

July 1, 1941.

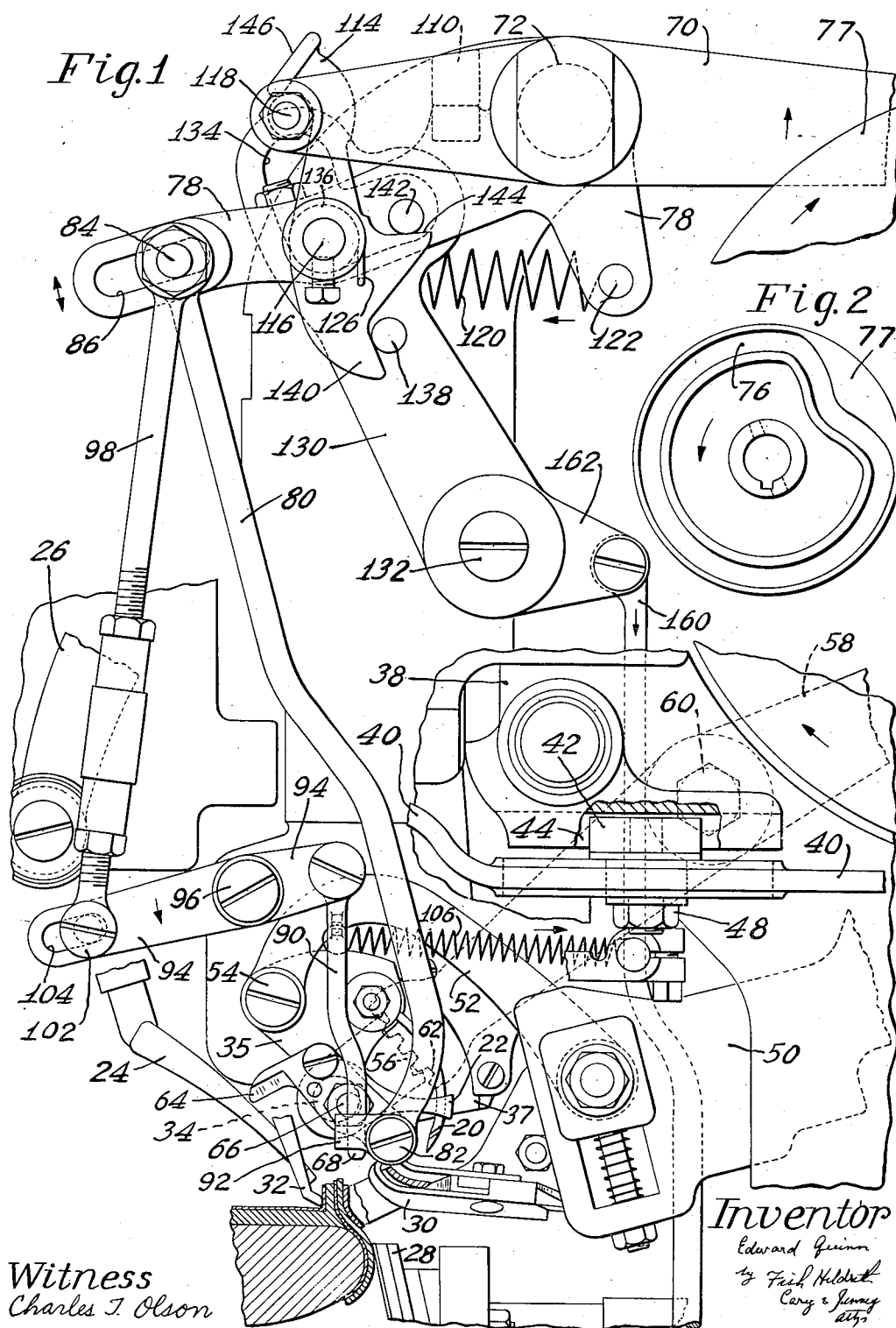
E. QUINN

2,247,691

MACHINE FOR OPERATING ON SHOES

Filed Dec. 1, 1938

3 Sheets-Sheet 1



July 1, 1941.

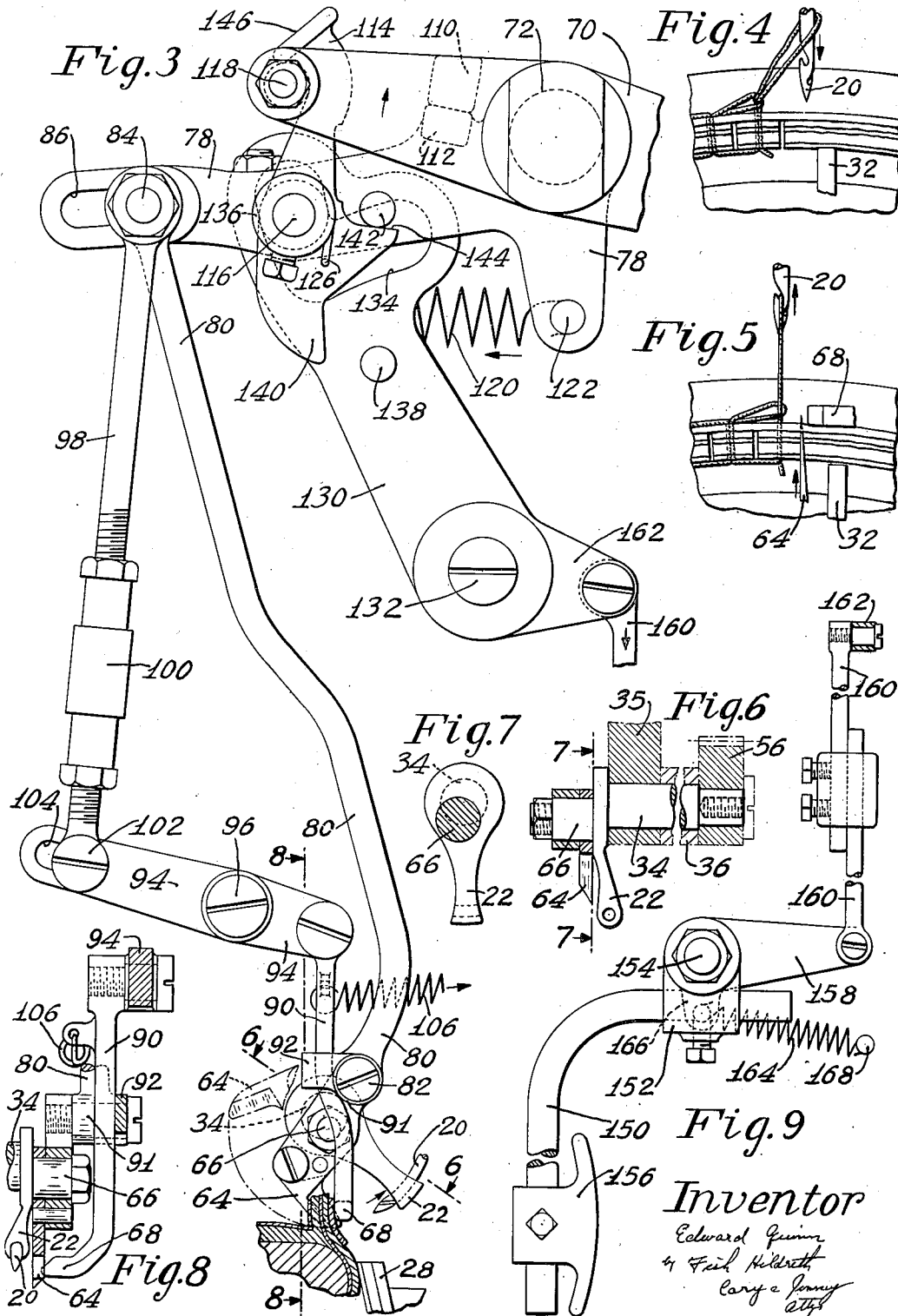
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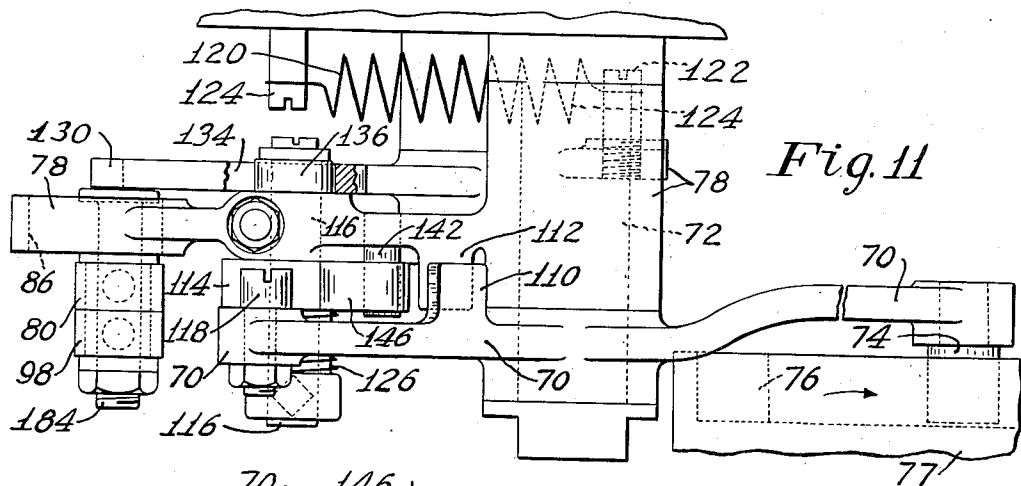


Fig. 11

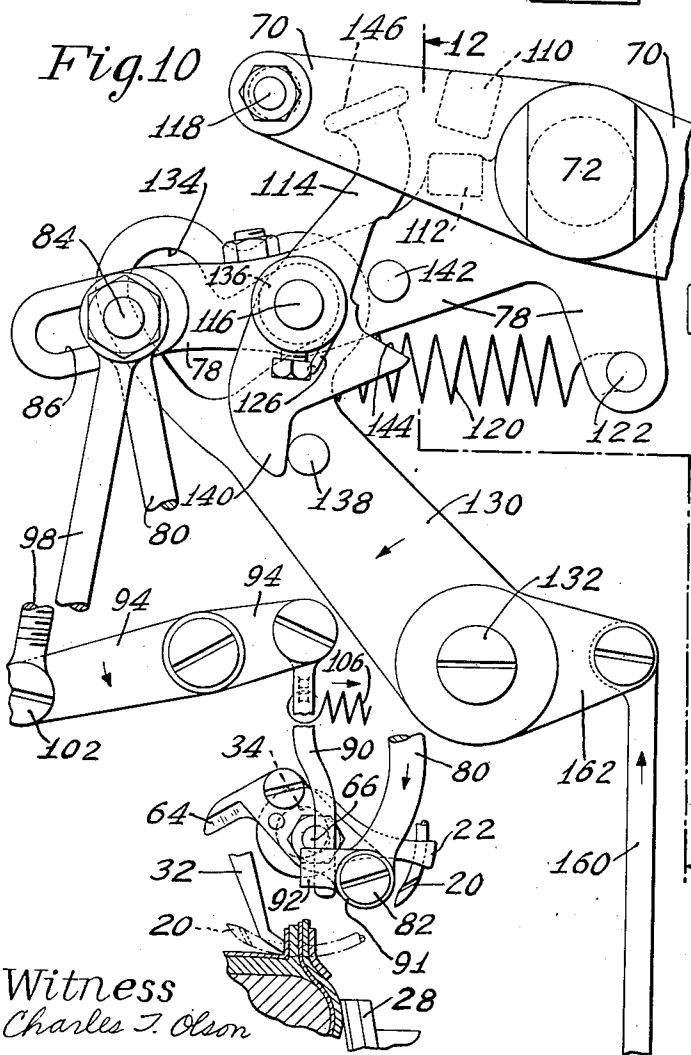


Fig. 10

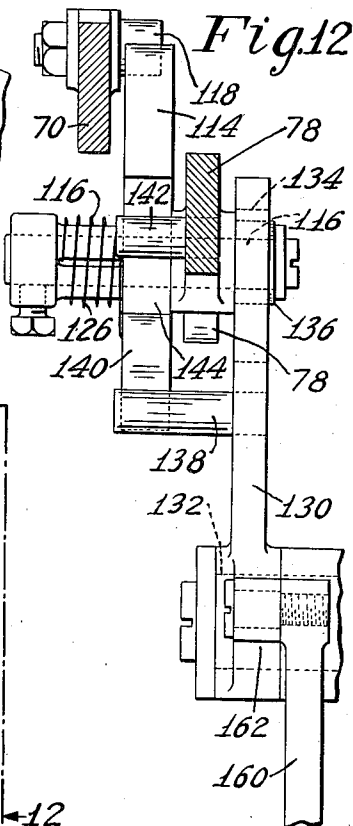


Fig. 12

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UNITED STATES PATENT OFFICE

2,247,691

MACHINE FOR OPERATING ON SHOES

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Application December 1, 1933, Serial No. 243,433

27 Claims. (Cl. 112—35)

The present invention relates to improvements in shoe machines, and more particularly to an in-seam sewing machine having a slashing device arranged for making a series of slashing cuts passing through the sewing rib comprised between the oppositely disposed stretches of thread forming the stitches of the seam.

The invention is intended as an improvement upon the construction illustrated and described in the applicant's Patent No. 2,183,170, dated December 12, 1939, and has for its principal object to provide a novel and improved slashing device which is well adapted for use in machines of this general description, and will operate with a high degree of efficiency and accuracy in forming and in placing the slashing cuts with relation to the stitches of the seam.

In operating upon certain types of shoes, and more particularly on shoes having a relatively vertical or upstanding sewing rib, it has been found that the usual instrumentalities for supporting and feeding the work do not provide adequate support for the sewing rib which tends to bend or yield under the cutting stroke of the rib slashing knife, with the result that the slashing cut is imperfectly made, or is displaced in such a manner as to weaken the anchorage for the stitches of the seam.

One feature of the present invention consists in the provision of novel supporting means cooperating with the rib slashing knife, said supporting means being constructed and so located as to engage with and support the sewing rib against the cutting stroke of the knife.

Another feature of the invention consists in the provision in an in-seam sewing machine of this general description having a rib slashing knife, of an anvil support, together with actuating means for moving the support into and out of engagement with the sewing rib in timed relation to the cutting stroke of the knife in order to provide the desired support for the rib without interfering in any way with the operation of the several shoe supporting, sewing and feeding devices in the sewing of an in-seam.

Another feature of the invention consists in the provision of a rocker support for the slashing knife having a relatively short radius arm, and mounted to turn on an eccentric which is moved in timed relation to the cutting stroke of the knife to cause the knife to move downwardly into the work at a substantial angle to the plane surface of the shoe sole, and thus to prevent cutting or marking of the shoe sole, while insuring a slashing cut of sufficient depth passing through

the sewing rib. In the illustrated construction, the eccentric mounting for the knife forms part of and moves with the needle guide of the machine.

Another feature of the invention consists in the locating of the knife a fixed distance from that side of the needle remote from the completed stitches of the seam, so that the knife will always enter the work a fixed distance from that point at which the needle passes through the work independently of the stitch length adjustment of the machine. An advantage of this arrangement is that the knife may be placed to make a slashing cut relatively close to the point at which the needle is operating through the work without interfering with the setting of the previous stitch, so that when the work is fed preparatory to the formation of the next stitch, the needle will then enter an unslashed portion of the sewing rib at a point which is relatively removed from the previously formed slashing cut to prevent tearing of the stock or other injury which would tend to weaken the seam.

Another feature of the invention relates to improvements in the timing of the rib slashing devices which in the illustrated construction are constructed and arranged to cause the knife to enter the work just prior to the time when the needle leaves the work, and thereafter to be immediately withdrawn so that the entire operation of the rib slashing devices including the cutting and return movements of the knife will take place after the looper has moved out of the way and before the sewing and work feeding devices have reached that point in the sewing cycle which constitutes the usual stop position of these machines.

Other features of the invention relate more specifically to improvements in the mechanism for actuating the rib slashing knife and the anvil support associated therewith in timed relation to the sewing and work feeding devices to insure the positive and accurate motion of these parts, and including means under the control of the operator for starting and for discontinuing the rib slashing operation during the continued operation of the machine in sewing the in-seam.

The several features of the invention consist also in the devices, combinations and arrangement of parts hereinafter described and claimed, which together with the advantages to be obtained thereby will be readily understood by one skilled in the art from the following description taken in connection with the accompanying drawings, in which Fig. 1 is a partial view in right side elevation of the sewing head of an in-

seam sewing machine, only so much of the machine being shown as is believed necessary to illustrate the connection of the present invention therewith. In this figure the machine is shown in stop position, but with the rib slashing knife and anvil support connected for active operation. Fig. 2 is a detail view on a smaller scale, of the rib slashing knife actuating cam looking from the left side of the machine; Fig. 3 is a detail view of the actuating connections for the rib slashing knife and anvil support, together with the latch mechanism for throwing these parts into and out of operation, the parts being shown with the anvil support in engagement with the sewing rib and with the rib slashing knife at the limit of its cutting stroke; Fig. 4 is a detail plan view of a portion of the work and indicating the positions taken by the needle and channel guide during the feeding of the work; Fig. 5 is a view similar to Fig. 4, of the parts substantially in the position shown in Fig. 3, in which the anvil support is engaged against the sewing rib, the rib slashing knife has completed its slashing cut, and in which the needle is being withdrawn from the work; Fig. 6 is a detail view partly in section taken on the line 6—6 of Fig. 3, illustrating particularly the needle guide and the eccentric mounting thereon for the rib slashing knife; Fig. 7 is a sectional view on the line 7—7 of Fig. 6; Fig. 8 is a detail sectional view taken on the line 8—8 of Fig. 3; Fig. 9 is a detail view in front elevation illustrating particularly the knee treadle control for throwing the rib slashing devices into and out of operation; Fig. 10 is a detail view of the rib slashing mechanism shown in Figs. 1 and 3, but with the connecting linkages broken away and illustrating the rib slashing mechanism in disconnected position; Fig. 11 is a detail plan view of the parts shown in Fig. 10, to illustrate particularly the cam lever for connecting and disconnecting the rib slashing mechanism; and Fig. 12 is a sectional view taken on the line 12—12 of Fig. 10.

The machine disclosed in the drawings as illustrating in a preferred form the several features of the present invention, comprises a welt sewing machine for attaching the welt to the insole and associated upper, and is substantially identical in its construction and mode of operation with the machine disclosed in the patent to Eppler No. 1,108,560. The shoe operating devices of the machine include a curved hook needle 20, a needle guide 22, a looper 24, a take-up 26, work supporting devices including a back rest 28, a welt guide 30 which acts also as an edge support, and a channel guide 32. In accordance with the usual construction of these machines, the needle 20 is carried on a pivot pin 34 for the needle segment 35 which is mounted to turn on a stationary bearing 36, and is externally supported in a raceway 37 on the machine frame. In the illustrated machine, the awl has been omitted. For feeding the work, a feed slide is provided generally indicated at 38 which is reciprocated in the line of feed by means of a cam actuated feed lever 40, and provides a support for the channel guide 32 which acts to feed the work. Following the usual construction of these machines, the feed lever 40 is supported at its forward end to turn about a fixed pivot, and is connected to move the feed slide through connections including a block 42 adjustably supported in a slotted portion of the lever 40, and arranged to engage in a guideway 44 formed in the bottom side of the feed slide 38. Adjustment of the

length of stitch is readily obtained by loosening the nut 48, and shifting the block 42 forwardly or rearwardly as desired on the feed lever 40. The needle segment 35 is actuated from a reciprocable needle lever generally indicated at 50 in Fig. 1, which is connected by means of a curved link 52 to a pivot pin 54 on the needle segment 35. The needle guide 22 and pivot pin 34 are positively actuated through connections which include a gear segment 56 rigidly secured to one end of the pivot pin 34, and a cam actuated lever 58 supported to turn on a pivot 60, and having formed at its forward end a gear segment 62 which meshes with the segment 56.

The mode of operation and timing of the several cooperating elements as thus far described, is well known in the art, being more particularly described in the Eppler patent above referred to, but may be briefly outlined as follows, in order to establish more clearly the relation of the present invention thereto.

The feed slide carrying with it the retracted channel guide is back fed prior to and during the retracting movement of the needle. The channel guide is then permitted to clamp the work against the welt guide 30 and back rest 28, and the feed slide is then advanced to feed the work, and the needle is then advanced through the work to pick up a loop of thread.

The rib slashing mechanism forming more specifically the subject-matter of the present invention, comprises a rib slashing knife 64 which is supported to turn on an eccentric pivot 66 formed integrally with the needle guide 22 and pivot pin 34, and a cooperating anvil support 68 which is arranged to engage with and force the sewing rib outwardly against the thrust of the knife 64, which enters from the channel side of the work. As illustrated for example in Fig. 6 of the drawings, the knife 64 is fixed in the line of feed, and is spaced a predetermined distance from that side of the needle remote from the completed stitches of the seam, so that the slashing cut will always be spaced a predetermined distance from the point of operation on the shoe at which the needle is operating to engage with and draw a new loop of thread through the work. As best shown in Fig. 5 of the drawings, the knife is located to form a slashing cut close to the point at which the needle is operating through the work, so that when the work is fed the cut will be transferred to the other side of the needle a maximum possible distance for any given stitch length adjustment of the feed mechanism.

As clearly appears in Fig. 3, the operation of the knife 64 is timed with relation to the operation of the needle 20 and needle guide 22, so that the downward movement of the knife takes place during the retracting movement of the needle guide 22, and while the eccentric pivot 66 is moving rearwardly about the axis of rotation of the needle guide on the pivot pin 34. Owing to the rearward shift in the position of the eccentric pivot 66 and the relatively short radius on which the knife is turning, the knife will enter the work at a substantial angle to the plane of the shoe sole as indicated by the dot-and-dash line in Fig. 3, thus avoiding any possibility of injurious cutting of the sole, and at the same time insuring a sufficient depth of cut of the knife through the sewing rib. As the needle guide reaches its extreme retracted position, the knife is again retracted, swinging clear of the work on

the eccentric pivot 66 which is now in an extreme rearward and somewhat raised position.

The anvil support 68 is constructed and arranged to move in timed relation to the knife, acting as the knife moves downwardly first to move downwardly and rearwardly and then forwardly to force the sewing rib outwardly against the thrust of the knife as best shown in Figs. 3 and 5. During retracting movement of the knife, the anvil support 68 is again moved rearwardly and then up to its raised inoperative position as shown, for example, in Figs. 1 and 10. With this construction and arrangement of the anvil support 68, it will readily be seen that a firm support is provided for the sewing rib against the thrust of the slashing knife which at the same time does not interfere with the feeding or correct positioning of the work during the transfer of the point of operation about the shoe, particularly as the anvil support will have moved to its fully retracted position prior to the start of the work feed. By using a support movable as above described, it is possible to apply a positive pressure on the relatively yielding rib to insure the proper position of the rib for the operation of the knife, an overthrow forward movement of the anvil 68 preferably being provided for this purpose. The anvil support thus provided serves to provide support considerably above the usual shoe supporting devices, and more particularly the welt guide 30 which necessarily engages the outer edge of the shoe at a lower point which will be substantially opposite the plane of operation of the needle through the base of the sewing rib. The timing of the operation of the knife and of the anvil support above described, has also the advantage that the operation of these parts is calculated to avoid any possible interference with the associated thread handling and work feeding instrumentalities including particularly the looper 24 and welt guide 30.

In the illustrated embodiment of the invention, the rib slashing knife 64 and anvil support 68 are positively driven from the main cam shaft of the machine by means of a cam lever 70 supported to turn on a pivot pin 72, and provided at its rear end with a cam roll 74 for engagement with a face cam 76 (see Figs. 2 and 11) formed on the left side of the usual feed cam disk 77 of the machine. The cam lever 70 is connected through a latch mechanism hereinafter more fully to be described, to drive a forwardly extending lever 78 loosely mounted to turn on the pivot shaft 72. The lever 78 is connected to impart oscillatory movements to the knife 64 through a link 80 connected at its lower end by means of a pivot pin 82 to the knife segment, and at its upper end by means of a pin 84 to the lever 78. In order to provide a convenient adjustment to determine the throw of the knife 64, the pin 84 is adjustably mounted in a slot 86 formed in the forward end of the lever 78.

The anvil support 68 is formed on the lower end of a vertically extending rod 90 which is slidably supported toward its lower end against the knuckle 91 at the lower end of the link 80 forming part of the pivotal connection with the knife segment. A guard plate 92 rigidly secured to the knuckle 91 serves to provide a lateral support for the rod 90. The rod 90 is pivotally connected at its upper end to one end of a lever 94 supported to turn on a fixed pivot 96. The lever arm 94 is connected at its other end by means of a link 98 to the adjustable pivot pin 84 on the actuating lever 78. In order to provide additional adjust-

ment of the extreme down position taken by the anvil support 68, the link 98 is provided with an extensible coupling 100, and at its lower end is connected to the lever 94 by means of a pivot pin 102 adjustably mounted in a slot 104 formed in the lever 94. A tension spring 106 connected at its forward end to the rod 90, and at its rear end to a fixed point on the machine, tends to swing the rod 90 rearwardly about its pivotal connection with the lever 94, and serves to hold the rod 90 at all times in engagement with the knuckle 91 forming part of the pivotal connection between the link 80 and the knife segment. With the construction and arrangement of the actuating connections as thus far described, it will readily be seen that the anvil support 68 is moved downwardly simultaneously with the knife 64, while the lower end thereof is moved first rearwardly and then forwardly as the knuckle 91 turns about the eccentric pivot 66 of the knife segment. In order to further modify the forward and back motion of the anvil support 68, the rod 90 is bent in such a manner as to prevent excessive forward movement of the anvil support 68 as the knife 64 and knuckle 91 reach the extreme thrust position illustrated in Fig. 3.

The actuating lever 78 is arranged to be connected and disconnected from the continuously reciprocating cam lever 70 during continued operation of the machine, these parts being arranged so that the lever 78 when disconnected will remain in its extreme low position in which the knife 64 and anvil support 68 are in their fully retracted inoperative positions as shown in Fig. 10. The mechanism through which the actuating lever 78 is connected to move with the cam lever 70 includes a lug 110 on the cam lever 70 which engages with a lug 112 on the actuating lever 78 to positively limit the upward throw of the lever 78 with relation to the forward end of the cam lever 70, and a cooperating latch lever 114 pivotally supported at 116 on the actuating lever 78 for engagement with a latch pin 118 on the forward end of the cam lever 70. A tension spring 120 connected at one end to a pin 122 on a downwardly extending arm of the actuating lever 78, and at its other end to a pin 124 on the machine frame, tends to move the actuating lever 78 upwardly into operating position with relation to the cam lever 70 in which the latch 114 can be brought into locking engagement with the latch pin 118. A torsion spring 126 coiled about the pivot pin 116 and connected at one end to the latch lever 114, tends to swing the latch lever forwardly into latching engagement with the latch pin 118.

Mechanism is provided under the control of the operator which may be rendered operative to disengage the latch and to positively lock the actuating lever 78 in its low inoperative position in which the rib slashing knife 64 and anvil support 68 are retained in their inoperative position, or alternatively, to release the actuating lever 78 and to permit the engagement of the latch lever 114 with the latch pin 118 to throw the rib slashing mechanism into operation. This mechanism comprises a control lever 130 supported to turn on a stationary pivot 132, and provided at its upper end with a right angle slot 134 to receive a cam roller 136 mounted on one end of the pivot pin 116. For the rearward or operative position of the control lever 130, the cam roller 136 will ride in the vertical portion of the slot 134, so that the actuating lever 78 is free to reciprocate with the cam lever 70 as shown, for example, in Fig. 3.

Forward movement of the control lever 130 as the cam lever 70 and control lever 78 reach their limiting down position, will cause the cam roll 136 to ride rearwardly in the horizontal portion of the slot 134 to lock the lever 78 in its low inoperative position. The forward movement of the control lever 130 is arranged also to disconnect the latch 114 from the latch pin 118. The disengagement of the latch 114 is effected through the engagement of a pin 138 on the control lever 130 with a downwardly extending arm 140 of the latch lever 114 which acts to swing the latch lever rearwardly to the disconnected position shown in Fig. 10, against the pressure of its spring 126. Movement of the control lever 130 to its rearward operative position acts to permit the latch 114 to swing forwardly under the influence of its spring 126 into the path of movement of the latch pin 118 supported on the oscillating cam lever 70. This forward movement of the latch lever 114 is limited by means of a stop pin 142 on the actuating lever 78 which engages with a stop surface 144 on the latch lever 114. The latch lever 114 is further provided at its upper end with a cam surface 146 which is arranged in the event that the latch lever is released when the latch pin 118 is at the upper end of its oscillatory movement with the cam lever 70 to engage with the pin 118 to force the latch lever 114 rearwardly as the latch pin 118 moves downwardly into locking position with relation thereto.

In the illustrated construction, the operation of the control lever 130 is controlled from a knee lever 150 (see Fig. 9) which takes the form of a curved rod secured at one end to a bracket 152 on a rock shaft 154, and provided at its lower end with a knee treadle 156. A laterally extending lever arm 158 secured to the rock shaft 154 is connected through an adjustable link 160 with a rearwardly extending arm 162 of the control lever 130. A tension spring 164 connected at one end to a downwardly extending lever arm 156 on the rock shaft 154 and at its other end to a stationary pin 168, tends normally to maintain the control lever in its advanced inoperative position as shown in Fig. 10, in which the rib slashing mechanism is disconnected. Pressure exerted on the knee treadle 156 will then act through the connections above described and against the pressure of the spring 164 to move the control lever 130 rearwardly to operating position in which the actuating lever 78 is connected through the latch 114 to move with the cam lever 70 as above described.

The nature and scope of the invention having been described, what is claimed is:

1. An inseam sewing machine having, in combination, stitch forming and work feeding devices including a needle fixed in the line of feed, means for feeding the work, a knife constructed and arranged for forming a series of slashing cuts in the sewing rib between adjacent portions of the stitching passing through the between substance, and means for supporting the knife a fixed distance from the needle in the line of feed, and on that side of the needle remote from the completed stitches of the seam.

2. An inseam sewing machine having, in combination, stitch forming and work feeding devices including a needle fixed in the line of feed, means for feeding the work having provision for adjustment to vary the length of stitch, a knife constructed and arranged for forming a series of slashing cuts in the sewing rib, and means for supporting the knife a fixed distance from the

needle in the line of feed, and on that side of the needle remote from the completed stitches of the seam.

3. An inseam sewing machine having in combination stitch forming and work feeding devices including a needle fixed in the line of feed, means for feeding the work having provision for adjustment to vary the length of stitch, a knife constructed and arranged for forming a slashing cut in the sewing rib transversely of the line of stitching and between adjacent portions of the stitching passing through the between substance, means for supporting the knife a fixed distance from the needle in the line of feed, and means for actuating the knife.

4. An inseam sewing machine having in combination stitch forming devices including a needle, a slashing knife arranged for making transverse cuts through the sewing rib, and a support arranged to engage the sewing rib substantially above the path followed by the needle in its work piercing stroke and to support the sewing rib against the cutting stroke of the knife.

5. An inseam sewing machine having, in combination, stitch forming and work feeding devices, a slashing knife arranged for making transverse cuts through the sewing rib, a support movable to engage and to support the sewing rib against the cutting stroke of the knife, and actuating means for the support.

6. An inseam sewing machine having, in combination, stitch forming and work feeding devices including a curved needle, a slashing knife movable in a curved path for making transverse cuts through the sewing rib, a pivoted knife segment on which the knife is carried, a support arranged to engage and support the sewing rib against the cutting stroke of the knife, and means associated with the knife segment and rendered operative by the movement thereof to force the support against the sewing rib against the cutting stroke of the knife.

7. An inseam sewing machine having, in combination, stitch forming and work feeding devices, a slashing knife arranged for making transverse cuts through the sewing rib, a support movable to engage and to support the sewing rib against the cutting stroke of the knife, actuating means for the knife, and means for actuating the support in timed relation to the knife.

8. An inseam sewing machine having, in combination, stitch forming devices, devices for slashing the sewing rib of the sole including a knife, a support movable to engage with and to support the sewing rib against the cutting stroke of the knife, means for actuating the knife and support in timed relation to the stitch forming devices, and means for rendering said slashing devices operative and inoperative during continued operation of the machine in sewing a seam.

9. An inseam sewing machine having, in combination, stitch forming devices, devices for slashing the sewing rib of the sole including a knife, a support movable to engage with and to support the sewing rib against the cutting stroke of the knife, means for actuating the knife and support in timed relation to the stitch forming devices, a treadle, and connections therefrom for throwing the knife and support into and out of operation during continued operation of the machine in sewing a seam.

10. An inseam sewing machine having, in combination, stitch forming and work feeding devices including a curved needle, a pivotal support for the needle, a slashing knife movable in an

arcuate path for making transverse cuts through the sewing rib, and a pivotal support for said knife having the pivotal axis thereof off-set from the axis of the pivotal support for the needle toward the work.

11. An inseam sewing machine having, in combination, stitch forming and work feeding devices including a curved needle, a pivotal support for the needle, a slashing knife for making transverse cuts through the sewing rib, and a pivotal support on which the knife is movable in an arcuate path of shorter radius than the needle, and having the pivotal axis thereof off-set from the axis of the needle support toward the work.

12. An inseam shoe sewing machine having, in combination, stitch forming devices including a curved hook needle, a pivotal support for the needle, a needle guide movable about the same axis as the needle, a reciprocating slashing knife arranged to make transverse cuts through the sewing rib of the sole of a shoe presented to the stitch forming devices, and to enter the opposite side of the sewing rib from the needle, and a pivotal support for the knife on the needle guide having its axis offset from the axis of the needle support on a radial line extending generally toward but slightly to the work side of the needle engaging portion of said guide.

13. An inseam sewing machine having, in combination, stitch forming and work feeding devices including a curved needle arranged to enter the outside of the work, a pivotal support for the needle, a slashing knife for making transverse cuts through the sewing rib and arranged to enter the channel side of the rib, a pivotal support on which the knife is movable in an arcuate path of shorter radius than the needle, having the pivotal axis thereof off-set from the axis of the needle support toward the work.

14. An inseam shoe sewing machine having, in combination, stitch forming devices, a slashing knife arranged to make transverse cuts through the sewing rib of the sole of a shoe presented to said devices, mechanism for actuating the knife, and means for disconnecting the knife from its actuating mechanism and for locking the knife in retracted position during the continued operation of the stitch forming devices.

15. An inseam shoe sewing machine having, in combination, stitch forming devices, a slashing knife arranged to make transverse cuts through the sewing rib of the sole of a shoe presented to said devices, mechanism for actuating the knife comprising a cam actuated lever and connections between said lever and the knife, and means for rendering said connections effective and ineffective to actuate the knife during the continued operation of the stitch forming devices and for locking the knife in retracted position while said connections are ineffective.

16. An inseam shoe sewing machine having, in combination, stitch forming devices, a slashing knife arranged to make transverse cuts through the sewing rib of the sole of a shoe presented to said devices, a support movable into and out of engagement with the sewing rib to support the rib against the cutting stroke of the knife, a cam actuated lever, and connections from said lever for actuating the knife and support.

17. An inseam shoe sewing machine having, in combination, stitch forming devices, a slashing knife arranged to make transverse cuts through the sewing rib of the sole of a shoe presented to said devices, a pivotal support for the knife, and mechanism for oscillating the knife on said sup-

port and for moving the support to impart an additional increment of movement to the knife toward the shoe sole during the cutting stroke.

18. An inseam shoe sewing machine having, in combination, stitch forming devices including a curved hook needle, a pivotal support for the needle, a needle guide movable about the same axis as the needle, a slashing knife arranged to make transverse cuts through the sewing rib of the sole of a shoe presented to the stitch forming devices, and a pivotal support for the knife on the needle guide having its axis offset from the axis of the needle support.

19. An inseam shoe sewing machine having, in combination, stitch forming devices, a slashing knife arranged to make transverse cuts through the sewing rib of the sole of a shoe presented to said devices, mechanism for actuating the knife comprising two levers, a cam for actuating one of said levers, connections between the other lever and the knife, a latch to connect the two levers, and means for actuating the latch to connect and disconnect the levers during the continued operation of the stitch forming devices.

20. An inseam shoe sewing machine having, in combination, stitch forming devices, a slashing knife arranged to make transverse cuts through the sewing rib of the sole of a shoe presented to said devices, mechanism for actuating the knife comprising two levers, a cam for actuating one of said levers, a latch on the other lever, connections between the latch carrying lever and the knife, and means for actuating the latch to connect and disconnect the two levers during the continued operation of the stitch forming devices and for locking the latch carrying lever against movement while the levers are disconnected.

21. An inseam shoe sewing machine having, in combination, stitch forming devices including a curved hook needle, slashing knife arranged to make transverse cuts through the sewing rib of the sole of a shoe presented to said devices between adjacent portions of the stitching passing through the between substance, mechanism for advancing and retracting the knife independently of the needle movement timed to complete the retracting stroke of the knife while the needle is in retracted position.

22. An inseam shoe sewing machine having, in combination, stitch forming devices including a curved hook needle, a slashing knife arranged to make transverse cuts through the sewing rib of the sole of a shoe presented to said devices between adjacent portions of the stitching passing through the between substance, mechanism for advancing and retracting the knife independently of the needle movement comprising a cam actuated lever, and connections between said lever and the knife.

23. An inseam shoe sewing machine having, in combination, stitch forming devices, a slashing knife arranged to make transverse cuts through the sewing rib of the sole of a shoe presented to said devices, a pivotal support for the knife, mechanism for oscillating the knife, and means for moving the pivotal support to cause the knife to move in a more steeply angled path toward the work during its cutting stroke, and in a path slightly withdrawn with relation to the work during its retracting stroke.

24. An inseam shoe sewing machine having, in combination, stitch forming devices, a slashing knife arranged to make transverse cuts through the sewing rib of the sole of a shoe presented to said devices, a pivotal support for the

knife, mechanism for oscillating the knife, and means for moving the pivotal support during the cutting stroke of the knife to cause the knife to enter the work at an increased angle with relation to the surface of the sole, and thereafter to cause the knife to be slightly withdrawn with relation to the work and for holding said support stationary during the retracting stroke of the knife.

25. An inseam sewing machine having, in combination, stitch forming and work feeding devices, a slashing knife arranged for making transverse cuts through the sewing rib, a support having a movement downwardly opposite the sewing rib and then transversely of the line of feed to engage and to support the sewing rib against the cutting stroke of the knife, and actuating means for the support.

26. An inseam sewing machine having, in combination, stitch forming and work feeding devices, a slashing knife arranged for making transverse cuts through the sewing rib, a support having a movement downwardly and transversely away from the line of feed to a position opposite the sewing rib and then transversely of the

line of feed to engage and to support the sewing rib against the cutting stroke of the knife, and actuating means for the support.

27. An inseam sewing machine having, in combination, stitch forming and work feeding devices including a curved needle, a slashing knife, a knife segment on which the knife is movable in an arcuate path for making transverse cuts through the sewing rib, means for operating the knife, a support to engage and to support the sewing rib against the cutting stroke of the knife, means acting in timed relation to said knife actuating means for moving the support downwardly opposite the sewing rib, a guiding element associated with said knife segment, and a cammed surface on said support cooperating with said guide, said guide and cammed surface being constructed and arranged for moving the support transversely of the line of feed rearwardly during said downward movement to a position opposite the rib, and then transversely of the line of feed forwardly into supporting engagement with the sewing rib.

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