetrate the fold. The position of the movable cutter member when in operative relation to the fabric is such that the sharp penetrating member will enter between two layers of fabric, fed to said cutting mechanism, lifting the upper layer from the lower layer and operate to sever said lower layer. It will be noted that the cutting mechanism is located in front of the stitching mechanism and said cutting mechanism is also preferably so located relative to the stitching mechanism that one of the cut edges may

be deflected away from the stitching mechanism, while the other is secured by the stitching mechanism to the uncut layer. It is often desired in machines of this type, to so control the cutting mechanism that the cutting operation may be begun or terminated at the will of the operator. For example, when necking underwear, it may be desired to begin the cutting operation at a slight distance from the edge of the fold, in order that the finished product will be strengthened by having two plies of the fabric at the top of the neck. This produces what is termed a "turned-over neck." In order to secure this operation upon my machine, all that is necessary is to lower the arm 30 to the position shown in Fig. 2 and as the folded edge is fed to the stitching mechanism the cutter is in such position as to be ineffective to cut the fabric. After a certain portion of said fabric has been stitched, the operator may without stopping the machine, raise the arm 30 to the position shown in Fig. 1. This movement of the arm 30 changes the relative position of the pin 26 to the arm 25, and thus causes the movable cutter to reciprocate across the plane of movement of the lower layer of fabric. As the arm 30 is raised and the cutting member 16 is moved up against the two layers of material passing through the machine, this movement of the cutting member into operative cutting position lifts the material at the point of engagement by said cutting member, and as the presser foot holds the material on the work support in front of said cutting member, said material is thus positioned at an inclination to the line of forward movement of said cutting member.

It will be noted that the feed dog extends to a position in advance of the cutting member and the simultaneous lifting of the material, whereby the same is inclined to the work support, the forward movement of the cutter and the movement of the feed operate to cause the cutting member to penetrate the lower layer of the material, or if only one layer is being cut to penetrate said layer. The extent of movement of the cutting member is so adjusted that after the first layer is penetrated, the point of the cutter enters between the lawers of material, separates said layers and operates to sever said lower layer.

In order that the cutter may readily pierce the material, I have formed the movable member with a sharp piercing point, and the cutting edge extends backward from said point in a line substantially parallel with the line of feed. The top portion of the movable cutter is substantially flat, so that the upper layer of material is properly supported and lifted from the lower layer which is being severed.

When it is desired to terminate the cutting operation, all that is necessary is to lower the arm 30 which changes the working or reciprocating position of the cutter so that the cutting edge thereof does not cross the plane of the cloth plate.

By the above construction it will be seen that I have provided a trimming device which may be so controlled that one of two superposed layers of material passing through the machine may be pierced at a point within its free edge. Also by the above construction, the operation of severing the fabric may be rendered effective or ineffective without stopping the machine, at the will of the operator.

I have shown in Fig. 8 on a reduced scale, a folded fabric F, stitched and cut in the manner above described. It will be noted that the stitching begins at the edge of the fold and the cutting operation at a point *b* beyond the edge of the fold and terminates at a point *c* a short distance from the edge of the fold on the opposite side of the neck.

While I have described my machine as particularly adapted for necking underwear, it is obvious that the same is useful for a number of other purposes such as cutting and stitching of hems, cutting and stitching of collarettes, in appliqué work, in open work for cutting out certain portions when desired and in various other classes of work of a similar character, either with or without stitching mechanism.

It is obvious that many changes may be made in the detail form of structure illustrated by me, without departing from the spirit of my invention. While I have shown an arm carrying an eccentric pin for throwing the cutting mechanism into and out of operative position, it is apparent that any other form of mechanism for securing this result may be substituted for that herein disclosed. It is also obvious that a different arrangement and location of parts may be made without departing from the spirit of my invention so long as a cutting blade which has the combined function of separating the layers of fabric and severing one of the same, is moved into and out of effective operative relation to the fabric, so that the cutting of said layer may be controlled at will by the operator.

Having thus particularly described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A trimming machine including in combination a work support, feeding mechanism, a trimming blade having a forwardly projecting piercing point and a cutting edge in rear thereof, means for moving said blade for severing the fabric, and means for moving said blade to withdraw the same from the path of the fabric whereby its cutting action is rendered ineffective and for

causing said trimming blade to engage the fabric and bend the same whereby the piercing point may enter the fabric and the cutting action of the blade may be rendered effective.

2. A trimming machine including in combination a work support, feeding mechanism, a trimming blade located beneath the work support and projecting above and overhanging the same, said overhanging portion having a cutting edge and a piercing point, and means whereby the piercing point of the trimming blade may be moved beneath the surface of the work support or raised above the same at will for rendering said trimming blade ineffective or effective.

3. A trimming machine including in combination a work support, feeding mechanism, a movable trimming blade mounted beneath the work support and projecting above and overhanging the same, said overhanging portion having a cutting edge and a piercing point, means for moving said blade for its cutting action, and means whereby the piercing point of the trimming blade may be moved beneath the surface of the work support for rendering said trimming blade ineffective and may be raised above the work support for engaging the under face of the fabric, bending the same, whereby the piercing point may enter the fabric and the cutting action of said blade be rendered effective, and a presser foot above the work support for engaging the upper face of the fabric adjacent the trimming blade for holding the fabric so as to cause the piercing point to enter the same.

4. A sewing machine including in combination a work support, stitch forming mechanism, feeding mechanism, and a trimming mechanism, said trimming mechanism including a trimming blade mounted beneath the work support and projecting above and overhanging the work support, said projecting portion of the trimmer blade having a piercing point and a cutting edge in rear thereof, said blade being located in advance of the stitching mechanism, means for reciprocating the trimming blade, and means for moving the piercing point of the trimming blade beneath the surface of the work support for rendering the same ineffective and for raising the piercing point above the work support for causing the same to engage the under face of the fabric and penetrate the same whereby the trimming blade may be rendered effective.

5. A sewing machine including in combination a work support, stitch forming mechanism, feeding mechanism, and a trimming mechanism, said trimming mechanism including a trimming blade mounted beneath the work support and projecting above and overhanging the work support, said projecting portion of the trimming blade having a piercing point and a cutting edge in rear thereof, said blade being located in advance of the stitching mechanism, means for reciprocating the trimming blade, means for moving the piercing point of the trimming blade beneath the surface of the work support for rendering the same ineffective and for raising the piercing point above the work support for causing the same to engage the under face of the fabric and penetrate the same whereby the trimming blade may be rendered effective, and a presser foot extending to a point in advance of the trimming blade and having a groove in its under face to receive the trimming blade.

6. A sewing machine including in combination a work support, stitch forming mechanism, feeding mechanism, and a trimming mechanism, said trimming mechanism including a stationary trimming blade having its upper face substantially flush with the upper face of the work support, a movable trimming blade located beneath the work support and having a shank projecting above the work support, an overhanging portion carried by said shank, said overhanging portion having a piercing point, and a cutting edge adapted to coöperate with the stationary trimming blade, means for reciprocating said movable trimming blade, and means whereby said movable trimming blade may be depressed to carry the piercing point thereof beneath the plane of the work support or raised to lift the piercing point above the plane of the work support at the will of the operator.

7. A sewing machine including in combination a work support, stitch forming mechanism, feeding mechanism, and a trimming mechanism, said trimming mechanism including a stationary trimming blade having its upper face substantially flush with the upper face of the work support, a movable trimming blade located beneath the work support and having a shank projecting above the work support, an overhanging portion carried by said shank, said overhanging portion having a piercing point, and a cutting edge adapted to coöperate with the stationary trimming blade, means for reciprocating said movable trimming blade, and means whereby said movable trimming blade may be depressed to carry the piercing point thereof beneath the plane of the work support or raised to lift the piercing point above the plane of the work support at the will of the operator and without stopping the stitching mechanism.

8. A sewing machine including in combination a work support, stitch forming mechanism, feeding mechanism, and a trimming mechanism, said trimming mechanism including a stationary trimming blade having its upper face substantially flush with the upper face of the work sup-

port, a movable trimming blade located beneath the work support and having a shank projecting above the work support, an overhanging portion carried by said shank, said overhanging portion having a piercing point, and a cutting edge adapted to coöperate with the stationary trimming blade, means for reciprocating said movable trimming blade, and means whereby said movable trimming blade may be depressed to carry the piercing point thereof beneath the plane of the work support or raised to lift the piercing point above the plane of the work support at the will of the operator, and a presser foot for engaging the fabric, said presser foot extending to a point in advance of the movable trimming blade and having a groove in its under face to receive said movable trimming blade.

9. A sewing machine including in combination a work support, stitch forming mechanism, feeding mechanism and a trimming mechanism, said trimming mechanism including a stationary trimming blade, a movable trimming blade, including a shank extending across a horizontal plane containing the cutting edge of the stationary trimming blade, said shank having an overhanging portion and a piercing point at the forward end thereof, means for reciprocating said movable blade, and means for giving said stationary trimming blade and said movable trimming blade a relative movement for positioning the point of the movable trimming blade so that during the reciprocations of the movable trimming blade there will be no space between the blades and the cutting action of the trimming mechanism may be rendered ineffective and means for restoring said trimming blades to their normal cutting position.

10. A sewing machine including in combination a work support, stitch forming mechanism, feeding mechanism and a trimming mechanism, said trimming mechanism including a trimming blade mounted beneath the work support and projecting above and overhanging the work support, said projecting portion of the trimming blade having a piercing point and a cutting edge in rear thereof, said blade being located in advance of the stitching mechanism, means for reciprocating said trimming blade, means for moving the piercing point of the trimming blade beneath the surface of the work support and for raising the piercing point above the surface of the work support at will for rendering said trimming mechanism ineffective or effective, said feeding mechanism including a feed dog having feeding teeth both in front and in rear of the piercing point.

11. A sewing machine including in combination a work support, stitch forming mechanism, and a trimming mechanism, said trimming mechanism including a movable trimming blade mounted beneath the work support and projecting above and overhanging said work support, said overhanging portion of said trimming blade having a piercing point, means for moving the trimming blade forward and backward and for reciprocating said trimming blade across the plane of the work support to cut the fabric, means for moving the piercing point of the trimming blade beneath the surface of the work support for rendering the trimming blade ineffective and for raising said piercing point above the surface of the work support whereby the same is caused to engage the under face of the fabric and penetrate the same and thereby resume its cutting action.

12. A sewing machine including in combination a work support, feeding mechanism and a trimming mechanism, said trimming mechanism including a stationary trimming member having its upper face substantially flush with the work support, a movable trimming member projecting above and overhanging said work support, said overhanging portion having a piercing point, means for moving said movable trimming member to cut the fabric comprising an eccentric, a yoke operated by said eccentric, and an adjustable connection between the yoke and said trimming member whereby the piercing point may be moved beneath the surface of the work support for rendering the trimming mechanism ineffective, or raised above the surface of the work support whereby said piercing point will engage the under face of the fabric and penetrate the same and thereby resume its cutting action.

13. A trimming mechanism for sewing machines including in combination a stationary cutting member, a movable cutting member coöperating therewith, means for moving said movable member to cut the fabric, comprising an eccentric, a yoke operated by said eccentric, a forked member carried by said yoke, a pin resting within said forked member, a shaft on which said pin is eccentrically mounted, and means connected with said movable cutting member for supporting said shaft, and means for shifting the shaft so that the movable cutting member is brought below the stationary cutting member, whereby the cutting action of said cutting member may be rendered effective or ineffective.

14. A trimming mechanism for sewing machines including in combination a stationary cutting member, a movable cutting member coöperating therewith, means for moving said movable member to cut the fabric, comprising an eccentric, a yoke operated by said eccentric, a forked member carried by said yoke, a pin resting within said forked member, a shaft on which said pin is eccen-

trically mounted, means connected with said movable cutting member for supporting said shaft, and means for oscillating said shaft at the will of the operator whereby the cutting action of the movable member may be rendered ineffective, and means for holding said shaft in adjusted position, substantially as described.

15. A trimming mechanism for sewing machines including in combination a stationary member and a movable member, means for moving said movable member forward and backward, and means for reciprocating the same across the plane of the work support, said last named means including a shaft, a pin eccentrically carried thereby, and a hand lever for oscillating said shaft whereby the position of the cutting member relative to the work support may be changed; substantially as described.

16. A trimming mechanism including in combination a stationary member and a movable member, means for moving said movable member forward and backward, and means for reciprocating the same across the plane of the work support, said last named means including a shaft, a pin, eccentrically carried thereby, and a hand lever for oscillating said shaft, whereby the position of the cutting member relative to the work support may be changed, and means for holding said shaft in predetermined adjusted positions, substantially as described.

17. A sewing machine including in combination a work support, stitch forming mechanism, a trimming mechanism including cutting members located in advance of the stitching mechanism comprising a stationary cutting blade, means for adjustably supporting the same, and a movable cutting blade, a bar to which said movable cutting blade is adjustably connected, means for oscillating said bar whereby the movable blade is caused to sever the fabric, said last named means including a yoke, an eccentric for operating said yoke, a pin connected to said yoke, a shaft on which said pin is eccentrically mounted, a hand lever for operating said shaft, and means for holding said shaft in predetermined positions, substantially as described.

18. A trimming mechanism including in combination, a work support, a trimming blade having a piercing point and a cutting edge in rear thereof, said piercing point and cutting edge being so disposed as to penetrate and cut one of two superposed layers of fabric, and means operative to render said trimming blade effective when the material lies across the normal path of reciprocation of the blade in its effective position, said blade operating to penetrate the material and commence its cutting action.

19. A trimming mechanism including in combination a work support, a trimming blade having a piercing point and a cutting edge in rear thereof, said piercing point and cutting edge being so disposed as to penetrate and cut one of two superposed layers of fabric, and means operative to render said trimming blade effective when the material is above the blade, said blade operating to penetrate the material and commence its cutting action.

In testimony whereof I affix my signature, in presence of two witnesses.

GEORGE SCOTT.

Witnesses:

CHESTER MCNEIL,

WILLIAM P. HOVER.