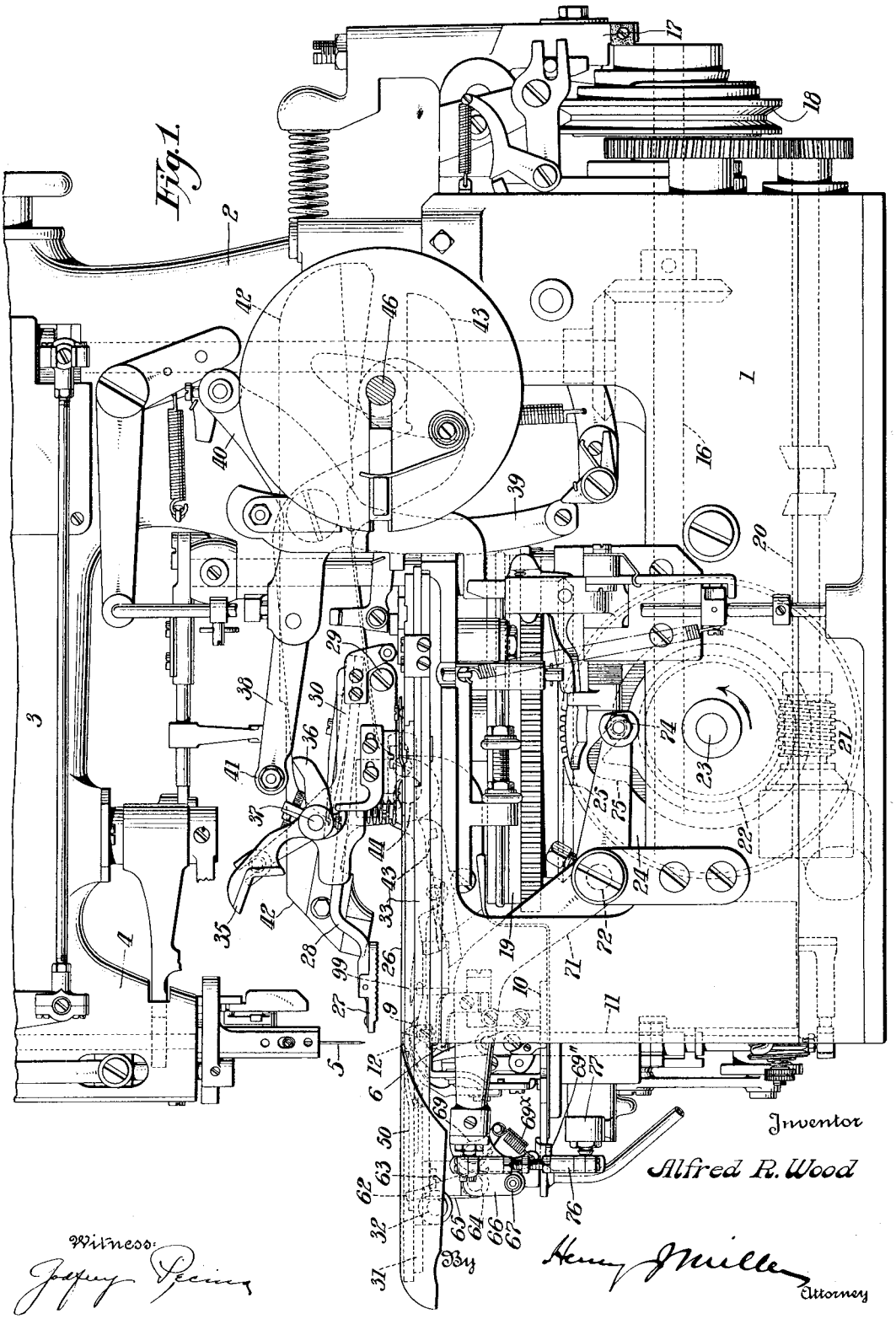
Dec. 5, 1933. A. R. WOOD 1,938,128

THREAD CUTTING MECHANISM FOR SEWING MACHINES

Filed Aug. 4, 1932 7 Sheets-Sheet 1

Fig. 1.



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Dec. 5, 1933. A. R. WOOD 1,938,128

THREAD CUTTING MECHANISM FOR SEWING MACHINES

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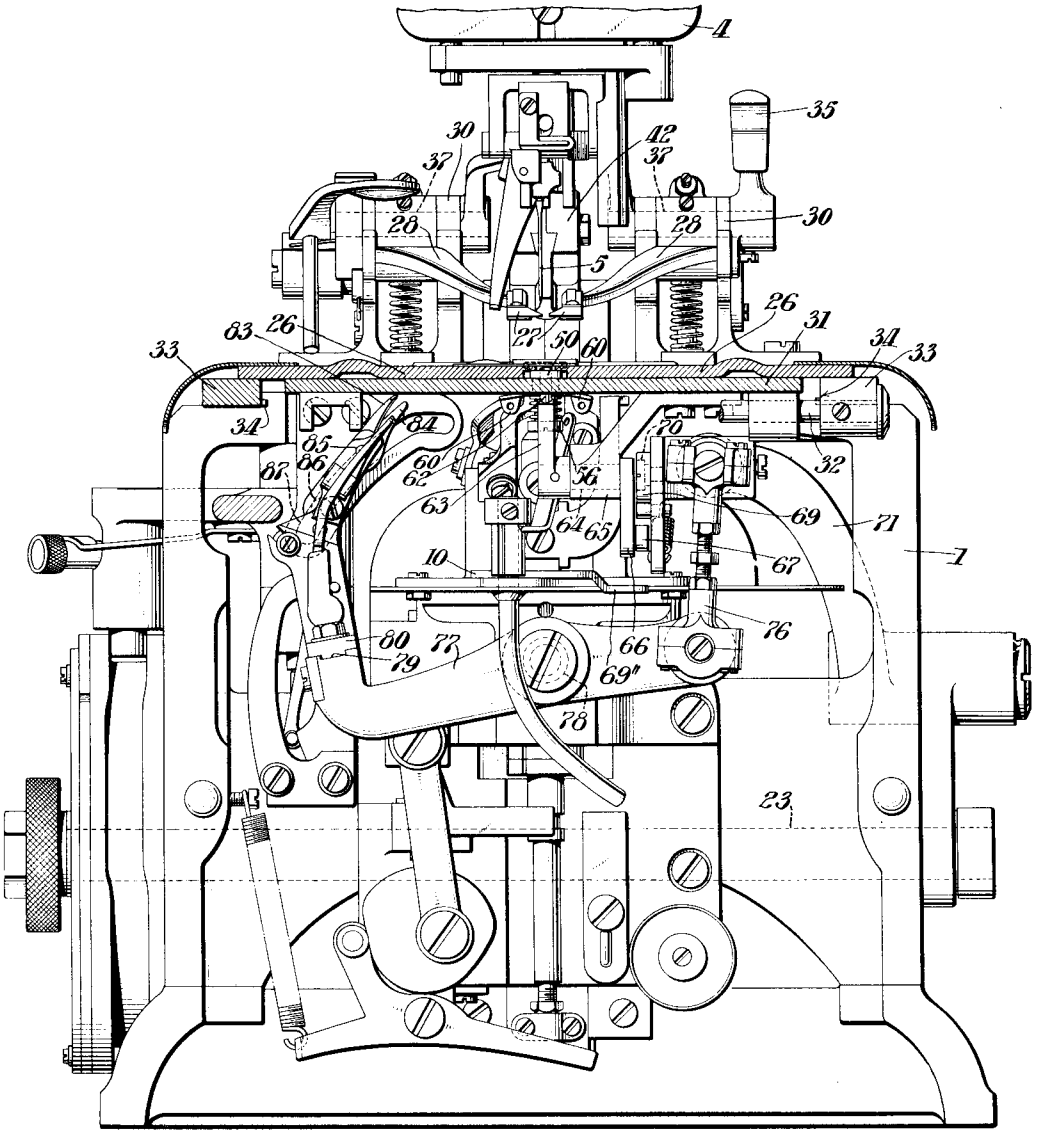


Fig. 2.

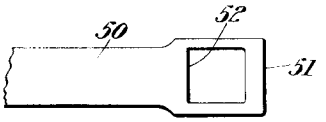


Fig. 16.

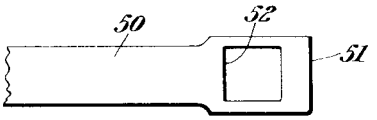


Fig. 17.

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Dec. 5, 1933. A. R. WOOD 1,938,128

THREAD CUTTING MECHANISM FOR SEWING MACHINES

Filed Aug. 4, 1932 7 Sheets-Sheet 3

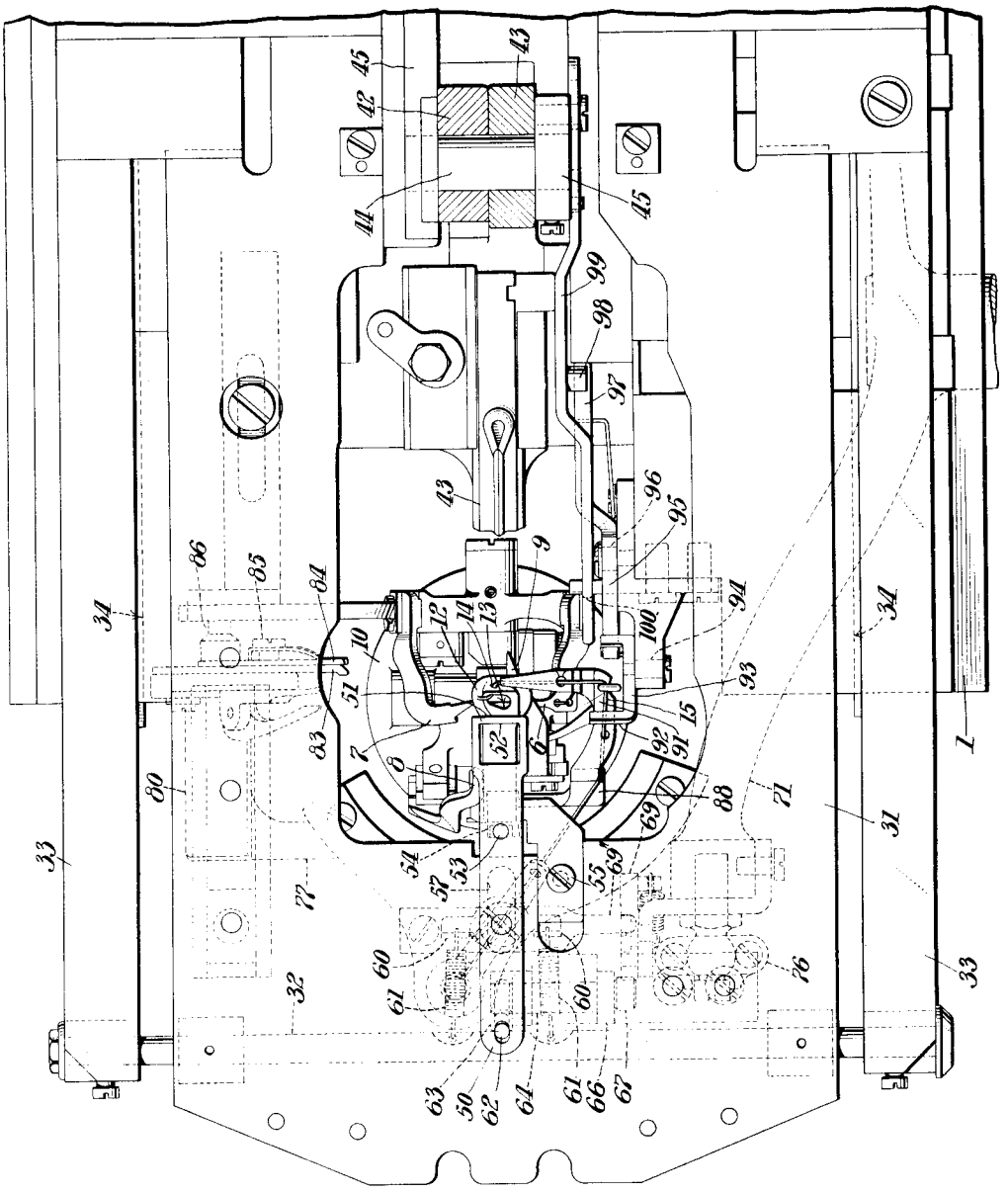


Fig. 3.

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Dec. 5, 1933. A. R. WOOD 1,938,128

THREAD CUTTING MECHANISM FOR SEWING MACHINES

Filed Aug. 4, 1932 7 Sheets-Sheet 4

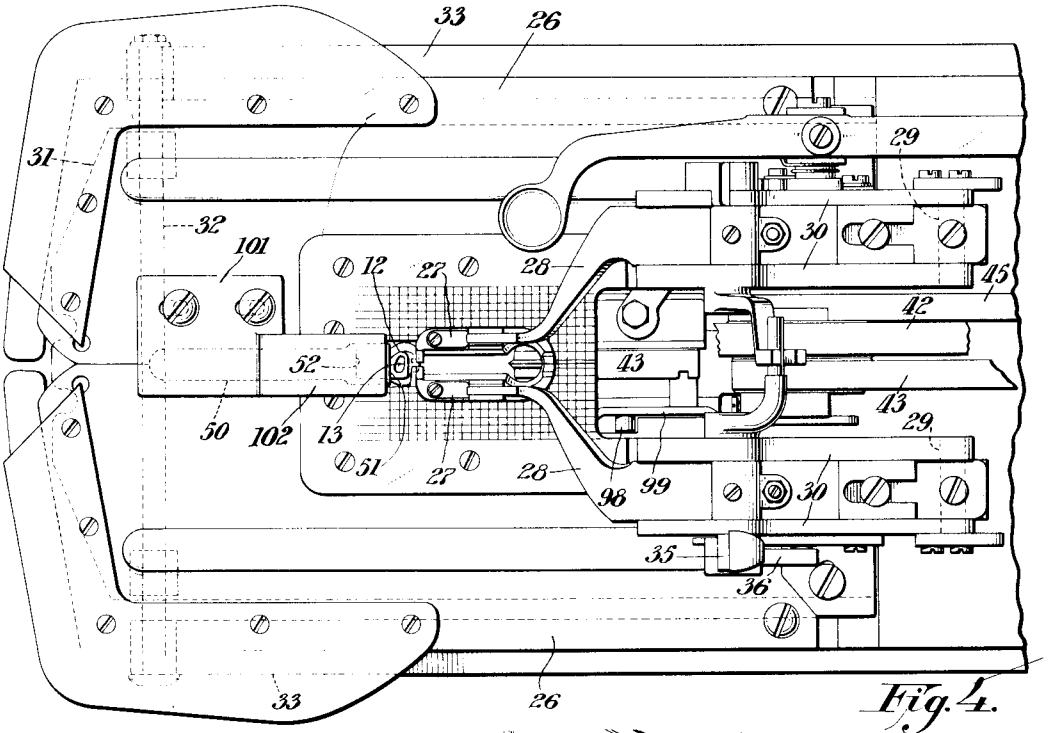


Fig. 4.

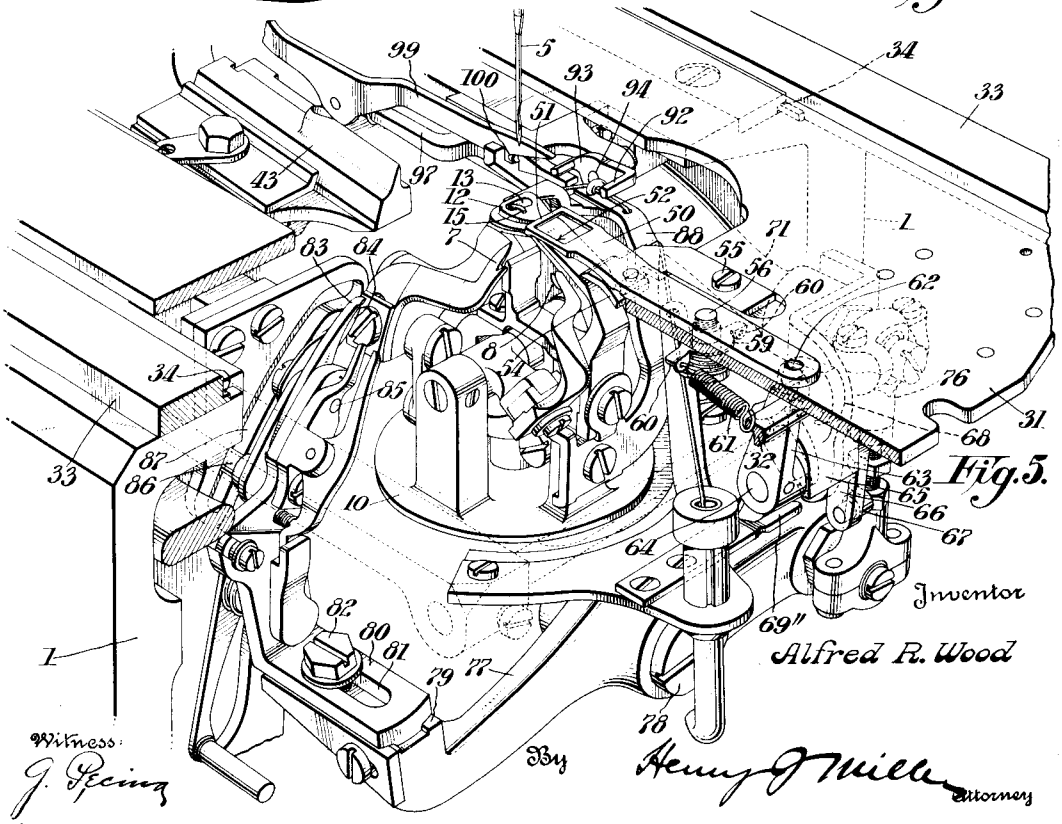


Fig. 5.

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Dec. 5, 1933. A. R. WOOD 1,938,128

THREAD CUTTING MECHANISM FOR SEWING MACHINES

Filed Aug. 4, 1932 7 Sheets-Sheet 5

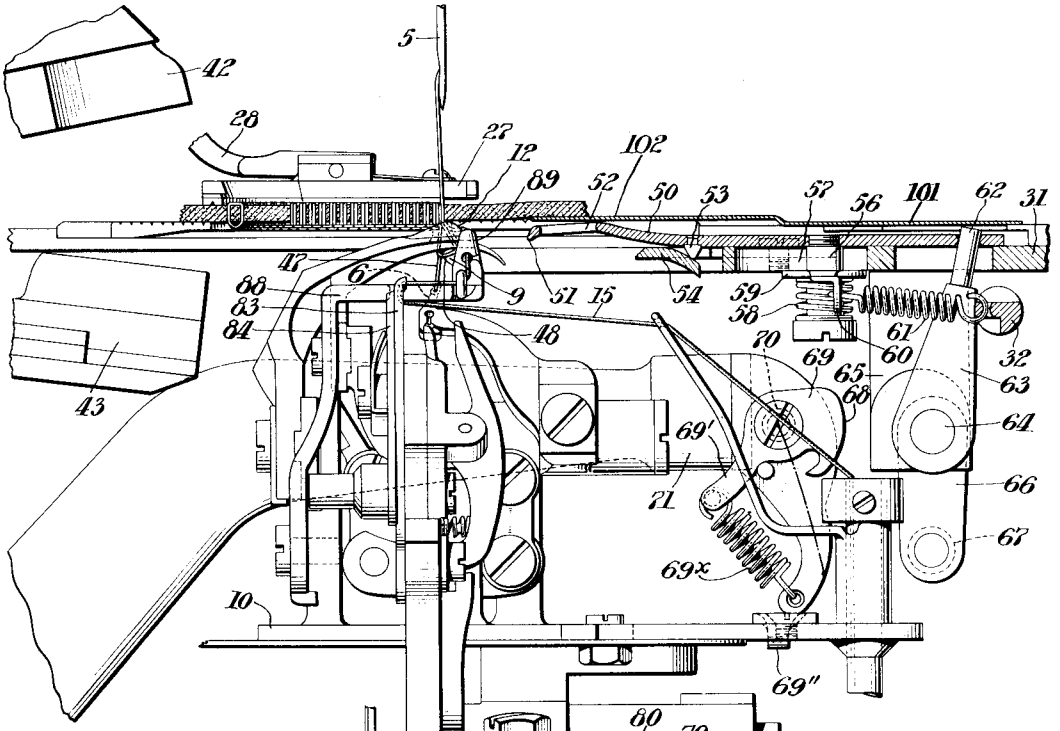


Fig. 6.

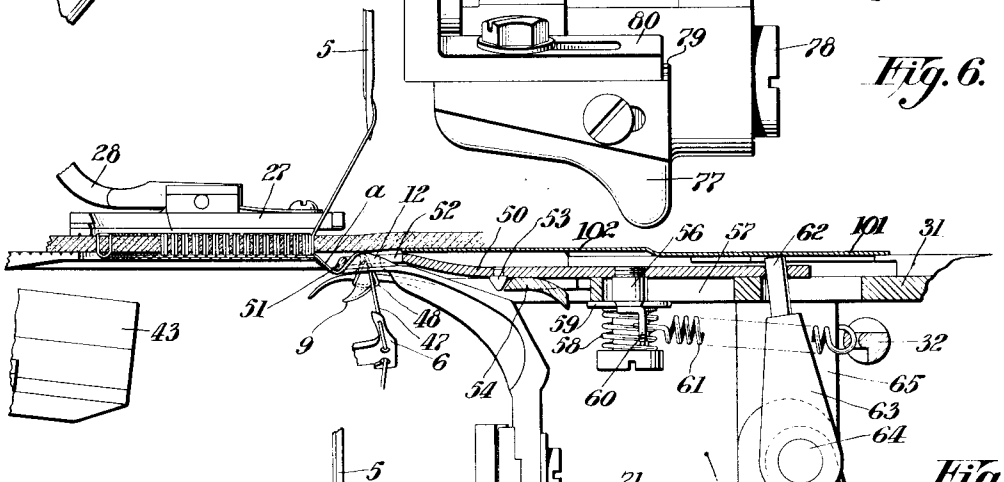


Fig. 8.

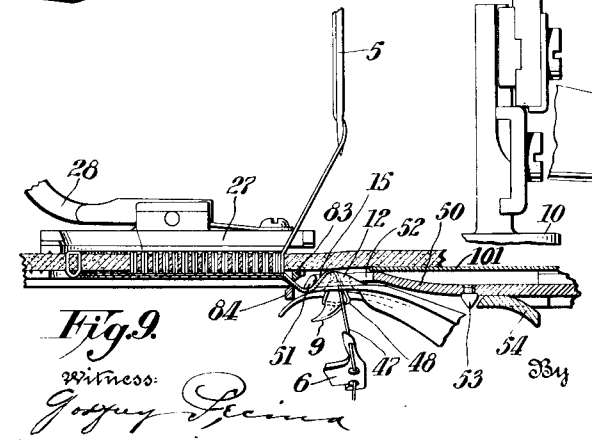


Fig. 9.

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Dec. 5, 1933. A. R. WOOD 1,938,128

THREAD CUTTING MECHANISM FOR SEWING MACHINES

Filed Aug. 4, 1932 7 Sheets-Sheet 6

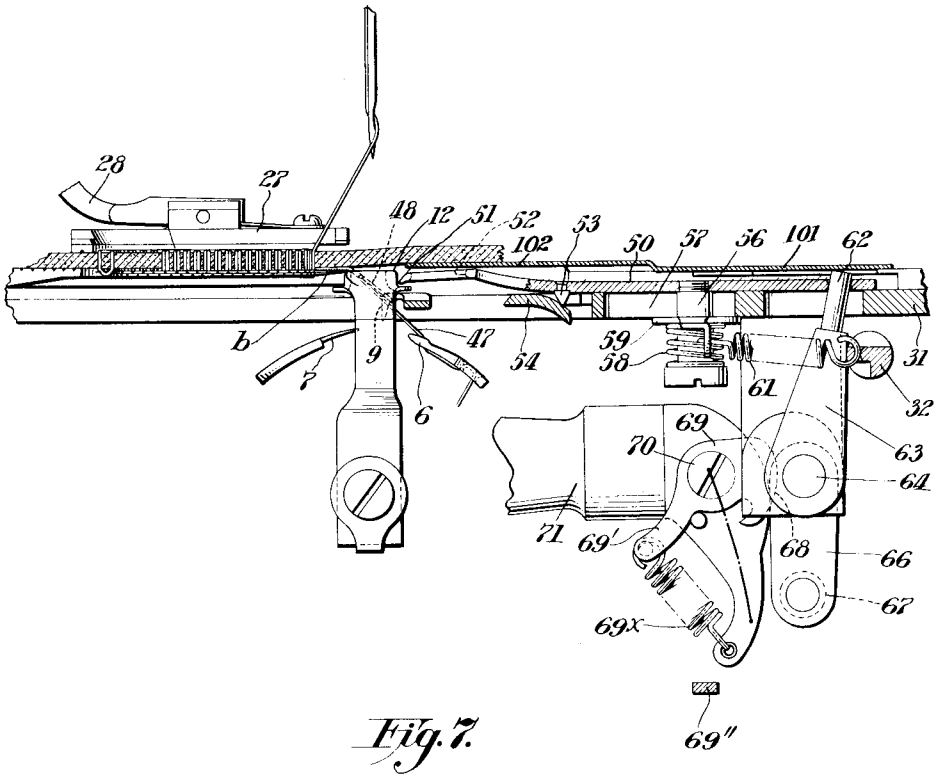


Fig. 7.

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Witness:

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Dec. 5, 1933. A. R. WOOD 1,938,128

THREAD CUTTING MECHANISM FOR SEWING MACHINES

Filed Aug. 4, 1932 7 Sheets-Sheet 7

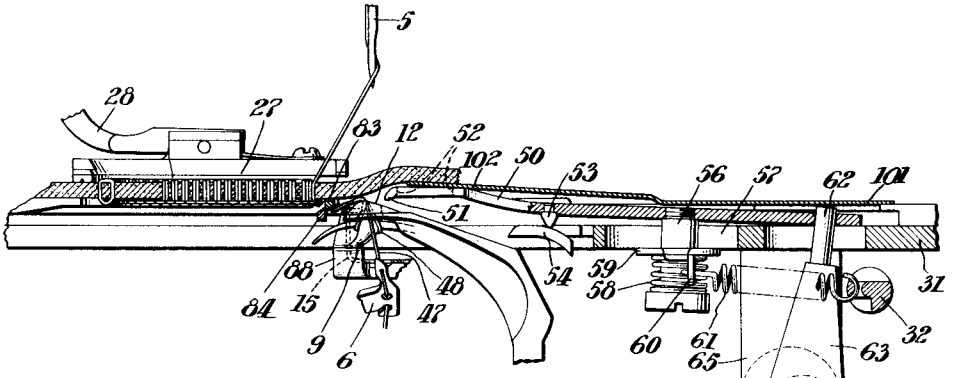
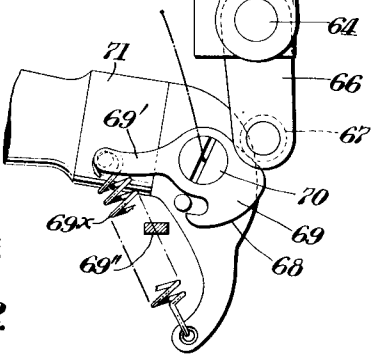


Fig. 10.



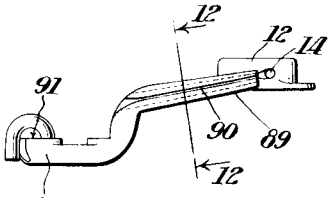


Fig. 11.

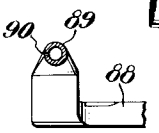


Fig. 12.

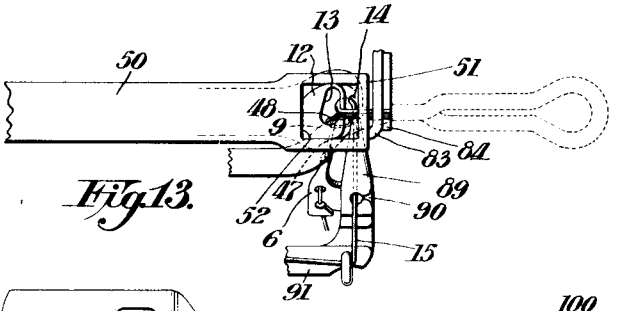


Fig. 13.

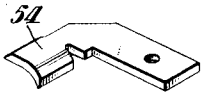


Fig. 14.

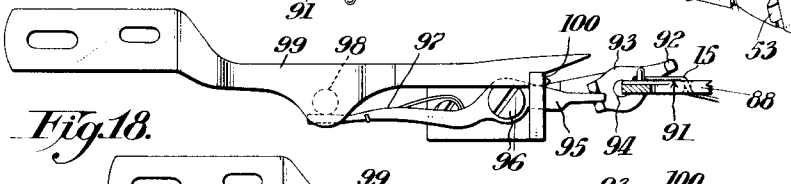


Fig. 18.

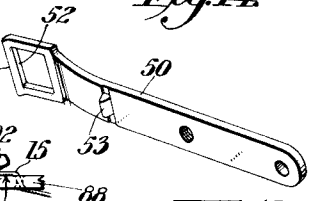


Fig. 15.

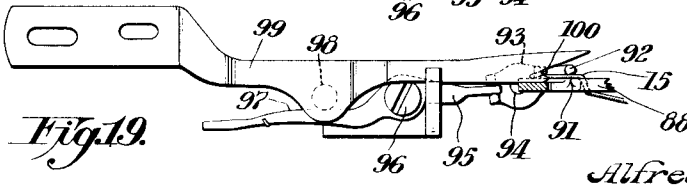


Fig. 19.

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Patented Dec. 5, 1933 1,938,128

UNITED STATES PATENT OFFICE

1,938,128

THREAD-CUTTING MECHANISM FOR SEWING MACHINES

Alfred R. Wood, Bridgeport, Conn., assignor to The Singer Manufacturing Company, Elizabeth, N. J., a corporation of New Jersey

Application August 4, 1932. Serial No. 627,396

11 Claims. (Cl. 112—252)

This invention relates to sewing machines, more particularly of the buttonhole sewing type having stitch-forming mechanism including a needle, a needle-throat member, a work-clamp and means for relatively moving the stitch-forming mechanism and work-clamp to sew about a buttonhole and for further relatively moving the stitch-forming mechanism and work-clamp at the completion of the sewing of a buttonhole to draw off a length of thread from the needle-throat member, such thread-length extending from the last stitch in the work to the needle-throat member parallel to and substantially in contact with the under surface of the work.

In machines of this type devices have been provided for cutting this thread-length between the last stitch and the needle-throat member, as described in the U. S. patents to Allen, No. 1,579,200, of April 6, 1926; No. 1,600,206, of September 21, 1926, and No. 1,867,129, of July 12, 1932.

Before the thread-length in question can be safely cut without danger of damaging the work, it must first be separated from the under surface of the work. In the device of the Allen Patent No. 1,579,200, the desired separation is effected by a blunt-nosed implement which is moved in a direction transverse to the thread to be cut and in a path such that the blunt nose grazes the under surface of the work and passes between the work and the thread to be cut, wedging the thread downwardly and separating it from the under surface of the work. In the device of the Allen Patent No. 1,867,129, the desired preliminary separation of the thread from the under surface of the work is effected by relatively separating the work-clamp and needle-throat member vertically, as by lifting the work-clamp.

The present invention has for an object to provide a thread-cutting mechanism with simplified and improved means for effecting the preliminary separation of the thread from the under surface of the work which avoids all danger of snagging, cutting or damaging the work regardless of the character of the latter.

With the above and other objects in view, as will hereinafter appear, the invention comprises the devices, combinations, and arrangements of parts hereinafter set forth and illustrated in the accompanying drawings of a preferred embodiment of the invention, from which the several features of the invention and the advantages attained thereby will be readily understood by those skilled in the art.

Fig. 1 of the accompanying drawings is a side elevation of a buttonhole sewing machine embodying the invention. Fig. 2 is a front end elevation of the machine. Fig. 3 is a plan view of the machine bed with the work-clamp plates removed to expose the longitudinal slide-frame and cross slide-plate members of the work-holder and parts therebelow. Fig. 4 is a plan view of the work-clamp plates in operative position upon the machine bed. Fig. 5 is a perspective view of the under thread mechanism, thread-severing mechanism and parts cooperating therewith. Fig. 6 is a vertical sectional view through the sewing point longitudinally of the machine bed; the parts being in the relative positions occupied at the completion of a sewing operation before a further relative movement between the stitch-forming mechanism and work-holder has occurred to draw out a length of thread from the needle-throat member. Fig. 7 is a similar view of the parts after such further relative movement has occurred. Fig. 8 is a similar view showing the member for separating the thread from the under side of the work after it has been moved over the needle-throat member to thread-separating position. Fig. 9 is a similar view showing the position occupied by the blades of the thread-severing device at a slightly later stage of the thread-cutting operation.

Fig. 10 is a similar view of the parts after the threads have been severed and the thread-separator partially retracted. Fig. 11 is a side elevation of a cord-guiding member associated with the under thread mechanism. Fig. 12 is a section on the line 12—12, Fig. 11. Fig. 13 is a top plan view of the needle-throat member, thread-separator, thread-cutter and a stitched buttonhole in their relative positions just prior to severance of the thread, as in Fig. 1. Fig. 14 is a perspective view of the cam-element for raising and lowering the thread-separator as the latter passes over the needle-throat member. Fig. 15 is a perspective view of the thread-separator. Figs. 16 and 17 are plan views of thread-separators which are interchangeable with the one shown in the remaining figures for use in the machine when the latter is adjusted to sew shorter buttonholes. Fig. 18 is an inside elevation of the cord-nipping and cord pull-back mechanism, the nipper being open, and Fig. 19 is a similar view with the cord pull-back element advanced and the nipper closed.

The invention is shown as embodied in a machine of the buttonhole sewing type having, in general, constructive features which are substantially in accordance with the disclosure of the U. S. patent to Allen, No. 15,324, reissued April 4, 1922.

The machine-frame is formed with the hollow box-like bed 1 from the rear end of which rises the standard 2 of the overhanging goose-neck 3 terminating in the head 4.

The stitch-forming mechanism is constructed substantially in accordance with the disclosure of the U. S. patent to Allen et al., No. 1,372,473, of March 22, 1921, and comprises the upper reciprocatory and laterally vibratory needle 5 and under thread mechanism including a threaded looper 6, a non-threaded looper 7 and a pair of loop-detainers 8, 9, all operatively mounted on a turret 10 which is rotatable about a vertical spindle 11. The turret 10 also carries the usual needle-throat member 12 having the needle-clearance aperture 13 and guiding aperture 14 for the cord 15 which is thus led within the range of action of the stitch-forming mechanism so as to be covered by the buttonhole overseam. The stitch-forming mechanism is driven by the main sewing shaft 16 under the control of the usual start- and stop-motion device 17 which automatically and at the proper times in a buttonhole-producing cycle of operations of the machine establishes and interrupts driving relation between the constantly running power-means or belt-pulley 18 and the main sewing shaft 16.

There is mounted within the bed 1 of the machine the usual feed-wheel 19 which is driven step-by-step during the sewing period through suitable gearing by the main-sewing shaft 16. The feed-wheel 19 is more rapidly driven both prior and subsequent to the sewing period from a constantly running shaft 20 geared to the belt-pulley 18. The shaft 20 carries a worm 21 with which meshes a gear 22 loose on the cross-shaft 23. An automatic clutch mechanism (not shown) establishes and interrupts driving relation between the constantly running gear 22 and the cross-shaft 23; the latter having fixed to it the large gear-wheel 24 meshing with a gear 25 on the feed-wheel 19.

Through suitable mechanism the feed-wheel 19 effects a semi-rotation of the stitch-forming devices about a vertical axis as the sewing progresses around the eyelet end of a buttonhole, and a reverse semi-rotation of the stitch-forming devices after the sewing is completed to restore the stitch-forming devices to starting position; this reverse rotation of the stitch-forming devices about a vertical axis being effected by the feed-wheel while the latter is being more rapidly driven by the cross-shaft 23 at the completion of a sewing period.

The work-holder comprises the usual lower work-supporting plates 26 and upper clamp-feet 27 each carried by a respective clamp-arm 28 fulcrumed at 29 in a block 30 carried by a respective one of the plates 26. The work-supporting plates 26 are carried as usual by the cross slide-plate 31 slidable laterally upon the cross-rod 32 which connects the front ends of the side-bars 33 of the longitudinal slide-frame mounted to slide in ways 34 on the machine bed.

The work-clamps are closed in the usual manner either by rearward pressure by the operator upon the finger-piece 35 or downward pressure upon the arm 36 fixed to one of the connected clamp-closing rock-shaft-sections 37. The work-clamps are usually closed automatically at the beginning of a buttonhole-producing cycle by the action of the usual three-armed lever 38, 39, 40 having a roll 41 at the forward end of the arm 38 adapted to depress the arm 36 as disclosed in said Allen reissued patent.

The work-holder is moved relative to the stitch-forming mechanism during the sewing period as well as prior and subsequent to the sewing period by the usual connections with the feed-wheel 19 as disclosed in said Allen reissued patent.

The buttonhole cutting mechanism comprises the usual coacting cutter-levers 42, 43 fulcrumed at 44 on the travelling fulcrum-block 45 and actuated by suitable cams on the cutter-shaft 46 which makes one complete rotation and then comes to rest as described in said Allen reissued patent.

The cycle of operations of a machine of the type in question is briefly as follows: The work is placed under the clamp-feet 27, Fig. 1, and the machine is started. The three-armed lever 38, 39, 40 receives one complete oscillatory impulse and depresses the arm 36 to close the clamp-feet 27 upon the work. The cross-shaft 23 is then automatically connected to the constantly running shaft 20 for a brief period during which the feed-wheel is rapidly driven while the work-holder is shifted forwardly from its initial retracted position to sewing position with the clamp-feet 27 under the needle 5. The shaft 23 is then disconnected from the shaft 20 and the stop-motion lever 17 is tilted to running position to start the shaft 16 and the stitch-forming mechanism. The feed-wheel then receives the usual step-by-step feeding movements from the shaft 16 and moves the work-holder to place the stitches around the buttonhole. When the sewing reaches the eyelet-end of the buttonhole the needle and turret are slowly turned 180° about a vertical axis by the feed-wheel 19 to place the stitches radially of the eyelet-end of the buttonhole. When the sewing is completed the stop-motion lever 17 is released and returns to stopping position thereby disconnecting the sewing shaft 16 from the belt-pulley 18 and bringing the stitch-forming mechanism to rest with the needle 5 out of the work. The cross-shaft 23 is again automatically connected to the shaft 20 which again rapidly drives the feed-wheel 19 to shift the work-holder back to its initial position with the stitched buttonhole clamped therein. During this movement the needle and turret are reversely rotated 180° about a vertical axis by the feed-wheel 19 to restore them to starting position. Just before the shaft 23 is disconnected the second time from the shaft 20, a tripping point (not shown) on the gear 24 trips the cutter-shaft 46 into action and the cutter-levers 42, 43 are advanced and closed to cut the buttonhole and are then opened and retracted, after which the cutter-shaft comes to rest. The rotation of the cutter-shaft 46 effects the opening of the work-clamp after the buttonhole is cut, as disclosed in said Allen reissued patent.

It is well known that the needle-throat member 12 of a machine of the type under consideration supports the portion of the clamped work immediately adjacent the sewing point against the thrusts of the needle 5 and is adapted to

guide the stay-cord 15 to the stitch-forming mechanism so that the stitches will be formed over the stay-cord and bind the latter in position around the buttonhole. Also, it is known that when the stitch-forming mechanism of a machine of the type under consideration is stopped a loop of needle-thread is retained by the under thread mechanism. Consequently, when the work-holder is shifted rearwardly from sewing position to its initial position, also known as buttonhole-cutting position, four thread-lengths are drawn out from the hole in the needle-throat member and lie substantially parallel to and in contact with the under side of the work. One of these threads is the stay cord 15. Another is the under or looper-thread 47. The remaining two are the limbs of the last or retained needle-thread-loop 48.

To cut these thread-lengths close to the last stitch without damaging the work it has been proposed to equip the machine with means for effecting a preliminary separation of the threads from the work. One such means comprises a blunt-nosed implement movable crosswise of the lead of the threads and adapted to graze the under surface of the work as disclosed in the Allen Patent No. 1,579,200, previously referred to. Another such means comprises mechanism for relatively separating the closed work-clamp and needle-throat member vertically to cause the threads extending from the needle-throat member to the last stitch to stand at an angle to the under side of the work as disclosed in the Allen Patent No. 1,867,129, previously referred to.

According to the present invention the desired preliminary separation of the threads from the under side of the work is accomplished by an implement movable longitudinally of the lead of the threads and preferably over the needle-throat member.

This implement preferably comprises a blade 50 movably mounted on the cross slide-plate 31 between the work-supporting plates 26 and formed with a thread-engaging end-edge 51 extending transversely of the lead of the threads to be cut, Fig. 13, and transversely of the direction of motion of the blade 50. The blade 50 is preferably formed with an aperture 52 to clear the needle-throat member 12. It is also preferably provided at its under side with a transverse ridge or knob 53 which rides over the cam-plate 54 screwed at 55 to the cross slide-plate 31; which cam-plate causes the thread-engaging edge 51 of the thread-separator 50 in its movement from inoperative to operative position to be first elevated over the needle-throat member 12 and then lowered below the level of the work-engaging surface of the needle-throat member to engage and depress the threads.

Depending from the separator-blade 50 is a stud-screw 56 which passes through a guide-slot 57 in the cross-slide plate 31. A spring 58 interposed between the head of the stud-screw 56 and a washer 59 slidably contacting with the under side of the plate 31 yieldingly holds the separator-blade 50 in contact with the upper side of the plate 31 but permits the blade 50 to rise as the knob 53 rides over the cam-member 54. The washer 59 has two oppositely extending arms 60 which are connected by springs 61 to the cross-rod 32 upon which the cross slide-plate 31 is slidably mounted. The springs 61 are recovery springs and retract the separator-blade 50 from operative position when such blade is released.

The blade 50 is apertured at its end remote from the operative end edge 51 to receive the upwardly projecting end 62 of a lever-arm 63 fixed to a cross-shaft 64 journaled in the bracket 65 screwed to the under side of the cross slide-plate 31. The cross-shaft 64 also has fixed to it a depending arm 66 carrying an anti-friction roll 67 engaged at the proper time by the curved end 68 of a latch-member 69 fulcrumed at 70 on the thread-cutter actuating lever 71. The lever 71, Fig. 1, is fulcrumed at 72 on the frame-bracket 73 and has a cam-follower roll 74 in the cam-groove 75 in the face of the gear 24 which runs with the feed-wheel 19, substantially as disclosed in the Allen Patent No. 1,600,206, previously referred to.

The lever 71 is connected by the link 76, Fig. 2, to the thread-cutter carrier lever 77 fulcrumed at 78 on the machine frame and having a grooved seat 79 for the ribbed foot 80 of the scissors thread-cutter device. The foot 80 is formed with a slot 81, Fig. 5, through which passes a screw 82 threaded into the seat 79. By loosening the screw 82 the plane of operation of the scissors thread-cutter may be shifted to the proper distance from the end of the buttonhole, so that the threads will be cut close to the last stitch.

The scissors thread-cutter is constructed substantially in accordance with the disclosure of the Allen Patents Nos. 1,579,200, and 1,600,206, referred to. It comprises an upper blade 83 operatively rigid with the carrier-lever 77 and a lower blade 84 fulcrumed at 85 on the upper blade and having a tail-pin 86 riding in the scissors closing cam 87 fixed to the machine frame. The point of the upper blade 83 is not set high enough to graze the work but only high enough to cleanly enter the angle *a*, Fig. 8, between the under surface of the work and the depressed threads to be cut. Seizure of the threads by the upper blade of the thread-cutter is thus assured without requiring close adjustment of the working radius of the thread-cutter. The angle *a* is well opened by the action of the thread-separator 50, so that the thread-cutter may be set to seize the threads with certainty because of the wide opening of the angle *a*, and cut the threads very close to the last stitch. All danger of cutting or damaging the work is thus avoided, regardless of the character or texture of the work.

In the operation of the device, starting with the position shown in Fig. 6 in which the stitch-forming mechanism has just been brought to rest, with the work-holder in sewing position. The work-holder is then rapidly moved from sewing position, Fig. 6, to initial or buttonhole-cutting position, Fig. 7, and draws out the four thread-lengths collectively indicated at *b* from the needle-throat member 12. After the work-holder is shifted to initial position to draw out the described thread-lengths *b*, further movement of the feed-wheel 19 effects the reverse semi-rotation of the needle and turret mechanisms to restore them to starting position. Fig. 7 shows the needle-throat member 12 reversely turned 90° from the position shown in Fig. 6; the reverse semi-rotation of the stitch-forming devices being only half completed. When the reverse semi-rotation of the stitch-forming devices has been completed they are out of the way of the subsequent operation of the thread-cutting and buttonhole-cutting devices.

While this reverse semi-rotational movement of the needle and turret mechanisms is in prog-

ress, the cam 75 in the outside face of the gear 24 begins to advance the scissors device 83, 84 toward the thread-lengths *b* to be cut. When the reverse semi-rotation of the turret is about two-thirds completed and the point of the scissors is still a considerable distance from the threads *b*, the latch 69 engages the roller 67 and projects the separator blade 50 rearwardly over the needle-throat member 12.

When the thread separator blade 50 reaches operative position, Fig. 8, the point of the upper blade 83 of the scissors device is close to but has not entered the angle *a*. Further down movement of the thread-cutter actuating lever 71 advances the blade 83 of the scissors device well into the angle *a* or across the thread-lengths *b* which are firmly held by the last stitch and the thread-separator 50. The threads *b* are then cut as the nose 69^a of the latch 69 is kicked past the roller 67 by engagement of the tail 69′ of the downwardly moving latch 69 with the stationary kick-off arm 69″ mounted on the frame of the machine; the recovery springs 61 then acting to draw back the separator-blade 50 to the position shown in Fig. 10.

The buttonhole cutting mechanism is tripped into action just after the threads *b* are cut and the separator-blade 50 is retracted, or about when the parts are in the positions shown in Fig. 10. On the upward or return motion of the thread-cutter actuating lever 71, the latch 69 rides past the roller 67 without actuating the latter; the latch-spring 69^x being weak enough to yield for this return movement of the latch 69 without stretching the springs 61 which hold the separator-blade 50 and lever 63, 66 in inoperative position.

The machine is fitted with a cord-nipper and cord pull-back device similar to that disclosed in the patent to Allen, No. 1,646,946, of Oct. 25, 1927, but with certain modifications. In the present machine the cord guide post 88 has a lateral tubular extension 89 terminating closely adjacent the needle-throat member as shown in Figs. 11, 12 and 13. The tubular extension 89 is longitudinally slitted at 90 for easy threading. The cord 15 passes over an exposed upper flat portion 91 of the post 88 upon which the free end 92 of a nipper-lever 93 fulcrumed at 94 on the machine frame presses downwardly to nip the cord 15 during the advance of the buttonhole cutter levers. The lever 93 is actuated by the lever 95 fulcrumed at 96 and having a cam edge 97 engaged by the roller 98 on the cord pull-back bar 99 fixed to the travelling cutter fulcrum-block 45. The bar 99 has a notch 100 which engages the cord between the nipper 92 and the needle-throat member 12 and pulls back the excess length of cord end sticking out of the needle-throat member, as explained in the Allen Patent No. 1,646,946, referred to.

Screwed to one of the work-clamp plates 26, Fig. 4, is a guard-plate 101 overlying the separator-blade 50 in the retracted or inoperative position of the latter. The guard-plate 101 is quite thin and springy so that the tongue-portion 102 thereof may yield upwardly as the separator-blade 50 is lifted by the cam 54 in the advance of said blade to operative position.

The machine may be readily adapted for trimming the threads of shorter buttonholes by substitution of another of a set of separator-blades 50 such as shown in Figs. 16 and 17 having end edges 51 at different distances from the respective needle-throat clearance apertures 52. It is well known that when a machine of the present type is adjusted to sew a shorter buttonhole the work-clamp is rapidly moved a correspondingly longer distance after the sewing is completed to carry the work-clamp from sewing position to initial or thread- and buttonhole-cutting position. This increased travel of the work-clamp subsequent to sewing draws out longer thread-lengths. Consequently a blade 50 is selected having its end-edge 51 spaced a correspondingly increased distance from the needle-throat clearance hole 52. The foot 80 of the scissors device 83, 84 is also adjusted on its seat 79 to shift the plane of action of the scissors so that the blades thereof will pass the end 51 of the blade 50 and catch the thread extending at an angle from such end to the last stitch.

The invention is not to be understood as limited to the embodiment of the invention shown and described.

Having thus set forth the nature of the invention, what I claim herein is:—

1. In a sewing machine adapted to perform a predetermined sewing operation and then come to rest, the combination with stitch-forming mechanism and work-holding means movable relative to each other during and subsequent to the sewing operation, of a needle-throat member through which the thread is led to the work, the relative movement after the sewing operation drawing out a length of thread from the needle-throat member, means movable over said needle-throat member to a position between said length of thread and the work and thence downwardly to pull down the thread, and means to sever the thread.

2. In a sewing machine adapted to perform a predetermined sewing operation and then come to rest, the combination with stitch-forming mechanism and work-holding means movable relative to each other during and subsequent to the sewing operation, of a needle-throat member through which the thread is led to the work, the relative movement after the sewing operation drawing out a length of thread from the needle-throat member, means mounted on the work-holder and movable both horizontally and vertically relative to the work-holder and over the needle-throat member to a position between said length of thread and the work, and means to sever the thread.

3. In a sewing machine adapted to perform a predetermined operation and then come to rest, the combination with stitch-forming mechanism including a needle and a needle-throat member, of work-holding means, said stitch-forming mechanism and work-holding means having a movement relative to each other at the end of the sewing operation thereby to draw out a length of thread, means movable in two directions upon and relative to the work-holding means and over the needle-throat member to engage and depress a portion of said length of thread, and means to sever the thread.

4. In a sewing machine adapted to perform a predetermined sewing operation and then come to rest, the combination with stitch-forming mechanism and work-holding means movable relative to each other during and subsequent to the sewing operation, of a needle-throat member through which the thread is led to the work, the relative movement after the sewing operation drawing out a length of thread from the needle-throat member, means mounted on the

work-holder and movable over the needle-throat member to a position between said length of thread and the work, a yielding guard-plate mounted on the work-holder and disposed between the under side of the work and such means in the initial position of the latter, and means to sever the thread.

5. In a sewing machine of the buttonhole type, stitch-forming mechanism including a needle and a needle-throat member, a work-holder including a longitudinal slide-frame, a cross slide-plate and work-clamping means carried by said cross slide-plate, means for moving the work-holder at the completion of the sewing to draw out a length of thread from the needle-throat member, means mounted on the cross slide-plate to seperate such thread from the under side of the work, and means to sever the thread.

6. In a sewing machine of the buttonhole type, stitch-forming mechanism including a needle and a needle-throat member, a work-holder including a longitudinal slide-frame, a cross slide-plate and work-clamping means carried by said cross slide-plate, means for moving the work-holder at the completion of the sewing to draw out a length of thread from the needle-throat member, means mounted on the cross-slide plate and movable over the needle-throat member and thence downwardly to depress the thread, and means to sever the thread.

7. In a sewing machine of the buttonhole type, stitch-forming mechanism including a needle and a needle-throat member, a work-holder including a longitudinal slide-frame, a cross slide-plate and work-clamping means carried by said cross slide-plate, means for moving the work-holder at the completion of the sewing to draw out a length of thread from the needle-throat member, a thread-engaging member mounted upon and movable relative to said cross slide-plate into and out of thread-engaging position, and a cam on the cross slide-plate to raise and lower said member.

8. In a sewing machine adapted to perform a predetermined operation and then come to rest, the combination with stitch-forming mechanism, of a work-clamp, clamp-closing means, said stitch-forming mechanism and work-clamp having a movement relative to each other at the end of the sewing operation thereby to draw out a length of thread, means movable relative to the closed work-clamp and longitudinally of said length of thread from a retracted position to a position between such thread and the under side of the work, means to sever the thread, and means to open the work-clamp after the thread is severed.

9. In a sewing machine adapted to perform a predetermined sewing operation and then come to rest, the combination with stitch-forming mechanism, a work-clamp, and clamp-closing means, said stitch-forming mechanism and work-clamp being movable relative to each other during and subsequent to the sewing operation, of a needle-throat member through which the thread is led to the work, the relative movement after the sewing operation drawing out a length of thread from the needle-throat member, means movable over said needle-throat member and relative to the closed work-clamp to a position between said length of thread and the work, means to sever the thread, and means to open the work-clamp after the thread is severed.

10. In a sewing machine adapted to perform a predetermined operation and then come to rest, the combination with stitch-forming mechanism, a work-clamp, and clamp-closing means, said stitch-forming mechanism and work-clamp having a movement relative to each other at the end of the sewing operation thereby to draw out a length of thread, of means movable below the work and relative to the closed work-clamp and over the needle-throat member in the direction in which the thread is drawn out from the needle-throat member to separate the thread from the work, means to sever the thread, and means to open the work-clamp after the thread is severed.

11. In a sewing machine adapted to perform a predetermined operation and then come to rest, the combination with stitch-forming mechnism, a work-clamp, clamp-closing means, said stitch-forming mechanism and work-clamp having a movement relative to each other at the end of the sewing operation thereby to draw out a length of thread, means mounted on the work-clamp and movable relative to the closed work-clamp between such thread and the under side of the work to separate the thread from the work, means to sever the thread, and means to open the work-clamp after the thread is severed.

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