

T. G. PLANT.
SEWING MACHINE.

APPLICATION FILED SEPT. 1, 1908. RENEWED NOV. 22, 1909.

958,296

Patented May 17, 1910.

2 SHEETS—SHEET 1.

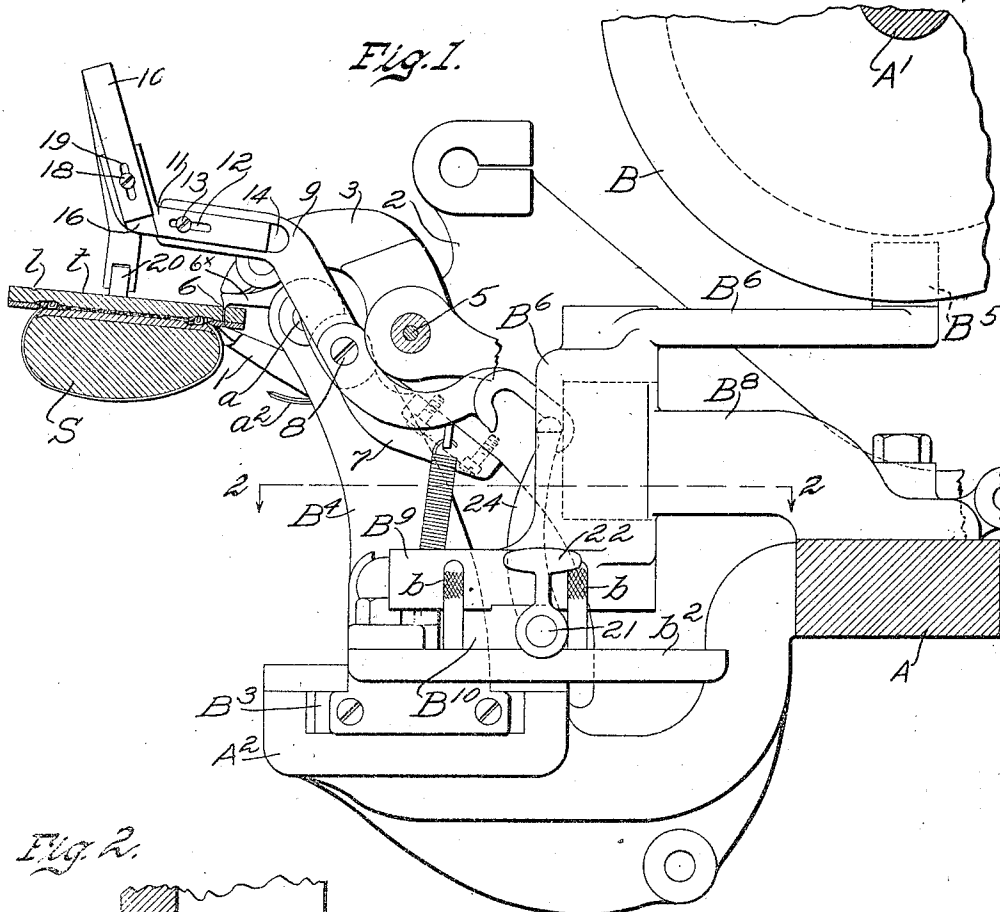
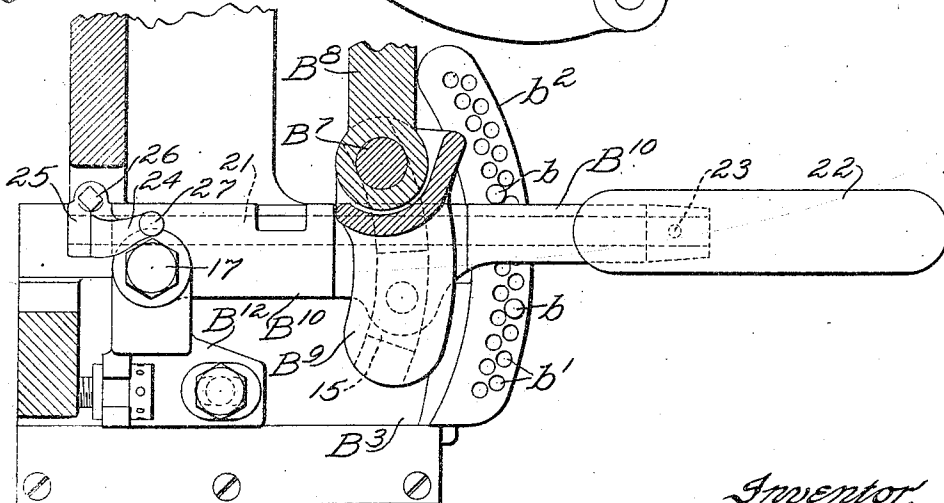


Fig. 2.



Witnesses:
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Thomas G. Plant
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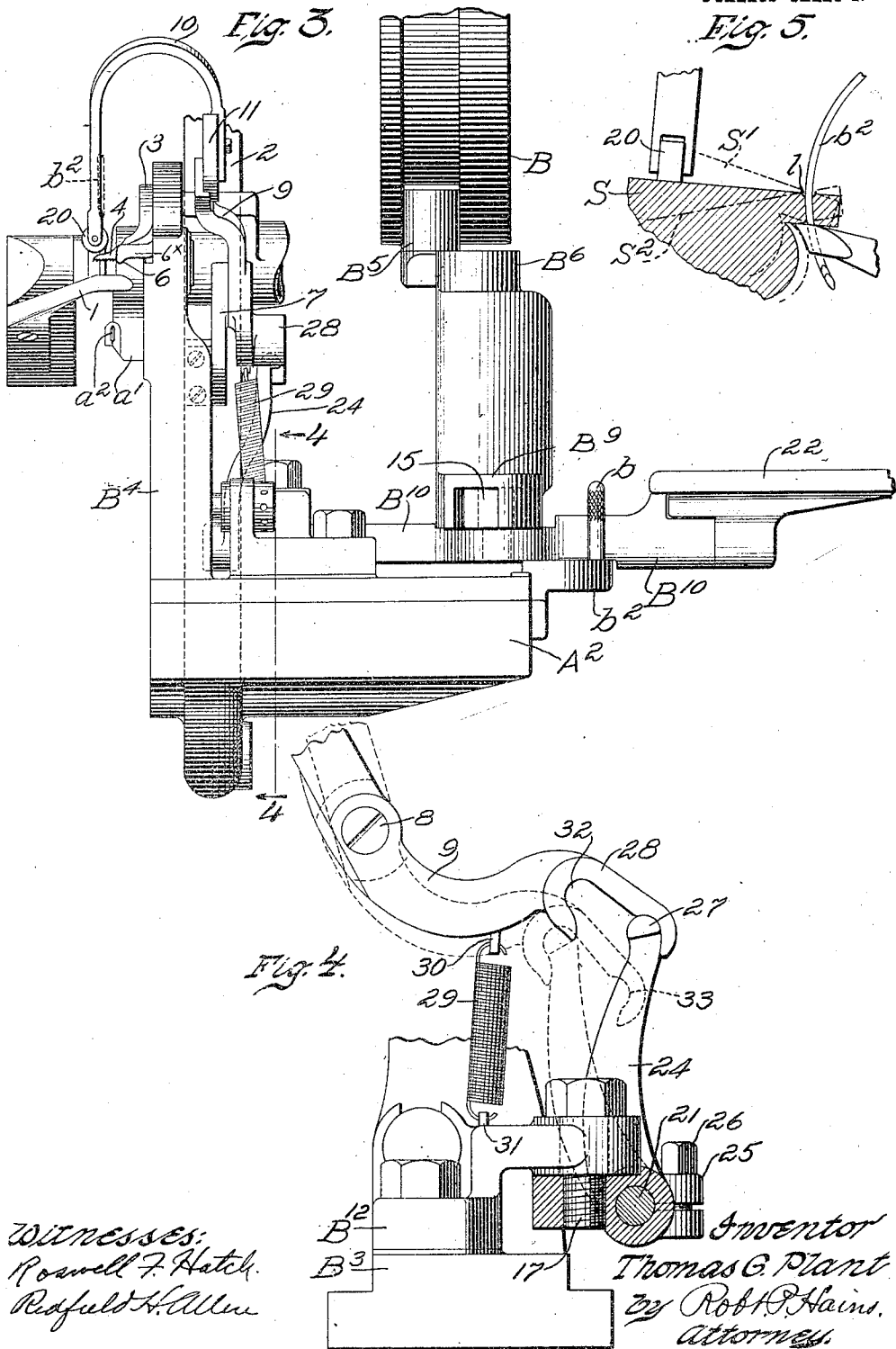
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

THOMAS GUSTAVE PLANT, OF BOSTON, MASSACHUSETTS.

SEWING-MACHINE.

958,296.

Specification of Letters Patent.

Patented May 17, 1910.

Application filed September 1, 1908, Serial No. 451,145. Renewed November 22, 1909. Serial No. 529,304.

To all whom it may concern:

Be it known that I, THOMAS GUSTAVE PLANT, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Sewing-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts:

The invention to be hereinafter described relates to sewing machines and more particularly to that type employed in sewing shoes.

In some classes of boots and shoes the sole edge projects at different distances from the upper at different points, as in the so called "Baltimore" and "Scotch" edge shoes. In securing the outsole in place, however, it is desirable that the line of stitches shall be disposed at certain distances from the sole edge regardless of variations in distance of such edge from the upper, and it is desirable that the line of stitches be carried well back from the edge in the shank portion of the shoe. Among the attempts heretofore made to secure these results a movable edge gage adjustable toward and from the stitch forming mechanism during the sewing operation has been employed; fixed and movable edge gages have likewise been devised; but in all such edge gage constructions, however, the ultimate position of the line of stitches must still depend upon the skill of the operator with resultant unsatisfactory results, because, even though the edge gage be automatically moved toward and from the stitch forming mechanism during the sewing operation, as has been suggested heretofore, the operator, however skilled, will tilt or incline the boot or shoe more or less in a vertical plane, with the result, that while the line of stitches may appear properly located with respect to the sole edge on one face of the work, it will be either too close to or remote from the edge on the opposite face dependent upon the angle of tilt or inclination given the work by the operator during the sewing operation.

The present invention aims to overcome the defects and objections incident to the devices heretofore employed, and to provide means, quite distinct from the various forms of edge gages of the prior art, whereby the line of stitches will be properly disposed the desired distance from the sole edge on both

faces of the work, all of which will more fully appear in the following description and accompanying drawing of one form or embodiment of the invention.

In illustrating and exploiting the invention, it has been shown as applied to a machine for sewing the outsole to the welt of a welted shoe of the general type disclosed in the patent to French and Meyer No. 473,870, dated April 26, 1892, it being understood, however, that the invention is not restricted thereto, as obviously it may be employed in other relations, as in securing the outsole in a McKay sewed shoe and the like.

In the drawings: Figure 1 is a side elevation showing sufficient of the machine to make clear the relation of the present invention to the associated parts, some of which are broken away and others of which are shown in section; Fig. 2 is a section on line 2-2 of Fig. 1; Fig. 3 is a front elevation looking from left to right in Fig. 1 with the shoe omitted; Fig. 4 is a section on line 4-4 of Fig. 3; and Fig. 5 is a diagrammatic view showing, on an enlarged scale and, by full lines, the path of the stitch as it passes from one to the opposite face of the work and its proper location on each face of the work as determined by tilt controller or preventer, and, by dotted lines, the effect of tilting the work when such feature of the present invention is not employed.

The frame-work A of the machine, only part of which is shown, is and may be of any suitable shape and construction to support the working parts. This frame-work, as indicated in the before-mentioned French and Meyer patent, for instance, has suitable bearings for a main shaft A', Fig. 1, having fast thereon a series of cams, as shown in said patent, only one of said cams, B, being illustrated in the present drawings.

The frame-work has a guide-box A², in which is fitted to move longitudinally the feed slide B³, it having at its inner end an upright B⁴, which receives a fixed stud a, upon which is mounted loosely the usual awl segment a', Fig. 3, to which is attached the awl a², said parts, together with the needle b² and its actuating means, being, if desired, substantially as set forth in said patent.

The cam groove in the periphery of the cam B receives a roller or stud B⁵ extended from a lever B⁶ fulcrumed on a suitable stud B⁷ in the stand B⁸; one end or arm of said lever, as B⁹, being provided with a

groove for the reception of a block 15, Fig. 2, carried by the feed regulating lever B¹⁰, fulcrumed upon the stud 17 carried by an ear B¹² secured adjustably to the feed slide B³, whereby, by movement of the feed regulating lever B¹⁰ to different positions as defined by the stop pins *b*, *b* adapted to any one of a series of holes *b'*, *b'*, in a plate *b*², the reciprocation of said feed slide and consequently the length of the stitch may be regulated, all of which may be as usual or as pointed out in the said patent to which reference may be had.

Secured to a stationary part of the machine head is a table or work-support 1 which, in the construction illustrated, is adapted to sustain the projecting edge of a boot or shoe S, said table or work support, in this instance, furnishing a rest for the surface of the welt, as indicated in Fig. 1. Pivottally mounted at 5 upon a stationary part, as the bracket 2, is the presser-foot carrier 3, having the presser-foot 4, Fig. 3, to engage the work above the table and clamp it between itself and the table beneath, as will be fully understood by those skilled in the art without further elucidation.

From the construction thus far described and the patent heretofore mentioned, it will be apparent that the projecting edge of a shoe sole, as indicated in Fig. 1, may be clamped between the presser-foot and table and the successive operations of forming the stitches and feeding the work may be performed. As heretofore stated, however, it is desirable that the line of stitches shall be disposed at certain distances from the edge of the work, regardless of the distance of the edge from the upper, and heretofore a movable edge gage has been employed to bear upon the edge of the sole, said gage being movable or adjustable during the sewing operation to secure the desired position of the line of stitches. In the present invention, however, such edge gages have been entirely omitted, as the correct position of the line of stitches has been secured by the means now to be described.

The outsole *t*, or other part to receive the stitches, is provided with a channel or groove *l* extending about the same, said channel or groove being located a distance from the sole edge corresponding to the desired location of the line of stitches. For instance, if the desired distance of the line of stitches from the sole edge about the forepart is less than the distance desired about the shank, the channel or groove *l* will be made accordingly; and, similarly, if this distance is to be varied about the forepart or made uniform, the channel or groove will be formed in the material to correspond.

The presser-foot 4 is provided with a nose 6, Figs. 1 and 3, of a shape to enter or en-

gage the channel or groove *l* in the work as said work rests upon the table or work-support 1. This nose 6 may consist of a small projection on the presser-foot 4 of sufficient size to travel in the channel or groove *l* as the work is fed, or it may preferably be formed on or attached to a carrier 6*, suitably mounted for movement relative to, and preferably also in unison with, the presser-foot lever 3, whereby said nose 6 is rendered movable relative to the presser-foot in the line of feed while engaging said channel or groove. The carrier 6* may be pivoted on the bracket B⁴ and suitably connected with the presser-foot to partake of its rising and falling movements, or may be mounted on the stud 5 for movement longitudinally thereof and operatively connected, by any suitable means, with the feed slide. While the precise construction and arrangement of these parts may be varied as desired, the preferred form thereof is shown and described in a pending application, Serial No. 436,329, filed June 3, 1908. Whatever the construction, the nose 6 is preferably so disposed relative to the presser-foot as to form, in effect, an integral part thereof when the presser-foot is in its work engaging position. In any event, the said nose acts as a fixed guide and, by its engagement with the channel or groove *l*, causes the work to automatically adjust itself back and forth according to the varying positions of said channel or groove with respect to the sole edge. Thus in this feature of the invention and by reason of the previous formation of the channel or groove, as described, the line of stitches is accurately disposed with relation to the edge of the work without the uncertain conditions that arise in the use of an edge gage movable toward and from the stitch forming mechanism.

The previous formation of the channel or groove with respect to the sole edge and the action of the nose 6 therein will, obviously, cause the line of stitches to be properly positioned on that side or surface of the work, but should the shoe be not properly held by the operator or be tilted or inclined to varying positions, the line of stitches on the opposite side or surface of the work will vary with respect to distance from the sole edge. This is well shown in the diagrammatic view in Fig. 5, wherein it will be noted that when the work S is held in the full line position, the needle *b*² will pass through the channel or groove *l* on one face and emerge at the opposite face at a point substantially the same distance from the sole edge as is the channel or groove *l*, so that the line of stitches will be substantially the same distance from the edge on both sides or surfaces of the work. If, however, the shoe be tilted upward, as indicated by the dotted lines S', it will be seen that while

the needle may enter the work through the channel 7, it will emerge from the work at a point nearer the edge than is the channel or groove 7, and, similarly, if the shoe be tilted downward, as indicated by the dotted line S², the needle will emerge from the work at a point more remote from the sole edge than is the channel or groove. From this it will be seen that it becomes of importance in the proper positioning of the line of stitches on both sides or surfaces of the work that the shoe be held in correct position with respect to the table or the direction of the stitches where they pass through the work, and to secure this result the following means is contemplated as one form or embodiment of this feature of the invention, which may, for identification, be termed a tilt preventer.

Pivotaly mounted upon a fixed bracket 7, or other suitable part, at 8, is a lever 9, carrying at its upper end portion an arm 10, preferably connected to said lever 9 by an adjustable connection 11. Said adjustable connection is shown, in the present form of the invention, as an arm having one end secured to the lever 9 by a slot 12 and set screw 13, a recess or socket 14 being preferably formed in the end of the lever 9 into which one end of the arm 11 may slide, so that by loosening the set screw 13, the arm 11 may be adjusted as indicated. The other end of the arm 11 is preferably upturned and provided with a recess or socket 16 to receive the end of the arm 10, having a slot 18 and a set screw 19, so that by loosening the set screw 19, the said arm 10 may be adjusted, as indicated. Obviously, other forms of connection may be employed between the arm 10 and lever 9, as will be evident to those skilled in the art.

The arm 10 is preferably curved upward and downward, as indicated in Fig. 3, and carries at its end a roller 20, adapted, when the boot or shoe is in correct position for sewing, to bear upon the surface of the outsole and thereby prevent the operator from tilting the work, and enable him to hold the shoe with an upward pressure against the roller to cause the line of stitches to be correctly positioned, as will be clear from the foregoing description.

The upward and downward bend is given the arm 10 to carry the same out of the line of vision of the operator as he stands in front of the machine looking at the stitching point, but, obviously, changes in form and disposition of the parts may be made within the true field of this feature of the invention which is characterized by means bearing upon the work to prevent improper tilting thereof and consequent disturbance of the line of stitches with respect to the sole edge.

As well known to those familiar with boot and shoe constructions, it is desirable that

the line of stitches shall set well back from the edge of the sole in the shank portion, and in the present invention this is secured, in part at least, by carrying the channel or groove farther back from the edge at this portion of the sole than around the forepart, so that the nose 6 of the presser-foot may properly guide the shoe for such position of the line of stitches. It is desirable, while stitching the shank portion that the operator be permitted to tilt the shoe, because in some cases the channel or groove is so far back from the edge that if such tilt were impossible there is danger among other things that the needle will cut the inseam stitches which secure the upper and insole, or the upper, welt and insole, together. It is also usual to lengthen the stitches at the shank portion, and with these and other facts in view, the tilt preventer is provided with means for moving it into position to bear upon the sole and prevent tilting thereof while sewing around the forepart, and to remove it from such position to enable the shoe to be tilted while sewing the shank portion. One means for securing these results will now be described without, however, restricting the invention thereto.

Extending longitudinally through the feed regulating handle or lever 13¹⁰ is the tilt preventer shaft 21, best shown in dotted lines in Fig. 2 and in cross section in Fig. 4. Secured to the outer end of the said shaft 21 is a hand-piece 22, the connection between said hand-piece and shaft 21, in the present form of construction, being secured by a pin 23, dotted lines Fig. 2. On the opposite end of the shaft 21 is an operating arm 24, said arm being secured to the shaft 21 preferably by a split sleeve 25; the parts of said sleeve being clamped upon the said shaft 21 by a set screw 26, Figs. 2 and 4. From this construction it will be clear that as the handle 22 is turned, it will turn the shaft 21 and correspondingly move the operating arm 24. The said operating arm 24, Figs. 1 and 4, has at its upper end a rounded projecting portion 27 adapted to engage the slotted end 28 of the lever 9. The slotted end 28 of the lever 9 is caused to bear constantly upon the end 27 of the actuating arm 24 by means of the spring 29, one end of which is secured at 30 to the lever 9, and the other end of which is secured at 31. The terminal portions of the slot 28 of the lever 9 are rounded or formed with seats 32, 33, respectively, said seat 33 acting when engaged with the end 27 of the actuating arm 24, in connection with such end 27, as a yielding locking means to prevent movement of the lever 9 about its pivotal point 8 by upward pressure upon the roller 20 carried on the arm 10. The construction of these parts is such that upon movement of the actuating arm 24 in one direction to the

limit of the slot 28, it will cause the tilt preventer to carry its roller 20 downward into position to engage the surface of the sole being stitched, and when moved in the opposite direction it will permit the spring 29 to lift the tilt preventer and carry the roller 20 upward or away from the sole, all of which will be clear from the construction illustrated.

As hereinbefore stated, it is sometimes desirable to lengthen the stitches at the shank portion of the sole, and it is likewise desirable while stitching the shank portion that the tilt preventer be thrown to inoperative position. By mounting the shaft 21 in the feed regulating lever B¹⁰, and operating said lever and shaft by means of the handle 22, it will be seen that the first action of the handle 22 will be to turn the shaft 21 and thereby throw the tilt preventer into or out of operative position according to the direction of force upon the handle 22, and thereafter to move the feed regulating lever B¹⁰ to lengthen or shorten the stitches according to the direction of movement.

It may be desirable in some cases to maintain the same length of stitch throughout the forepart and shank portions of the shoe, in which event the pins *b*, *b* are placed in their appropriate holes *b'* to prevent movement of the slide 15 in the slotted arm *b'* of the actuating lever B⁶, whereupon movement of the handle 22 will simply operate the shaft 21 and the actuating arm 24 to throw the tilt preventer into and out of operation as desired.

From the construction hereinbefore described, it will be clear to those skilled in the art that the line of stitches will be properly located with respect to the sole edge on both faces of the work, the edge portion of the work resting, during the sewing operation, upon the upper surface of the table, and that, in the construction shown and described, the uncertain action of edge gages with their consequent objections is entirely eliminated.

Claim—

1. In a shoe sewing machine, the combination of a table or work support to engage and sustain the work, stitch forming mechanism, a presser-foot, a guide to engage the work to determine the distance of the line of stitches from the sole edge on one surface of the work, a tilt preventer independent of the presser foot to engage the surface of a shoe sole to determine the inclination of the work with respect to the table and cause the line of stitches to appear in a desired position on the opposite surface of the work, and means for causing the tilt preventer to be operative while sewing on one part and inoperative while sewing on another part of the shoe sole.

2. In a shoe sewing machine, the com-

bination of a table or work support to sustain the work, stitch forming mechanism, a presser foot for holding the work on the table, a guide to determine the distance of the line of stitches from the edge of the work on one surface thereof, a tilt preventer to engage the surface of a shoe sole and determine the vertical tilt of the shoe, and means for moving the tilt preventer during the operation of the machine to vary the position of the line of stitches on the opposite surface of the work with respect to the sole edge.

3. In a shoe sewing machine, the combination of a table or work support to engage and sustain the work, stitch forming mechanism, a presser foot for holding the work upon the table or work support, a guide to determine the position of the line of stitches from the edge of the sole on one surface thereof, and means inoperative while sewing around the shank to permit the work to be tilted and contacting with the sole surface while sewing around the forepart to determine the direction of the line of stitches through the work and maintain the desired position of the line of stitches on the opposite surface of the work with respect to the edge thereof about the forepart.

4. In a shoe sewing machine, the combination of stitch forming mechanism, means to determine the position of the line of stitches on one surface of the work, a presser-foot, and means to limit the vertical inclination of the shoe with respect to the direction of the stitches where they pass from one surface of the work to the other as said shoe is being stitched about the forepart to determine the position of the line of stitches with respect to the sole edge on the opposite surface of the work, said means permitting increased inclination of the shoe in sewing around the shank.

5. In a shoe sewing machine, the combination of a table or work support, stitch forming mechanism, a presser-foot a guide in coöperative relation with the presser foot to engage a groove in the surface of the work and determine the transverse adjustment of the shoe with respect to the stitch forming mechanism, a tilt preventer movable during the sewing operation into position to engage the shoe and determine the inclination or tilt of the work with respect to the direction of the stitches where they pass through the work that the line of stitches may be properly positioned on both surfaces of the work, and a lock for holding the tilt preventer in position.

6. In a shoe sewing machine, the combination of a table or work support to sustain the work during the sewing operation, stitch forming mechanism, a presser-foot means to position the work with respect to the plane of movement of the stitch form-

ing mechanism to cause the line of stitches to be formed at the desired distance from the work edge on one side of the work, and a tilt preventer mounted for contacting with the surface of the sole while sewing around the forepart to determine the position of the line of stitches with respect to the sole edge on the opposite surface of the work and disengaging the shoe while sewing around the shank portion to enable the position of the line of stitches to be changed.

7. In a shoe sewing machine, the combination of a table or work support to sustain the work during the sewing operation, stitch forming mechanism, a presser-foot means to determine the bodily movement of the shoe in a direction transverse to the line of stitches, means acting upon the shoe independent of the presser foot to control the inclination of the shoe with respect to the table while sewing around the forepart to cause the line of stitches to be positioned as desired with respect to the edge of the work on both sides thereof and devices for rendering said means ineffectual while sewing along the shank portion to permit increased inclination of the shoe.

8. In a shoe sewing machine, the combination of a table or work support, stitch forming mechanism, a tilt preventer movable to and from a position to engage the sole of the shoe to determine the tilt or inclination of the shoe, and means for throwing said tilt preventer into and out of operative position.

9. In a shoe sewing machine, the combination of a table or work support, stitch forming mechanism, a tilt preventer movable into and out of operative position, and means under control of the operator for moving said tilt preventer into and out of operative position.

10. In a shoe sewing machine, the combination of a table or work support, stitch forming mechanism, a tilt preventer movable to and from a position to engage the sole of a shoe being sewed at a point remote from the stitch formation to cause the line of stitches to appear in desired position with respect to the sole edge on both surfaces of the work, and means for moving said tilt preventer into and out of operative position.

11. In a shoe sewing machine, the combination of a table or work support, stitch forming mechanism, a tilt preventer to engage the sole of the shoe to determine the tilt or inclination of the shoe, means for throwing said tilt preventer into and out of operative position, and a lock for holding the tilt preventer in operative position.

12. In a shoe sewing machine, the combination of a table or work support, a presser foot opposed thereto and having a nose to travel in a channel or groove formed in a

shoe sole to determine the distance of the line of stitches from the sole edge, means to determine the tilt or vertical inclination of the shoe with respect to the direction of the stitches where they pass through the work, and means for moving said first-mentioned means into and out of operative position.

13. In a shoe sewing machine, the combination of a table or work support, a presser foot opposed thereto and having a nose to travel in a channel or groove formed in a shoe sole to determine the distance of the line of stitches from the sole edge, said nose being movable with respect to the presser foot, means to determine the tilt or vertical inclination of the shoe with respect to the direction of the stitches where they pass through the work, and means for moving said first mentioned means into and out of operative position.

14. In a shoe sewing machine, the combination of a table or work support, stitch forming mechanism and a tilt preventer comprising a lever, an arm carried by said lever and adapted to be moved into and out of a position to bear upon the sole of a shoe being sewed, and means for moving said arm into and out of operative position.

15. In a shoe sewing machine, the combination of a work support, stitch forming mechanism, means for varying the length of stitches produced by said stitch forming mechanism, means for defining the vertical tilt or inclination of the shoe, and devices for moving said last mentioned means into and out of operative position as the stitches are shortened and lengthened.

16. A shoe sewing machine comprising, in combination, a work support and stitch forming mechanism, means, movable into and out of operative position, for determining the vertical tilt or inclination of the shoe, and means for moving said first mentioned means into operative position in sewing around the forepart and for throwing said means out of operative position in sewing the shank portion.

17. A shoe sewing machine comprising, in combination, stitch forming mechanism for producing stitches of the desired length around the forepart, means for lengthening such stitches in sewing around the shank, means to determine the tilt of the shoe in sewing around the forepart and devices for throwing said last mentioned means out of operative position as the stitches are lengthened in sewing around the shank portion.

18. In a machine for attaching an outsole to a boot or shoe, the combination of a work support, stitch forming mechanism, means to guide the boot or shoe to determine its position transversely with respect to the stitch forming mechanism, a tilt preventer movable into position to contact with the surface of the outsole and determine the tilt

or inclination of the boot or shoe with respect to the direction of the stitches where they pass through the sole in sewing about the forepart and movable from contact with the outsole to permit increased tilt or inclination of the shoe in sewing about the shank portion.

19. In a machine for sewing an outsole to a boot or shoe, the combination of a work support, stitch forming mechanism, a tilt preventer disposed to contact with the shoe at a point remote from the stitch forming mechanism to define the direction of the stitches with respect to the sole where they pass through the same, and means for adjusting said tilt preventer toward and from said stitch forming mechanism.

20. In a shoe sewing machine, the combination of stitch forming mechanism, a tilt preventer movable into and out of a position to contact with the work at a point remote from said stitch forming mechanism to determine the direction of the stitches as they pass through the work, means for adjusting the tilt preventer to suit different work, and means for moving it into and out of operative position.

21. In a shoe sewing machine, the combination of stitch forming mechanism, a work support, a guide acting externally upon a lasted boot or shoe to guide the boot or shoe while sewing around the forepart and the shank portions, a tilt preventer operative while sewing around the forepart to determine the direction the stitches shall take in passing through the work, and means for rendering said tilt preventer ineffectual while sewing along the shank portion of the shoe.

22. In a shoe sewing machine, the combination of stitch forming mechanism, a guide acting externally upon a boot or shoe to guide the boot or shoe while sewing around the forepart and shank portions, a tilt preventer operative while sewing around the forepart to determine the direction the stitches shall take in passing through the work, means to lengthen the stitches in sewing the shank portion, and means for moving

the tilt preventer into inoperative position when the stitches are lengthened.

23. In a shoe sewing machine, stitch forming mechanism and a guide for the work, in combination with a tilt preventer comprising a member 9, an arm 10 secured thereto, an actuator 24 for said member, and a handle 22 for operating the actuator.

24. In a shoe sewing machine, a tilt preventer comprising a member 9 carrying a part having a roller 20, a spring 29 acting to move the said member 9 in one direction, an actuator 24 for moving the member 9 in another direction, and means for operating the actuator.

25. In a shoe sewing machine, stitch forming mechanism, a table or work support 1 to receive upon it and externally sustain the projecting edge of the welt of a lasted boot or shoe, a presser-foot, a guide 6 to engage a groove formed in the surface of the shoe sole at a desired distance from the edge thereof, a tilt preventer independent of the presser foot and adapted to engage the surface of the sole to determine the inclination of the stitches with respect to the two surfaces of the work, and means for rendering said tilt preventer ineffectual while sewing along portions of the work.

26. In a machine for sewing an outsole to a boot or shoe, the combination of a work support, stitch forming mechanism, devices including said work support and a presser-foot for determining the location of the line of stitches on both sides of the sole, and means acting during the sewing operation for varying the relative positions of the line of stitches with respect to the sole edge on opposite sides of the sole, so that the line of stitches may be at the same or different distance from the sole edge on opposite sides of the sole.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

THOMAS GUSTAVE PLANT.

Witnesses:

IRVING U. TOWNSEND,
ARTHUR W. CALVERT.