A. EPPLER.

SEWING MACHINE.

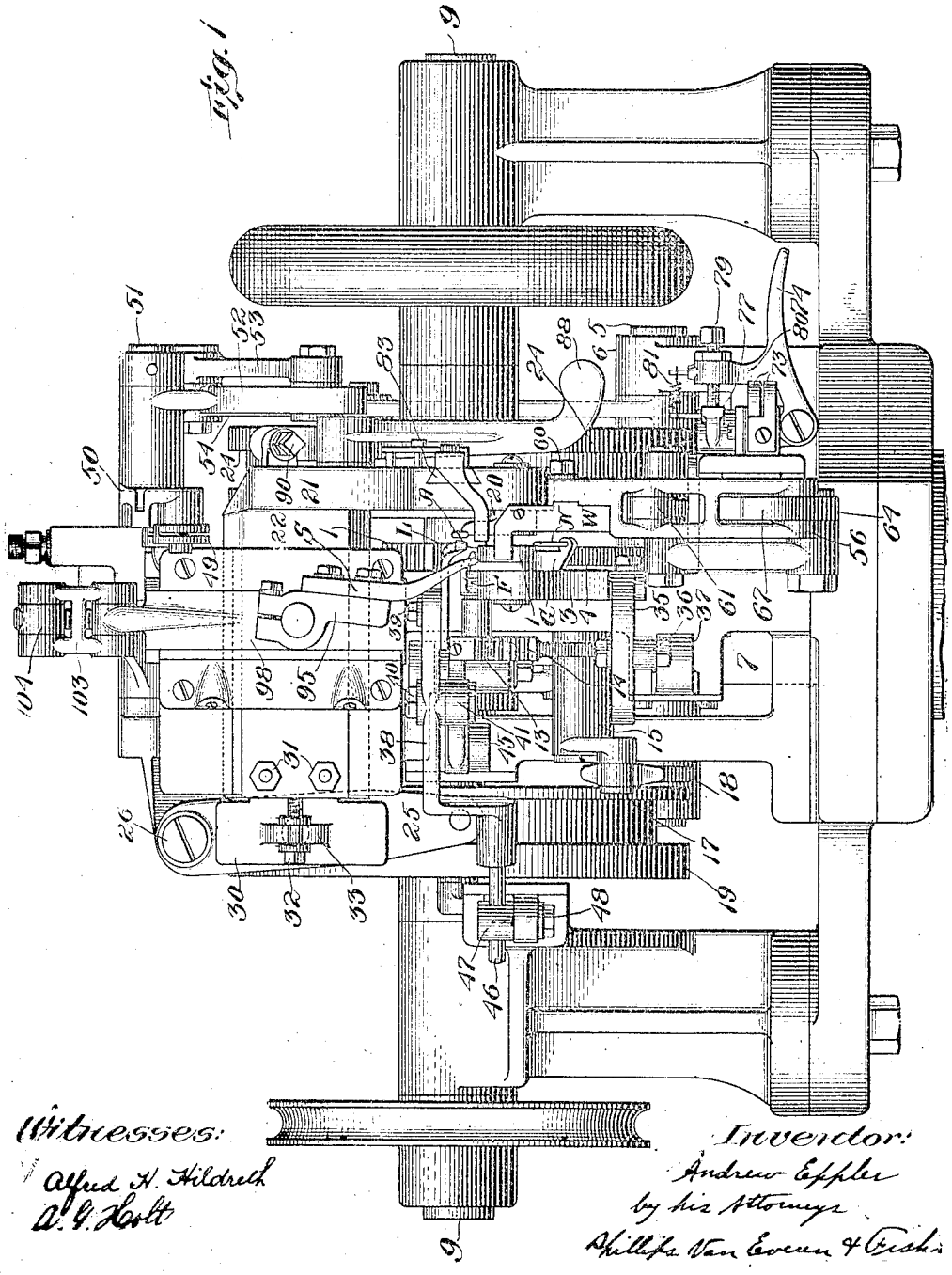
APPLICATION FILED AUG. 25, 1905.

1,030,880.

Patented July 2, 1912.

6 SHEETS—SHEET 1.

Fig. 1.



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6 SHEETS—SHEET 2.

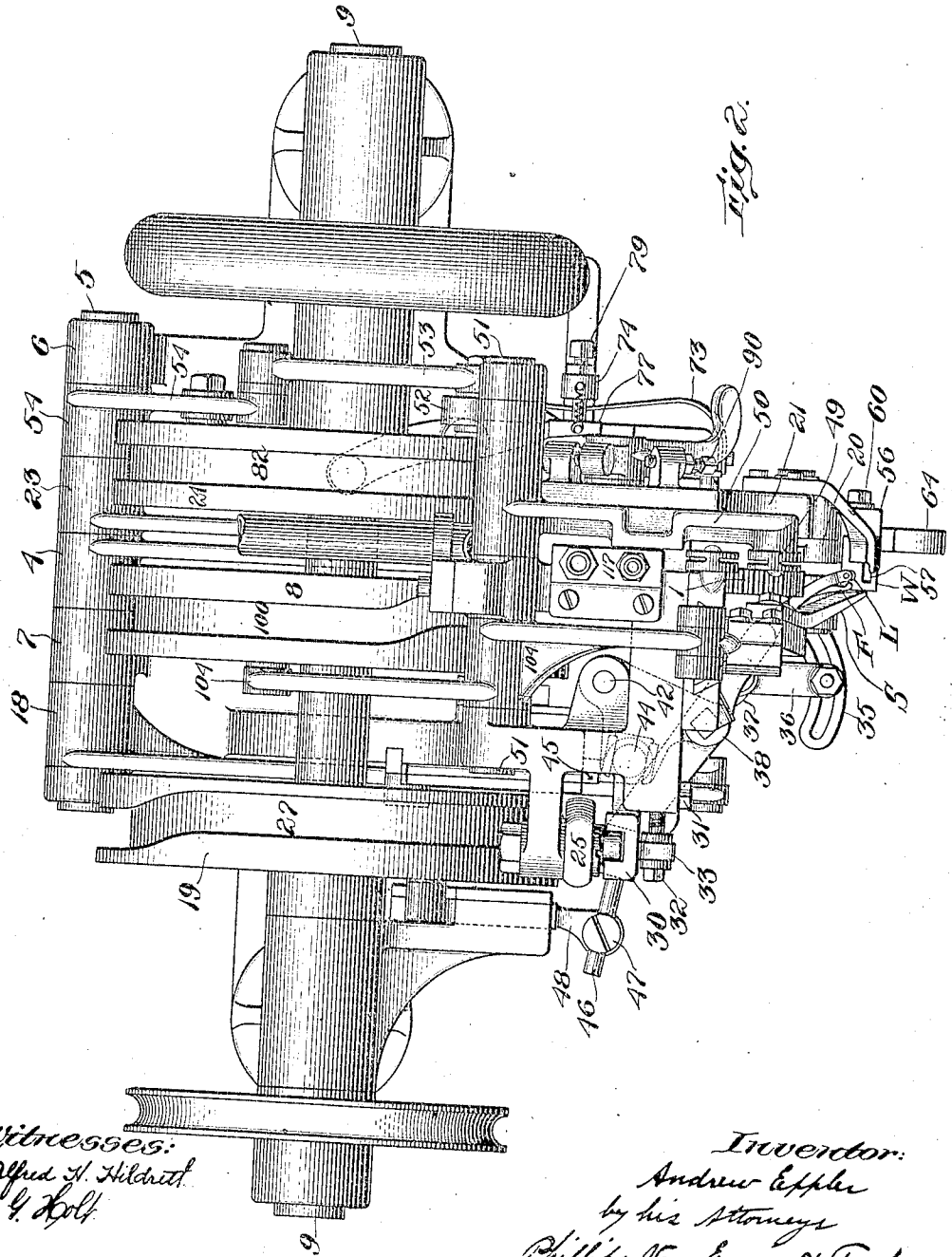


Fig. 2.

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6 SHEETS-SHEET 3.

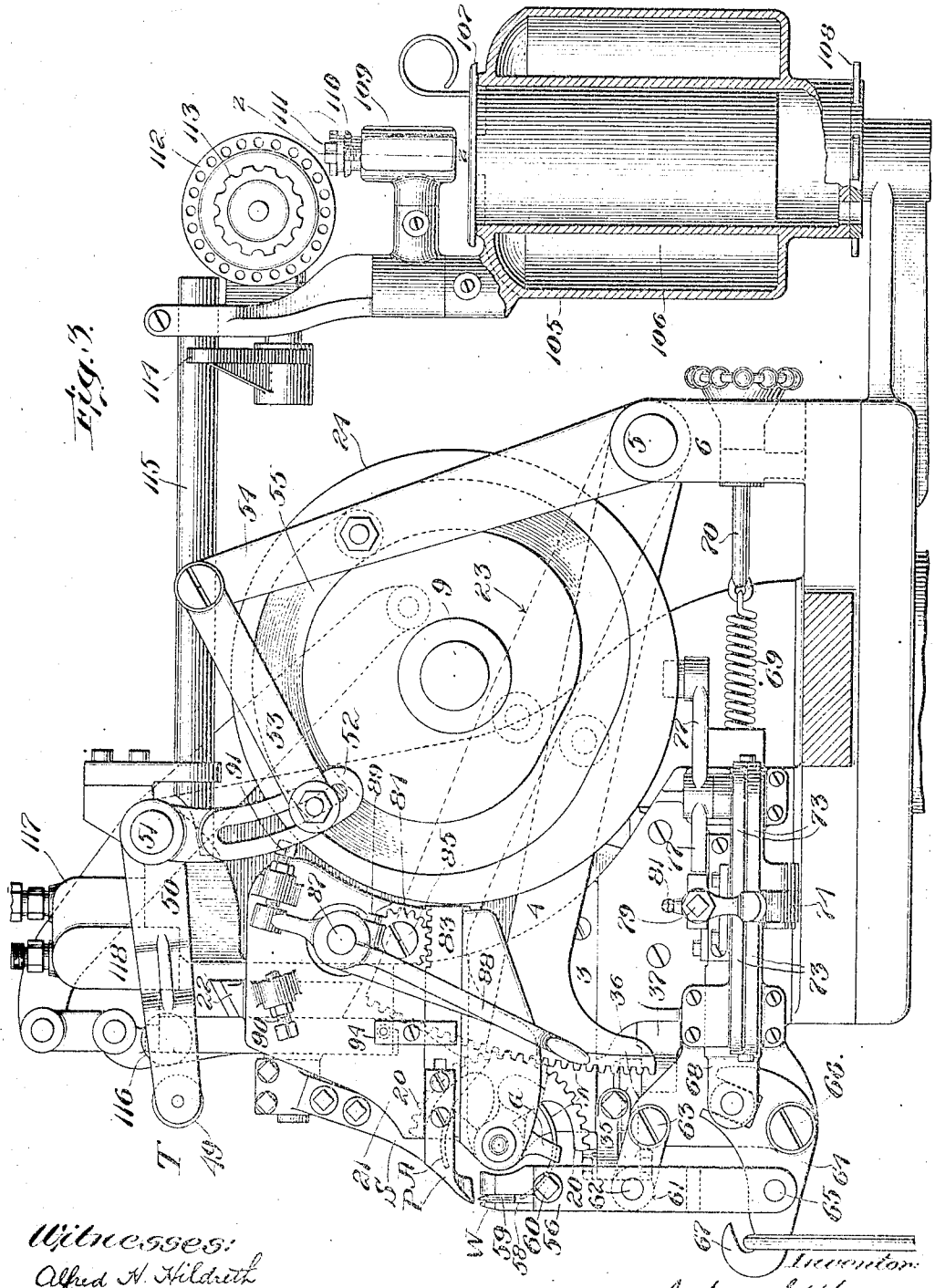


Fig. 3.

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6 SHEETS—SHEET 4.

Fig. 1.

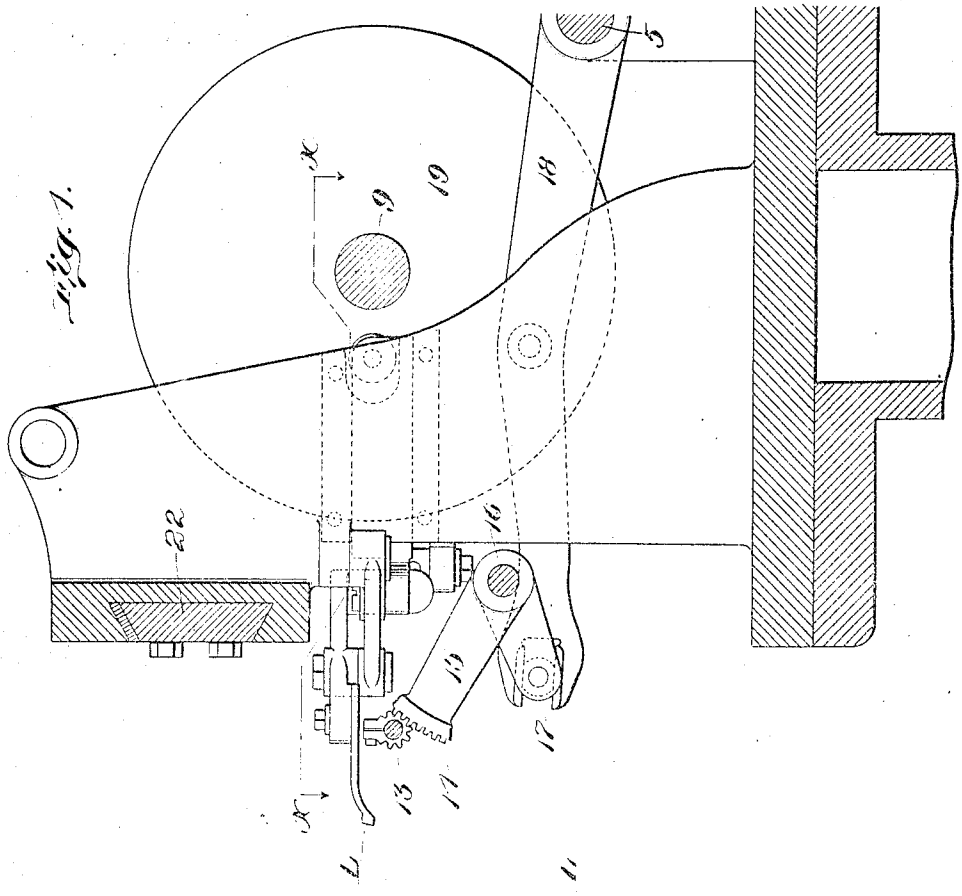


Fig. 3.

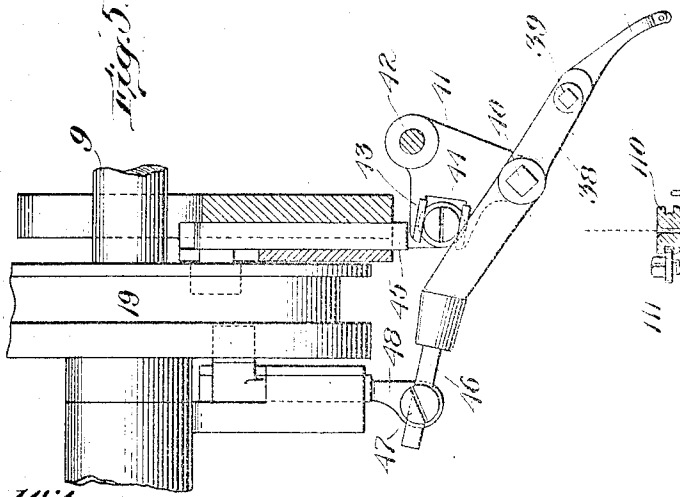
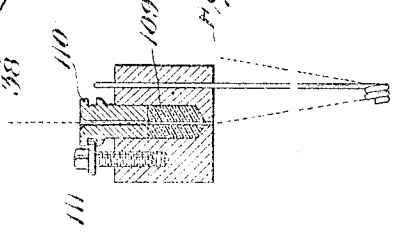


Fig. 15.



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1,030,880.

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6 SHEETS—SHEET 5.

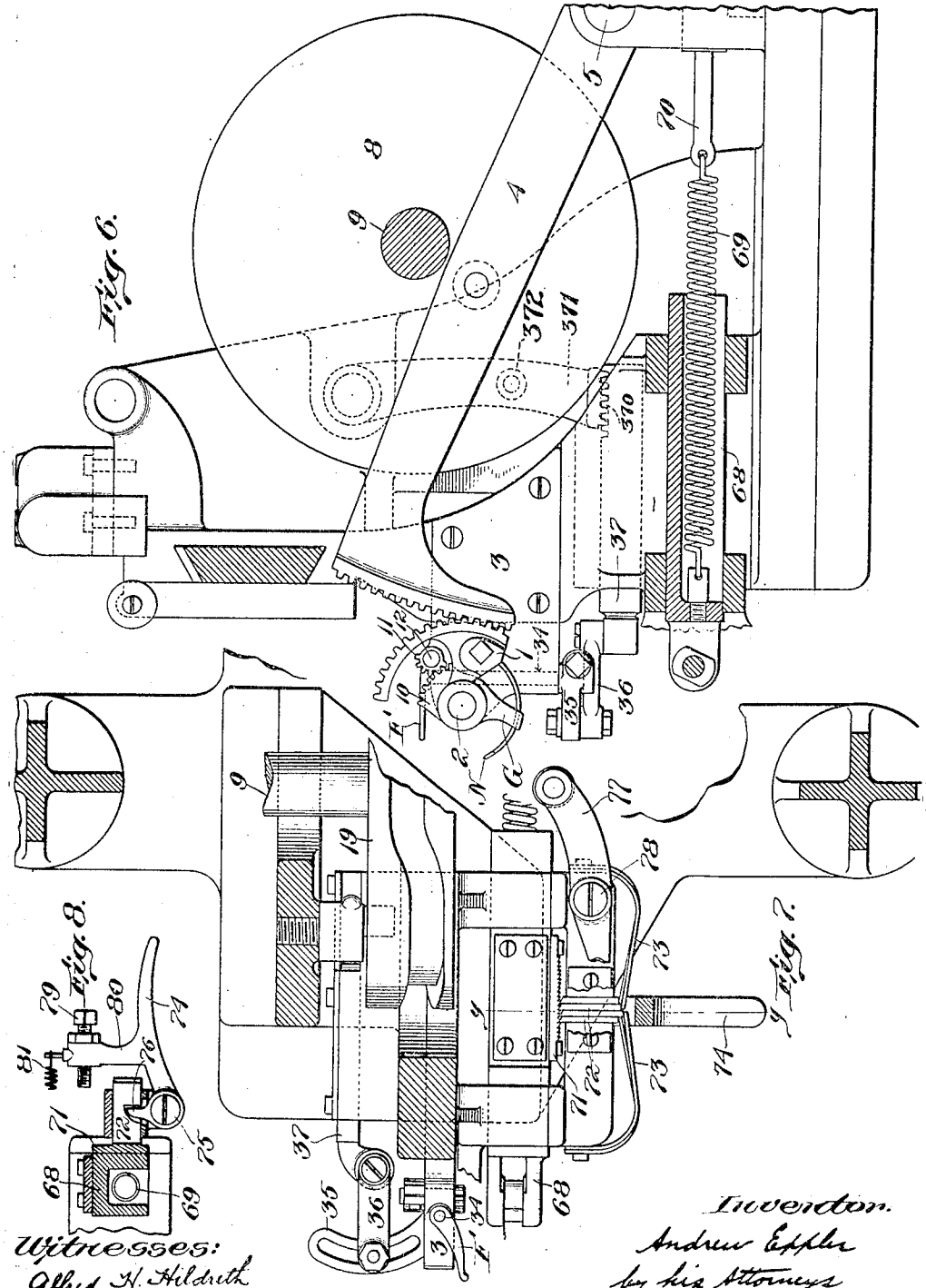


Fig. 6.

Fig. 8.

Fig. 7.

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Patented July 2, 1912.

6 SHEETS—SHEET 6.

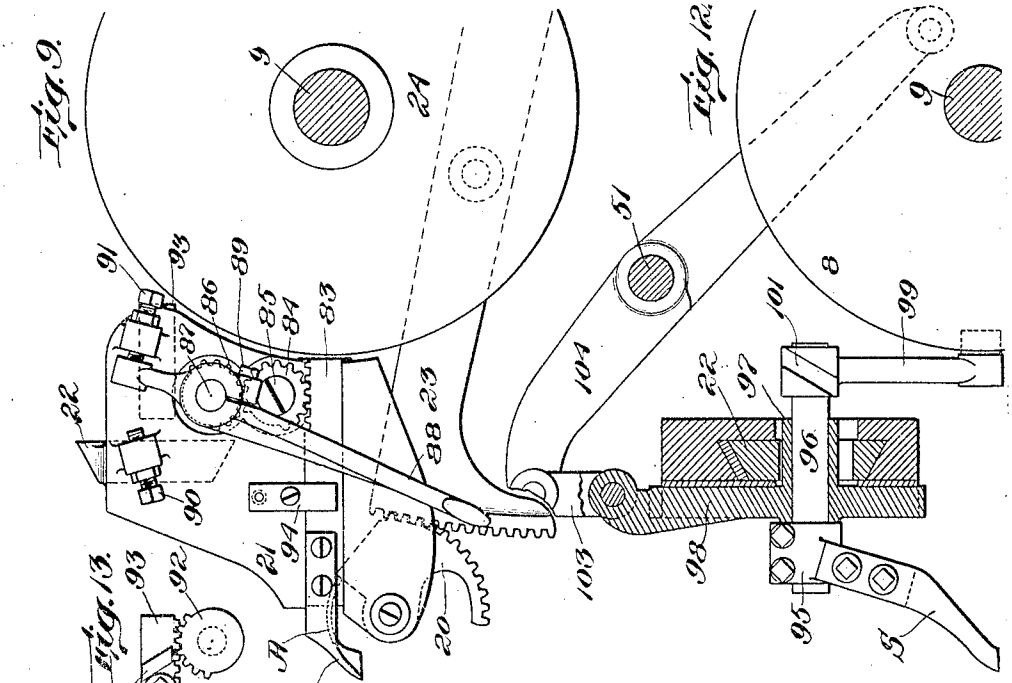


Fig. 9.

Fig. 12.

Fig. 13.

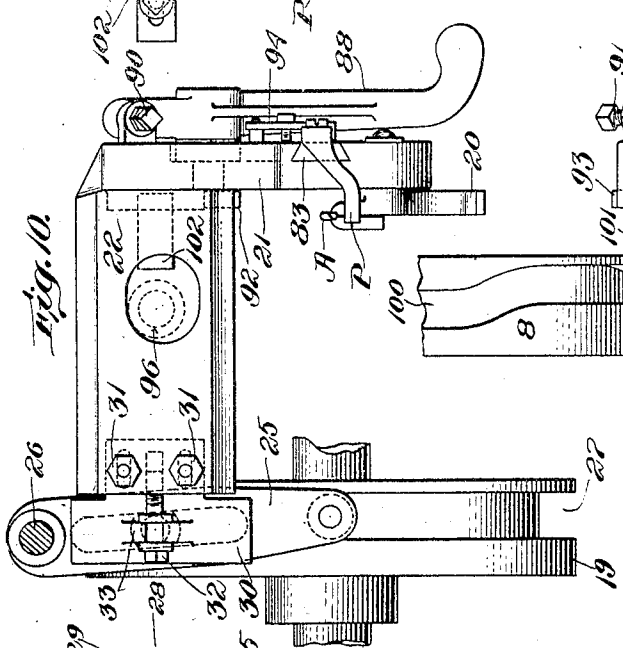


Fig. 10.

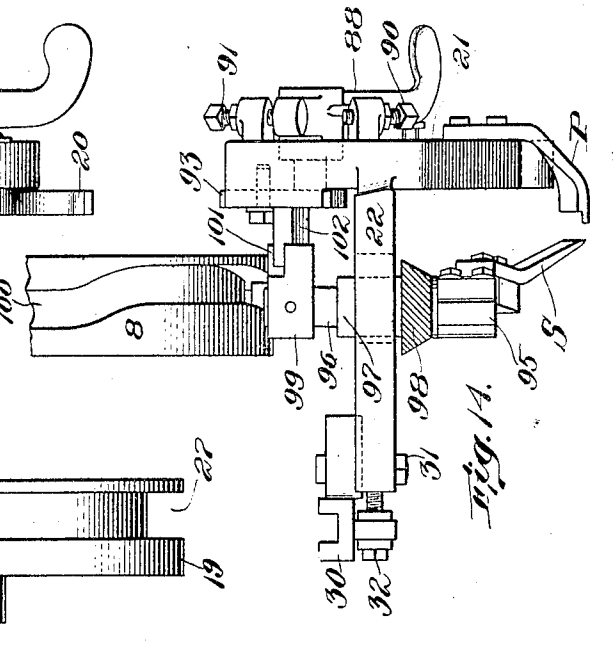


Fig. 14.

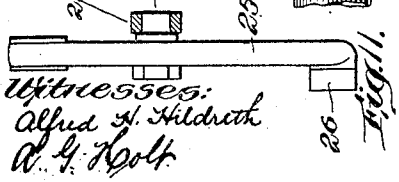


Fig. 11.

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UNITED STATES PATENT OFFICE.

ANDREW EPPLER, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

SEWING-MACHINE.

1,030,880. Specification of Letters Patent. Patented July 2, 1912.

Application filed August 25, 1905. Serial No. 275,741.

To all whom it may concern:

Be it known that I, ANDREW EPPLER, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to an improvement in sewing machines and more particularly to that type of sewing machines employing a curved hook needle adapted for fair stitching mock welts and McKays.

The object of the invention is to re-organize and improve the construction of sewing machines and especially to produce a high speed fair stitch sewing machine provided with stitch separating devices and to these ends the present invention consists of the sewing machine hereinafter described and particularly defined in the claims.

In the accompanying drawings illustrating the preferred form of the invention, Figure 1, is a front elevation, Fig. 2 is a plan, Fig. 3, is a right side elevation, the right hand bearing and hand wheel being removed. Fig. 4, is a sectional elevation showing the looper and needle guide actuating devices. Fig. 5, is a sectional plan taken on the line *x*—*x* Fig. 4, showing the looper and its actuating device in plan, Fig. 6, is a sectional elevation showing the thread finger actuating mechanism, the needle actuating mechanism, a portion of the needle guide actuating mechanism and a portion of the work table supporting means, Fig. 7, is a sectional plan showing the work support locking devices and the thread finger actuating mechanism, Fig. 8, is a detail section on the line *y*—*y* Fig. 7, showing the releasing lever for releasing the pawls of the work support holding devices, Fig. 9, is a right hand side elevation to a portion of the head of the machine illustrating the presser foot and its supporting and actuating devices. Fig. 10, is a front elevation of a portion of the machine showing the feed slide and the presser foot adjusting devices. Fig. 11, is a left hand side elevation of the feed lever, Fig. 12, is a sectional elevation showing the stitch separator and its actuating mechanism, Fig. 13, is a detail of a portion of the stitch separator actuating mechanism hereinafter referred to and Fig. 14, is a plan of the stitch separator actuating mechanism and associated parts and Fig. 15 is a detail sectional view of the device for stripping wax from the thread.

The needle N is carried by the needle segment 1 mounted on the needle stud 2 secured in a portion 3 of the frame of the machine. The needle segment 1, is actuated by the needle lever 4 provided upon its end with a segmental gear which engages the segmental pinion of the needle segment, The needle lever is pivoted upon the stud 5 secured in supports 6 and 7 on the head of the machine. The needle lever 4, is provided upon its side with a stud, carrying a cam roll engaging a cam path in the cam disk 8 mounted upon the main shaft 9 of the machine. The above described arrangement and the shape of the cam path are such that in timed coöperation with the other parts of the machine, the needle is caused to move forwardly up through an opening in the work support W and thence through the materials and back again.

The needle guide G which embraces the needle N and affords support therefor, is carried by the disk 10 pivotally mounted upon the needle stud 2 alongside the needle segment 1. The needle guide disk 10 is provided upon a portion of its periphery with teeth forming a segmental pinion and another segmental pinion 11 mounted upon the shaft 12 engages therewith. The shaft 12 is mounted in a bearing in the head of the machine and upon its other end carries another segmental pinion 13 which is engaged with a segmental gear 14 of the bell crank lever 15 pivoted upon the stud 16 secured in the head of the machine. The other arm of the bell crank lever 15 carries the block pivotally mounted upon the pin 17 which is engaged by the jaw in the end of the needle guide lever 18 pivoted upon the shaft 5 and provided upon its side with a cam roll which engages a cam path in the side of the cam disk 19 mounted upon the main shaft 9. The above described arrangement and the shape of the cam path

are such that the needle guide advances, with the advancing movement of the needle, until it reaches a point below the lowest position occupied by the work support, when it comes to rest and remains at rest during the time the needle is penetrating the materials, receiving its thread and until the needle has moved rearwardly far enough to bring its barb close to the needle guide, when the needle guide again moves rearwardly with the needle supporting it and sustaining it during the pull exerted thereby upon the thread.

The awl A, is a curved chisel pointed instrument for making a hole in and feeding the materials. It is mounted on the awl segment 20, pivotally mounted upon an awl stud and secured in the feed slide head 21 depending from the feed slide 22, in turn mounted in a horizontal guide way in the head of the machine. The teeth of the awl segment 20 are engaged by the segmental gear upon the end of the awl lever 23, pivotally mounted upon the shaft 5 and provided upon its side with a cam roll engaging a cam path in the cam disk 24, mounted upon the main shaft 9 of the machine. The above described construction and the shape of the cam path are such as to cause the awl to advance and puncture a hole through the materials then to move to the left, looking at the machine from the front as shown in Fig. 1, and then to withdraw as the needle advances and move again to the right ready to puncture a new hole and to feed the materials the distances required for the next stitch. The feed slide 22 is actuated by the feed lever 25 pivotally supported upon the stud 26 in a stationary part of the machine and carrying upon its lower end a cam roll 26 which engages the cam path 27 in the cam disk 19. The lever 25 is slotted and adjustably secured in the slot is a stud 28 which carries upon its outer end the block 29 which engages a vertical groove in the rear of the bracket 30 secured by bolts 31 to the feed slide 22. By adjusting the stud 29 up and down in the slot of the lever 25 the stroke of the feed slide and consequently the length of the stitch is varied. The bolt 32 having collars thereon is received in a notch in the ear 33 projected forward from the bracket 30 and is screwed into the end of the feed slide 22. By turning the bolt 32, the position of the path of movement of the awl may be varied without changing its stroke.

The thread finger F is mounted upon the upper end of a vertical rock shaft 34 supported in a bearing in the head of the machine and carrying upon its lower end a slotted arm 35 to which is pivotally attached the end of the link 36, the rear end of which is pivotally attached to the front end of the thread finger slide 37, mounted in a groove in a portion of the frame of the machine and having formed upon its rear end a rack 370 which meshes with gear teeth formed on the lower end of a pivoted lever 371 which is oscillated by means of a cam roll 372 which is carried on the side of the lever 371 and engages a cam path in the side of the cam disk 8. The above described construction and the shape of the cam path are such that the thread finger after the needle has advanced and penetrated the materials, moves to the right to form a bight of thread between the looper and the work, it then stands still and holds such bight of thread during the movement of the looper which lays the thread in hook of the needle, it then moves to the left during the retracting stroke of the needle giving up thread to the needle as it retracts, it then moves to the right again after having disengaged itself from the thread in order to avoid interference with the stitch separating tool during the time such tool is making its work indenting stroke and thereafter it again moves to the left to its original position. This additional movement of the thread finger is necessary solely for the purpose of avoiding interferences with the stitch separating tool and has no functional utility in the formation of the stitch by the stitch forming instrumentalities.

The looper L is mounted upon the right hand end of the looper lever 38 being secured thereto by a cap bolt 39 having provision for adjustment of the position of the looper with relation to the looper lever so as to correctly position the looper with respect to the needle and the other stitch forming instrumentalities. The looper lever 38 is pivotally mounted at 40 upon the auxiliary looper lever 41 in turn pivotally mounted at 42 upon a stationary part of the machine. All movements of the looper are secured by means of two cams, the timed coöperation of which causes the looper to be positively actuated. The auxiliary looper lever 41 has upon its side the jaw 43 which receives a block 44 pivotally mounted upon the front end of the slide 45 mounted in a guide way in a portion of the machine and carrying upon its rear end a cam roll which engages a cam path in the side of the cam disk 19. From the rear end of the looper lever is projected a pin 46 which passes through a hole in the stud 47, in turn pivotally mounted in the front end of the slide 48 supported in a guide way in a stationary part of the machine and having upon its rear end a cam roll which engages a cam path in the side of the cam disk 19. The above described construction and the shape of the cam paths are such, that after the awl has withdrawn from the materials and the needle has penetrated therethrough, the looper moves rearwardly to lay the thread

over the thread finger and then forwardly and to the right, as the thread finger moves to the right to form its bight of thread, thereby stretching the thread between the looper and the thread finger across the left hand side of the needle and in position to be engaged by the barb thereof when the needle retracts. The looper then stands still during the retracting stroke of the needle and during the work indenting movement of the separator and then with the retracting movement of the stitch separator it moves rearwardly and to the left to a position outside of the path of movement of the awl segment and awl clamp and then as the awl begins its retracting movement, the looper moves forwardly and slightly to the right to the position from which it started.

By employing the sides of a cam disk to receive the cam paths which actuate the two slides which actuate the looper the thickness of the cam disk may be reduced from construction employing cam paths cut in the face or edge of a cam disk. This machine being adapted to practice the Briggs method of forming chain stitches (which forms the subject matter of the Briggs patent No. 461,793), is provided with a take-up indicated in a general way by the reference character T. The take-up consists of a thread truck 49, mounted upon the end of a take-up lever 50, which is of bell crank form and pivoted upon the stud 51 mounted in a stationary part of the machine and to which the downwardly extended arm 52 is connected by a link 53 with the end of a take-up cam lever 54, pivotally mounted upon the stud 5. The arm 52 is slotted and the end of the link 53 is adapted to be secured therein at the desired point whereby the stroke of the take-up may be adjusted. The take-up cam lever 54 is provided upon its side with a cam roll which engages a cam path 55, in the side of the cam disk 24. The above described construction is such that the take-up truck 49 is actuated to vibrate to exert a pull upon the thread in timed relation to the movements of the other stitch forming instrumentalities as hereinafter described in connection with the operation of the machine.

So far as the applicant is aware, he is the first to produce a machine for carrying out the Briggs method of forming chain stitches which has not employed a spring auxiliary take-up for holding the thread taut during the looping of the needle. The elimination of spring actuated parts is recognized as desirable as it contributes to the certainty and correctness of the operation of the machine, and as well contributes to increased speed of operation.

According to the present invention the applicant has so timed the take-up with relation to the movements of the thread finger, looper and needle, that the thread is held taut by the take-up during the time the looper and the thread finger are laying the thread in the hook of the needle, then after the needle begins to retreat drawing with it the thread which has been laid in its barb by the looper and thread finger, the thread finger gives up the thread to the needle upon one side while the falling take-up gives up thread to the needle upon the other side.

The work support W is mounted upon the work support carrier 56. It is slotted at 57 to receive the needle and provided at 58 with a grooving knife 59. The work support W is secured to the work support carrier 56 by a tongue and groove connection and the cap screw 60. The work support carrier 56 is so supported that it moves toward and from the presser foot in the arc of the circle of which the axis of the needle is the center. A link 61 pivoted at 62 to the work support carrier and at 63 to a stationary portion of the machine and the bell crank lever pivoted at 65 to the lower end of the work support carrier 56 and at 66 to a stationary part of the machine affords such support for the carrier, the distance from the pivot 62 to the pivot 63 being the same as the distance of the pivot 65 from the pivot 66 and equal to the radius of curvature of the needle it is apparent that, the upper surface of the work support being in the path of movement of the needle, the work support will move downwardly along a curved path of which the axis of the needle is the center; thus the work is always correctly positioned with relation to the needle irrespective of variations in the thickness thereof. This feature of construction by virtue of which the work support always moves along the path of movement of the needle is of advantage because of the reduced width of the needle opening necessary in the work support and for the further reason because of the maintenance of the work engaging surface of the work support in a horizontal plane irrespective of variation of thickness in the materials. This latter feature is particularly important taken in connection with a stationary presser foot, the angle of inclination of which is invariable. By this means the work is always grasped firmly between two supporting surfaces which engage considerable areas of the work and hold it from tipping, as distinguished from constructions in which, when the material increases in thickness beyond the normal, the work is engaged only upon one surface and one corner or upon two corners, under which circumstances the tendency of the pressure upon the materials is to push the work out of the machine.

The bell crank lever 64, by which the work support is actuated, is provided upon

its front end with a hook 67 adapted to be engaged by a link connected with a treadle (not shown) by which the work support may be depressed to enter and remove the work. The bell crank lever 64 is also provided with a jaw which engages a block pivotally mounted upon the front end of the work support slide 68 mounted in a guideway in the frame of the machine and normally pulled rearwardly by a spring 69 attached at its forward end to the said slide 68 and at its rear end to the threaded eye pin 70 which, by means of its hand nut, may be adjusted to vary the tension of the spring. It will be seen that although the thickness of the work may be varied, the work support is always held firmly thereagainst by the spring 69 and when it is desired to enter and remove the work the work support may be depressed by the treadle connection referred to.

Means are provided for locking the work support in position against the material and such means comprise the rack 71 secured to the side of the slide 68 and adapted to be engaged by sliding pawls 72 pressed normally in the direction of the rack by springs 73. Four pawls are provided with their rack engaging faces separated from each other fractional parts of the width of a rack tooth so that the slide will be held in adjusted position within such fractional portions of the length of a rack tooth. Periodically in the operation of the machine the pawls are required to be withdrawn from engagement with the rack and for this purpose there is provided the lever 74 pivoted at 75 upon a stationary portion of the machine and having a dog 76 which enters recesses in the under side of the pawls 72. When the lever 74, see Fig. 8, is pressed downward the dog 76 engages the ends of the recesses in the pawls 72 and withdraws them so that they cannot engage the teeth of the rack 71. The lever 74 may be engaged and operated by hand when it is desired but the automatic release of the work support is effected by means of the lever 77 pivoted at 78 upon a stationary part of the machine the front end of which engages the end of the adjusting screw 79 secured in an upwardly projected portion of the portion 80 of the lever 74. A spring 81 connects the end of the lever 77 with the projection 80 and serves normally to hold the lever 74 up so as to permit the springs 73 to force the pawls into engagement with the teeth of the rack 71. This lever 77 carries upon its rear end a cam roll which engages the cam path 82 in the face of the cam disk 24. The above described arrangement and the shape of the cam path are such that while the awl is back and just before it starts downward the work support is released. During the movement of the awl from its rearmost position to a position where it is about to engage the materials the pawls again lock the work support until the feeding movement is about to begin, at which time the work support is again released and remains released during the feed movement of the awl while the awl is retracting and the needle advancing through the materials and until after the looper has laid the thread in the hook of the needle and the needle is about to begin its retracting stroke when the pawls are again permitted to engage the rack and lock the work support until the awl has completed its back feed and it is again about to make its movement toward the materials.

It will be observed that the times of release of the work support occur, the one, when the parts are in the position which they occupy when the work is entered and removed from the machine and the other during the time the feed is taking place and the thickness of the material between the presser foot and the work support is liable to vary. This latter of course, contributes to the ease of feeding the work.

The presser foot P is mounted upon the forward end of the presser foot slide 83, which is dovetailed in cross section and received in a correspondingly shaped groove in the side of the feed slide head 21. The upper side of the presser foot slide 83 is provided at its rear end with rack teeth which are engaged by the teeth of a pinion 84 mounted upon a stud 85 secured to the feed slide head. The pinion 84 is engaged by a segmental pinion 86 secured to the short shaft 87 supported in a bearing in the feed slide head. Upon the end of the shaft 87 is secured the hand lever 88 which is split and clamped upon the shaft 87 by the cap screw 89. The upper end of the hand lever 88 is extended between two stop bolts 90 and 91 which limit the movements of the hand lever. The above described arrangement is such that the presser foot may be moved forward and back transversely of the seam to vary the position of the seam in the work, the foot bearing against the shoe upper and constituting a gage to determine the position of the work with relation to the needle. When the lower end of the lever 88 is pushed rearwardly it forces the presser foot forward and thereby causes the seam to be sewed at the proper distance from the upper. Upon the shaft 87 there is also mounted a segmental pinion 92 which engages with the rack upon the lower side of the slide block 93, see Fig. 13, which is articulated with the stitch separating mechanism so as to vary the position of the stitch separating tool with the variations in the position of the presser foot. A friction device 94 is provided for the presser foot slide 83 which applies sufficient friction thereto to prevent accidental movement thereof and

which consists of a clip arranged to bear against the side of the slide as best shown in Fig. 9.

This feature of the present invention constitutes an improvement upon the construction illustrated in the patent granted to the present applicant, August 2, 1898, No. 608,373 in which is illustrated a construction comprising what is termed a work-guide (which corresponds to what the applicant has herein called a presser-foot) mounted upon an eccentric stud adapted to be rotated upon a lever to move the work guide backward and forward with relation to the needle to vary the position of the seam in the sole. In this construction, however, the turning of the eccentric stud to advance and retract the work-guide results in changing the angle of the work engaging face of the work guide with relation to the work. According to the present construction, the variation in the position of the presser foot, is accomplished without any change in the inclination of the work engaging face thereto.

The stitch separator S consists of a tool adapted to engage the work between successive stitches and form an indentation in the work, which makes the seam more uniform in appearance. The tool S is mounted on its carrier 95 which is secured to the shaft 96 in turn mounted in a bearing 97 in the slide 98. The slide 98 is dovetailed in section and is received in vertical guides located in front of the feed slide. To the end of the shaft 96 is secured the arm 99 upon the lower end of which is carried a cam roll which engages the cam path 100 in the face of the cam disk 8. By this means lateral oscillations are imparted to the stitch separating tool S. These oscillations are for the purpose of getting the tool out of the way of the stitch forming instrumentalities during the time they are performing their operations and bringing it back into position to perform its indenting work. The hub upon the upper end of the lever 99 is provided with a groove 101 which is engaged by a tongue 102 projected from the side of the slide 93. The tongue 102 fits loosely in the groove 101. The slide 98 is pivotally connected by a link 103 with the upper end of a cam lever 104 pivoted upon the stud 51 and carrying upon its rear end a cam roll which engages a cam path in the side of the cam disk 8. By this means vertical work indenting movements are imparted to the stitch separating tool S. The tongue and groove connection 101 and 102 causes the stitch separating tool to be moved downward in the direction of the tongue and groove when the slide 98 is depressed. This affords provision for moving the stitch separating tool in an inclined direction toward the materials and facilitates the sewing of shoes in that it affords provision for the stitch separating tool to advance toward the work without engagement with the upper. By this means close edge soles may be indented without danger of injury to the upper.

It is believed that the present construction is the first to embody a stitch separating means in a curved-needle chain-stitch sewing machine. The feature of connecting the presser foot and stitch separator so as to adjust them both with one adjusting lever is of utility because it is desirable in a machine of this character, that the indentations of the stitch separator should maintain a constant relation to the upper, irrespective of variations in the width of the sole edge.

The machine is provided with a wax pot 105 consisting of a steam chamber 106 having a central wax pot space for receiving the wax pot proper 107. The wax pot 107 is made smaller than the central chamber in the wax pot and a damper 108 at the bottom affords means for admitting air through holes therein to the wax pot chamber. By opening the damper more or less a larger or smaller amount of air is permitted to pass up through the wax pot chamber and thus the temperature of the wax may be very nicely regulated and boiling thereof be prevented. The thread passing up from the wax pot passes through the stripper 109 consisting of a rubber gasket and a follower 110 for compressing the rubber gasket to cause it to strip more or less wax from the thread. The follower 110 is provided with a groove in its upper end which is adapted to receive the collar of the adjusting bolt 111. By screwing the adjusting bolt 111 up and down the follower 110 is raised and lowered. This is regarded as an improvement over the use of a screw thread on the follower which has in the past caused considerable trouble by the sticking of the gasket in the thread. From the stripper the thread passes over the tension wheel 112, a tension spring adapted to be compressed by the hand wheel 113 is employed for applying resistance to the wheel, and a lever 114 is provided by means of which the tension may be thrown off. The thread from the tension wheel runs through the thread tube 115 to the stationary thread truck 116 thence over the thread truck 49 of the take-up and thence to the looper. An accessory of utility comprises a contrivance for heating the take-up lever which consists of a steam chamber 117 mounted upon the head of the machine and having a plane surface 118 adapted to lie close to, if not in actual contact with, a corresponding surface upon the side of the take-up lever 50.

The operation of the machine is described as follows:—Beginning with the parts in the positions which they occupy when the

work is entered in the machine, the work support treadle is depressed to lower the work support and the edge of the sole is laid upon the work support and the treadle is released. The hand lever 88 is then moved to properly position the presser foot with relation to the work support so as to bring the seam in the proper position to cause the seam to be sewed. The machine then being set in motion and assuming several stitches to have been made, the awl descends and punctures a hole in the material it then moves to the left to feed materials a stitch length. During the time of such feed movement the work support is released, then the needle starts forward and when its end nearly reaches the awl, the awl and needle rise together the needle following the awl through the materials. During the latter part of the feed movement of the awl, the take up begins to rise, and after the needle has entered the materials, the take-up completes its rising movement thereby exerting a pull upon the thread and drawing the previously formed loop up taut around the shank of the needle, after which it pulls off thread for the next stitch from the tension. After the needle has reached its advanced position the looper moves back to present the thread to the thread finger, the take-up at the same time beginning its descent, the thread finger then moves to the right and to the rear of the needle while the looper moves forward past the left hand side of the needle, upon which side of the needle is located the barb, to a position beyond the plane of the needle so that the thread extending from the looper to the thread finger is laid in the barb of the needle. During the looping of the needle by the thread finger and looper, the awl moves back to its original position ready to make its work puncturing stroke. During these movements of the thread finger and looper, the take-up continues its descent giving up thread to them but maintaining it taut at all times. Then the needle begins its descent, the looper moving slightly farther to the right in order to hold the thread securely in the barb of the needle and the thread finger retracts giving up thread to the needle upon the stitch side thereof while the take-up continues its descent giving up thread to the needle upon the supply side thereof. The downward movement of the take-up ceases before the retracting movement of the needle is completed, in order to cause the needle to exert a slight twitch upon the thread in order to pull it into its final position in the work. During the latter part of the retracting stroke of the needle and after the thread has disengaged itself from the thread finger, the thread finger again moves to the right in order to make room for the stitch separating tool, which, during the last part of the retracting stroke of the needle, has been moving to the right into position over the needle hole. After the needle has reached the limit of its retracting stroke, the stitch separating tool descends moving forwardly at the same time so that it is projected into the crease between the upper and the welt. After the work indenting movement of the separator is completed it rises and again moves out of the way to the left. It will be observed that the thread is held taut at all times by the needle, looper, thread finger, and take-up during the looping of the needle.

Having thus described the invention, what is claimed is:—

1. A chain stitch shoe sewing machine, having, in combination, a needle, a looper, a spring supported work support, a normally stationary presser foot and means for moving the presser foot back and forward in a straight line in relation to the work support, to vary the position of the seam, substantially as described.

2. A chain stitch shoe sewing machine, having, in combination a needle, a looper, a presser foot and stitch separating tool, and means for varying the position of the presser foot and the stitch separating tool transversely of the seam, during the operation of the machine, substantially as described.

3. A chain stitch shoe sewing machine, having, in combination, a hook needle, a looper, a work support, movable toward and from the work, a normally stationary presser foot, a stitch separating tool, means for actuating the parts and connected means for adjusting the position of the presser foot and stitch separating tool transversely of the seam during the operation of the machine, substantially as described.

4. A chain stitch shoe sewing machine, having, in combination, a hook needle, a looper, a thread finger, a take-up acting while the needle is in the work and constituting the only slack thread controlling means between the thread supply and the looper, and means for actuating the take-up to give up thread to the looper and to hold the thread taut during the looping operation, substantially as described.

5. A sewing machine, having, in combination, a needle, a looper, a work support, an awl, means for supporting the awl and moving it laterally to feed the work, a stitch separating tool, means for supporting and actuating the stitch separating tool to move laterally into position over a needle hole and to descend and indent the work and move laterally from the field of movement of the stitch forming instrumentalities, substantially as described.

6. A shoe sewing machine, having, in combination, stitch forming devices, a gage

to determine the position of the seam, a stitch separating tool and means for moving the gage and stitch separating tool transversely of the seam, substantially as described.

7. A shoe sewing machine, having, in combination, stitch forming devices, a gage to determine the position of the seam, a stitch separating tool, a lever, and connections between the lever and the gage and stitch separating tool to move the gage and stitch separating tool transversely of the seam, substantially as described.

8. A shoe sewing machine, having, in combination, stitch forming devices, a gage to determine the position of the seam, a stitch separating tool, means for actuating the tool to cause it to move toward the work in an inclined path to clear the shoe upper and means for adjusting the stitch separating tool in a right line transversely of the seam, substantially as described.

9. A shoe sewing machine, having, in combination, stitch forming devices, a gage to determine the position of the seam, a stitch separating tool, means for actuating the tool to cause it to move toward the work in an inclined path to clear the shoe upper, and a lever and suitable connections for adjusting the gage and tool transversely of the seam, substantially as described.

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

ANDREW EPPLER.

Witnesses:
JOS. WARREN,
ALFRED H. HILDRETH.