April 24, 1934. W. C. BAXTER 1,955,730

MACHINE FOR OPERATING UPON STITCHDOWN SHOES

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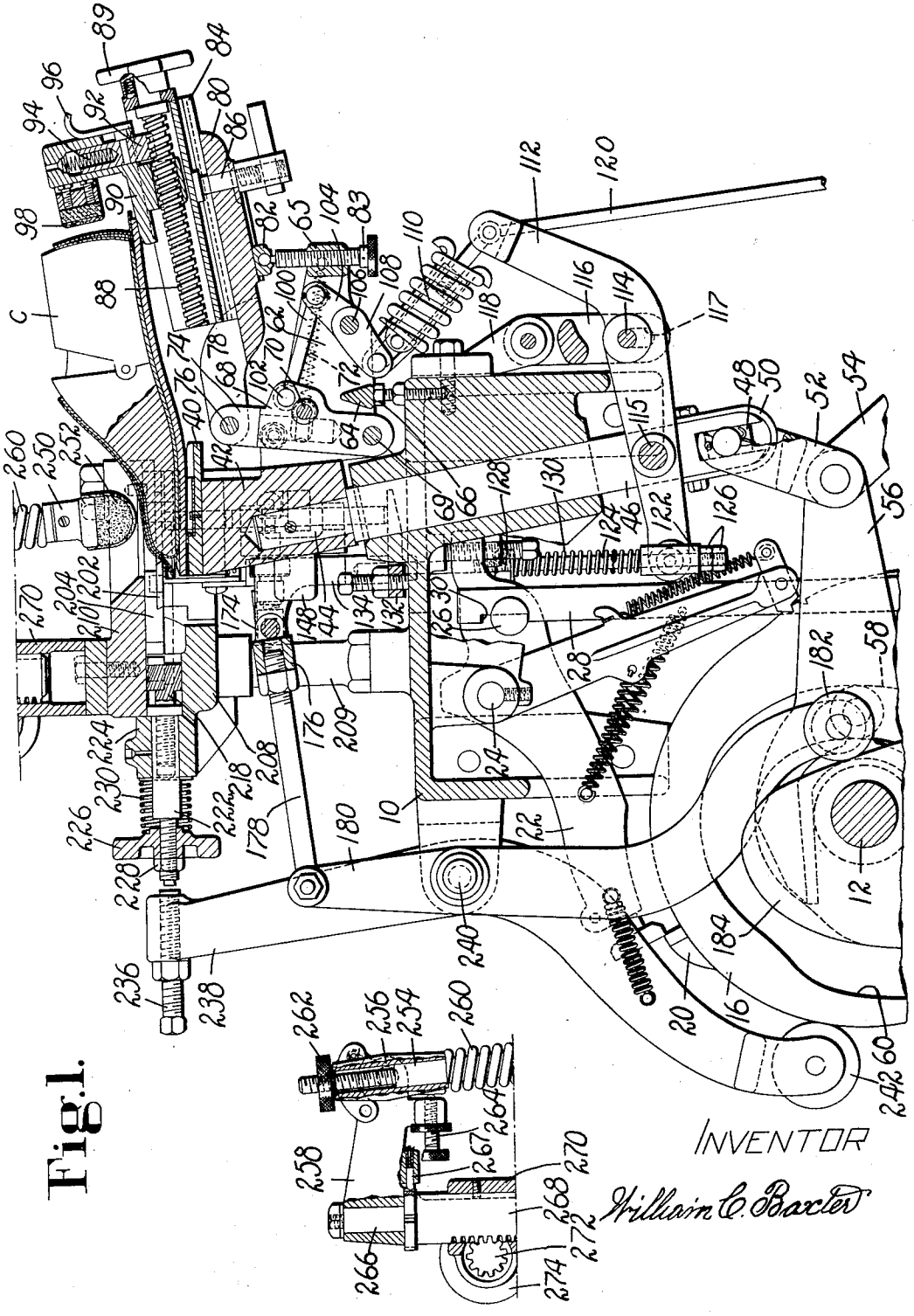


Fig.1.

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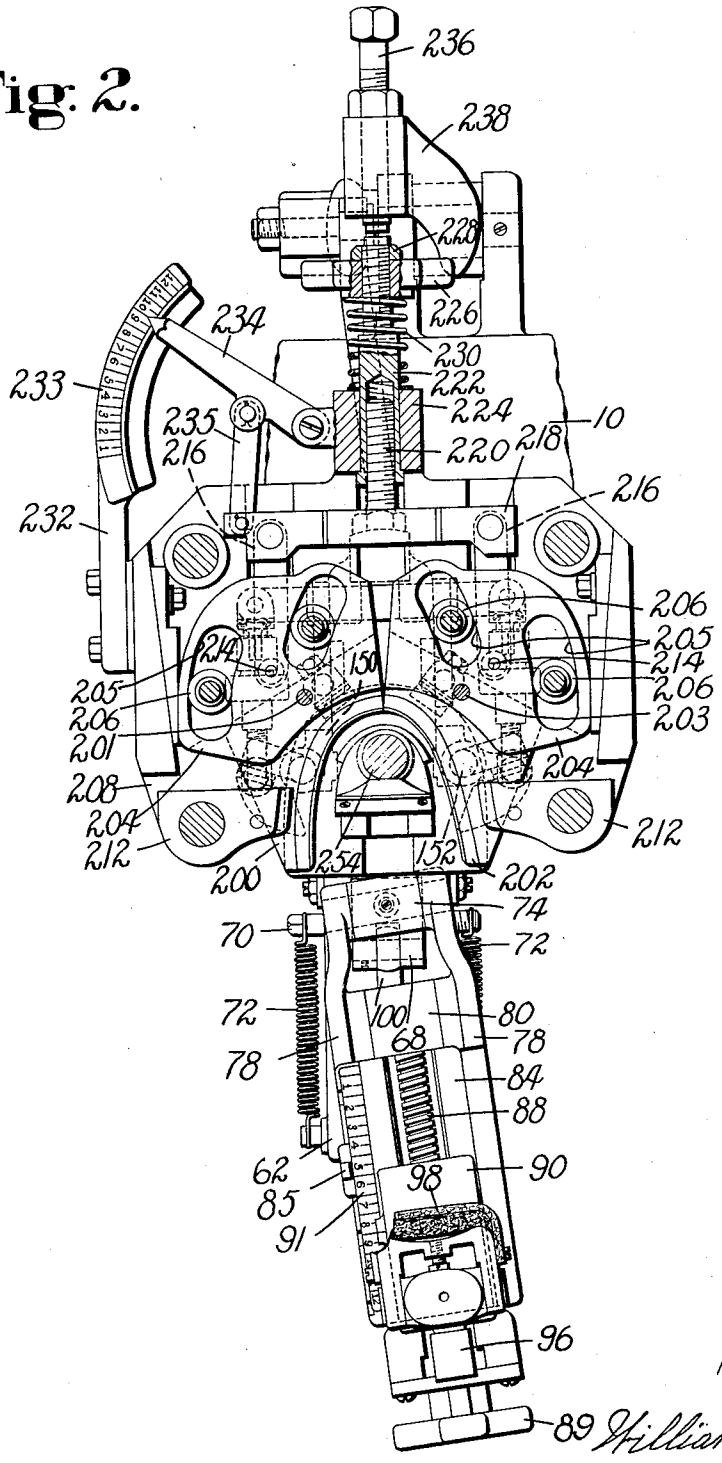
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Fig. 2.



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Fig. 3.

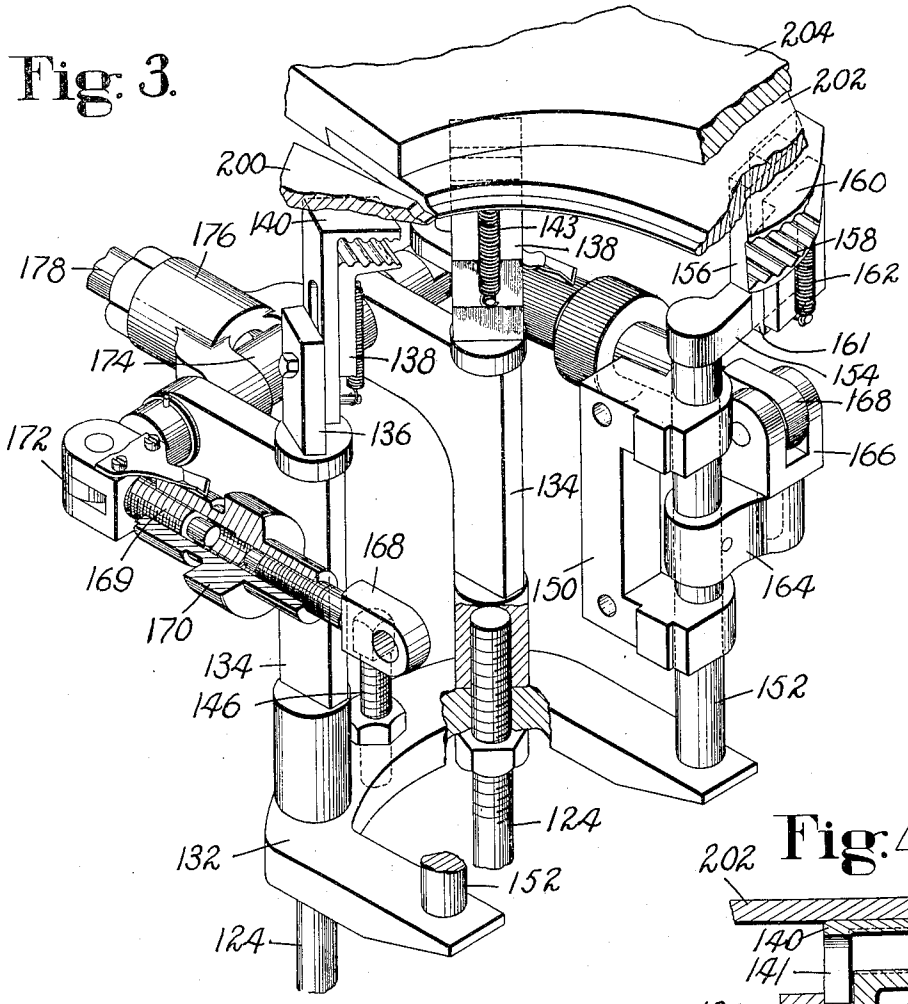
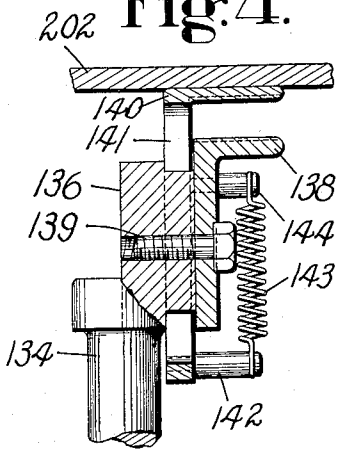


Fig. 4.



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Fig. 5.

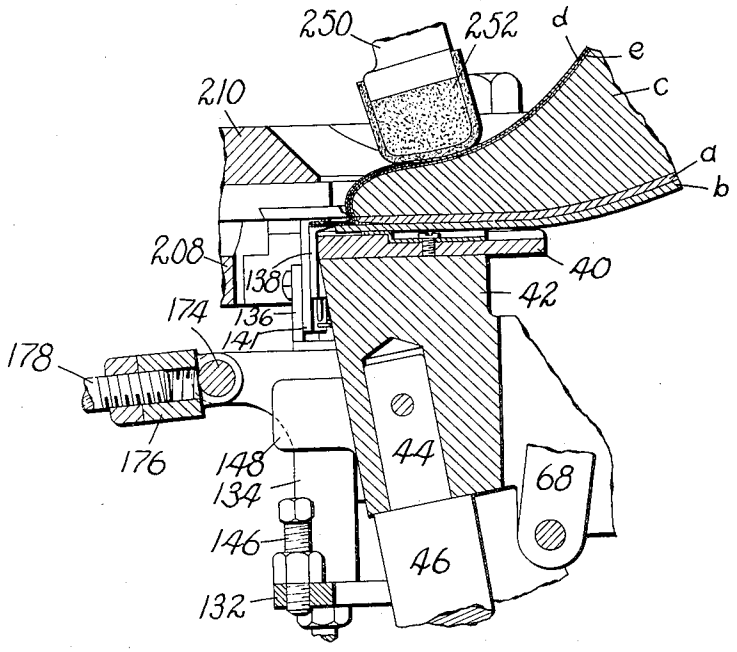
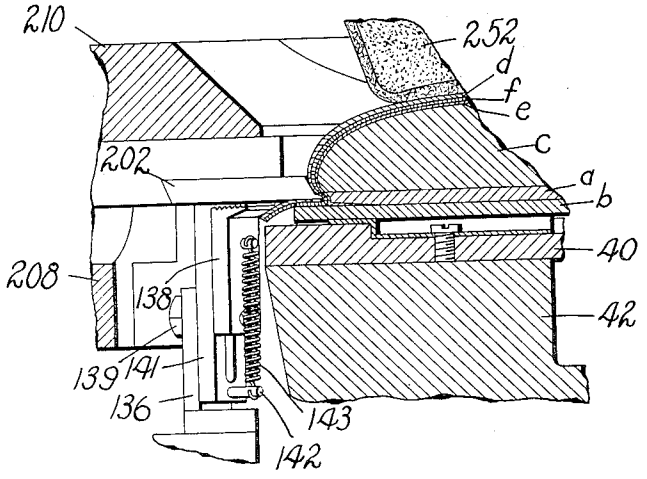


Fig. 6.



INVENTOR

William C. Baxter

Patented Apr. 24, 1934 1,955,730

UNITED STATES PATENT OFFICE

1,955,730

MACHINE FOR OPERATING UPON STITCH-DOWN SHOES

William C. Baxter, Beverly, Mass., assignor to United Shoe Machinery Corporation, Paterson, N. J., a corporation of New Jersey

Application June 13, 1932, Serial No. 616,936

34 Claims. (Cl. 12—14)

This invention relates to machines for operating upon the end portions of shoes and is illustrated as embodied in a machine for working the fore parts of stitchdown shoe uppers into lasted position and for pressing out-turned flanges thereof against the projecting margins of soles. In one aspect the present invention consists in the further development of the machine disclosed in Letters Patent of the United States No. 1,861,832, granted June 7, 1932, upon my application, with a view to rendering machines of that type more reliable and accurate in operation, more convenient for the operator and more economical of manufacture. In another aspect the invention consists in improvements of general utility in any machine for working an upper over a last by a wiping operation.

An important object of the invention is to provide improved means for effecting the tensioning of the upper materials in conjunction with the working of them into lasted position. In the machine of my prior patent, the operation of tensioning the upper was effected by clamping members operating to engage its margin against the face of the wipers and moving outwardly while pinching the upper stock against the surface of the stationary or oppositely moving wipers. In dealing with certain stock, this expedient is entirely satisfactory but it has been found advantageous in dealing with patent leather and certain other stock to engage the upper directly by two-jaw pincers in which the degree of pressure and direction of pull may be separately regulated and controlled. Accordingly, an important feature of my invention consists in the combination with wipers and a relatively movable shoe support, of pincers having jaws for gripping the margin of the upper adjacent to the wipers and being movable with the gripped stock parallel to the plane of the wiper face.

Another object of my invention is to insure that the shoe will be properly positioned and maintained against displacement during the upper-shaping operation. To this end, I provide improved means for engaging and holding the rear end of the shoe reliably and without requiring the skilled attention of the operator. As herein shown, a rocker member is mounted in substantially vertical position to swing longitudinally of the shoe and is connected to a relatively movable bed piece carrying an abutment member which is initially spaced from the heel-end of the shoe so that it may be presented without obstruction to the machine and which, in the swinging movement of the rocker, is moved into effective engaging position and so maintained during the upper working operation. This improved mechanism in general is characterized by the use of a rocker mounted on the carrier and movable through a short arc for quickly and accurately positioning the abutment and maintaining it in operative position without requiring on the part of the operator any attention beyond a treadle movement.

The present invention includes as another feature improved hold-down or toe-clamping mechanism cooperating with the shoe carrier or support to engage and hold against displacement the upper at the toe portion of the last. As herein shown, the hold-down is mounted in an overhanging arm by which it may be positioned in alignment with the forepart support of the carrier or conveniently displaced to an inoperative position when access to the forepart is desired. The overhanging arm, moreover, is supported for height-wise adjustment with reference to the shoe by mechanism which may be manipulated by the operator with convenience.

These and other features of the invention will be best understood and appreciated from the following description of a preferred embodiment thereof, selected for purposes of illustration and shown in the accompanying drawings, in which

Fig. 1 is a view of the upper portion of the machine in longitudinal section, the extreme top portion being shown at the left;

Fig. 2 is a plan view, partly in section, showing the wipers, the shoe support and part of the toe clamp or hold-down;

Fig. 3 is a view in perspective, partly in section, showing the wipers and the upper gripping mechanism;

Fig. 4 is a fragmentary sectional view of one of the upper grippers or pincers;

Fig. 5 is a sectional view of the shoe support illustrating the position of the operating instrumentalities of the machine on the shoe after the upper has been shaped to the toe and preliminary pressure applied; and

Fig. 6 is an enlarged view in cross section showing the position of the wipers after their advancing and closing movement has been effected.

In the drawings, the machine is illustrated as operating upon a stitchdown shoe which, when completed, will have three soles. At the time the toe lasting operation is performed, the shoe comprises an insole *a*, a middle or first extension sole *b* secured to a last *c* on which are assembled an upper *d* and lining *e*. The lining *e* is represented as having been wiped in and secured to

the insole by cement prior to the attachment to the last of the middle sole *b*. The shoe is also provided with a stiffener or box *f* inserted between the upper and the lining. In accordance with the usual shoemaking practice, the upper and the lining are pulled over and secured temporarily to the insole by partially driven tacks before the middle sole is applied, the shoe being allowed to remain in this condition until the upper has set upon the last. The temporary tacks are then pulled, the lining secured to the insole and the middle sole *b* applied. The shoe is represented as being in this condition when it comes to the operator of the illustrated machine.

In order to follow the detailed disclosure of the construction of the machine of the drawings, it will be convenient first to outline briefly its general organization and manner of operating. The shoe is placed by the operator in an upwardly-moving head, which includes a shoe supporting plate 40 for the forepart of the shoe and a longitudinally-movable back stop or abutment 98. The projecting margin of the upper is positioned within four spaced pincers which are arranged to engage the forepart of the upper as the shoe-carrying head is moved upwardly. In the upward movement of the head, the forepart of the shoe is wiped through a pair of stationary wipers and the upper drawn into accurate conformity to the forepart of the last, being tensioned meanwhile by the pincers which gradually release the upper in the wiping movement. The wipers are now moved forwardly, bringing the margin of the upper in under the edge of the last, and the pincers are moved outwardly to an inoperative position. When the pincers have been withdrawn so that they will not be engaged by the projecting edge of the sole, the shoe-carrying head is given a further upward movement, applying molding pressure to the out-turned margin of the upper, pressing and molding it to the projecting margin of the sole and into the vertex of the angle between the sole and the surface of the last, the machine coming to rest with the work under pressure.

Proceeding now to a detailed description of the illustrated machine. The frame 10 supports the operating instrumentalities thereof at a convenient height for the operator and carries bearings for the main shaft 12 upon which is mounted a clutch disk 16 having a cam track 60 in one face thereof. A stop projection 20 on the clutch disk is arranged to engage a stop arm 22 which is pivotally mounted upon a stud 24 in the frame of the machine and has a forwardly-projecting arm which carries a tripping pin 26. The pin 26 is slabbed off at its front side and cooperates with a vertical bar 28 having an elongated notch 30 in its upper end engaging the tripping pin 26 and at its lower end is connected to a treadle, not shown. When the bar 28 is depressed by the starting treadle, the notch 30 engages the pin 26 and by lifting the arm from engagement with the projection 20 permits the clutch to engage and the machine to be started. After the machine is set in operation, the bar 28 is pushed forwardly by a projection on the periphery of the cam disk 16 to free the notch 30 from the pin 26, thus allowing the stop arm 22 to drop back in position to stop the machine again after the cam disk has made a half revolution, there being another projection similar to the projection 20 on the cam 16 diametrically opposite to the projection 20.

The clutch mechanism above briefly described may be substantially that disclosed in United States Letters Patent No. 1,674,085, granted June 19, 1928 on an application of Ballard and Seely, to which reference may be had for further explanation of this part of the machine.

The head which carries the shoe will now be described. The frame 10 is provided with an elongated bearing extending upwardly and inclined slightly toward the rear of the machine, and in this is mounted for longitudinal movement a shaft 46. The latter has a reduced portion 44 at its upper end, to which is pinned a carrier or block 42, and upon the upper face of the block 42 is removably mounted a shoe supporting plate 40 which is shaped to underlie the forepart of the sole of the shoe being operated upon. The shoe supporting plate 40 is replaceable and plates of different contour may be substituted in accordance with the size and style of the shoes being operated upon. The shaft 46, together with the block 42 and the shoe supporting elements carried thereby, is arranged to be moved upwardly by the power of the machine, and for this purpose it is connected at its lower end to toggle links 52—54. The upper toggle link 52 is pivotally connected to a sliding block 48 which is freely movable in a slot in the lower end of the shaft 46, being prevented from displacement from the shaft by a strap 50 extending about the lower end of the shaft. The toggle links 52—54 are operated by a cam bar 56 which is forked to embrace a collar on the main shaft 12 and provided with a cam roll 58 running in the cam track 60 of the cam disk 16. It will be noted that as the bar 56 is moved toward the right, as seen in Fig. 1, and the toggle links straightened, after slight lost motion between the block 48 and the shaft 46 the latter will be moved upwardly under powerful toggle action.

The block 42 carried by the shaft 46 is provided with a pair of spaced, forwardly-extending arms 62 connected by an intermediate tie bar 64 and a second tie bar 65 extending between their outer ends. An adjustable stop 66 in the frame 10 is arranged to engage the tie bar 64 and so determine the initial vertical position of the block 42 and the parts carried thereby. The setting of the stop 66, accordingly, determines the amount of lost motion of the block 48 in the shaft 46 when the toggle links are straightened, and the final or uppermost position of these parts is determined by an adjustable support, not shown, to which the lower toggle link 54 is connected.

Between the forwardly-extending arms 62 extends a pivot pin 69, upon which is mounted an upstanding rocker member 68 which carries a cross pin 70 extending transversely through elongated slots in the arms 62. Tension springs 72 are connected to the ends of the pin 70 and to the outer ends of the arms 62, and these tend at all times to swing the rocker member 68 forwardly to an initial position determined by the forward end of the slots in the arms 62. It will be noted that the rocker 68 is disposed in a substantially vertical position and its amplitude of movement is limited by the cross pin 70 so that its free end moves in a substantially flat arc, it being in a nearly vertical position during its entire oscillation.

The rocker 68 carries at its upper end a head 74 having a swivel shank which extends downwardly into the body of the rocker. The head 74 carries another cross pin 76 to which are pivotally connected the spaced arms 78 of a bed piece 80. The bed piece extends forwardly from the upper end of the rocker in a substantially horizontal position

and is provided in its lower face with ways for a sliding block 82. The block 82 is swivelled upon the upper end of an adjusting screw 83 which is threaded into the outer tie bar 65 between the arms 62 of the carrier. The sliding block 82 constitutes the second point of support of the bed piece 80, and by turning the adjusting screw 83 the angular position of the bed piece may be regulated to accommodate the spring of the last of the shoes being operated upon. Movement of the bed piece 80 is effected by swinging the rocker 68, as will be presently explained, and in this movement the slide block 82 will swivel upon the head of the adjusting screw 83 to permit the bed piece to accommodate its angular position to the swing of the rocker.

The upper or inner face of the bed piece 80 is provided with guideways for a slide 84 having a slot in its bottom to receive a headed clamping bolt 86 which extends upwardly through the bottom of the bed piece. When the clamping bolt 86 is loosened, the slide 84 may be moved longitudinally in the bed piece 80 for purposes of quick adjustment. The slide 84 carries a latch 85 at one edge, as shown in Fig. 2, which is arranged to engage with one or another of a series of recesses in the wall of the bed piece and thus indicate definite positions of adjustment. In the slide 84 is mounted a long adjusting screw 88 provided at its outer end with a hand wheel 89 maintained yieldingly in position by a spring detent. A carriage 90 is mounted upon the adjusting screw 88 and supported by the sides of the slide 84. The carriage 90 is provided with a flat surface for supporting the heel-seat end of the shoe, as shown in Fig. 1, and with an upstanding portion carrying an abutment 98 for engaging the rear end of the counter portion of the shoe. Mounted in the carriage 90 is a block 92 constituting a half nut which normally engages and cooperates with the adjusting screw 88. The nut block 92 is held in engagement with the screw 88 by a compression spring 94 contained within the body of the carriage 90 and is connected to an operating handle 96, by which it may be elevated against the compression of the spring to disengage the adjusting screw 88 and permit free longitudinal movement of the carriage for effecting a quick adjustment thereof longitudinally with respect to the shoe. The carriage 90 has an index mark which cooperates with a scale 91 on one edge of the slide 84 to indicate the longitudinal position of the abutment 98 in terms of shoe sizes. In operating the machine, the normal setting of the carriage 90 is such as to initially position the abutment 98 about five-eighths of an inch behind the rear end of the shoe so that the latter may be presented to the carrier without obstruction. The rocker is then advanced to cause the abutment to engage the shoe by mechanism which will now be described.

Journaled in the forwardly-projecting arms 62 of the carrier is a rock shaft 106 to which is connected an upwardly-extending arm 104. This is connected to a stud 102 extending between ears on the rear side of the rocker 68 by a link 100. Also secured to the rock shaft 106 is a downwardly-extending operating arm 108 which is connected through a yielding link 110 of adjustable length to one arm of an operating lever 112. The lever 112 is fulcrumed on a pin 114 carried by a double link 116 suspended from a stationary bracket 118 bolted to the frame 10 of the machine. The double link 116 has slotted bearings 117 for the fulcrum pin 114 so that the lever 112 may be moved with lost motion in the initial part of its movement. The forward end of the lever 112 is connected to a treadle rod 120 by which it is rocked in a clockwise direction by the operator preliminarily to the power operation of the machine. This movement is transmitted through the yielding link 110, the rock shaft 106 and the link 100 to the rocker 68, swinging the latter inwardly and thus carrying the bed piece 80 into a position to cause the abutment 98 to engage the shoe.

The wipers are mounted in the machine in fixed vertical position opposite to the shoe carrier 42 and in such location that the toe portion of the shoe is carried up through them by the upward movement of the carrier. The wiper mechanism is mounted in a wiper head 208 supported at the upper end of a vertical post 209 secured to the upper portion of the frame 10 of the machine. The wipers 200 and 202 (Fig. 2) are shaped to embrace the toe end of the shoe and are detachably secured by bolts 201 and 203 respectively to wiper carriers 204 of identical construction. Each wiper carrier is provided with two curved slots 205 in which are received rolls 206 mounted to turn about fixed axes in the wiper head 208. The slots 205 are so designed that when the wiper carriers are moved toward the shoe, the wipers 200 and 202 will be advanced and closed about a point located centrally substantially at the end of the toe where the wiping edges of the wipers meet. A cover plate 210 is bolted to the wiper head 208 to hold the wiper carriers 204 in place and to withstand the upward pressure on the wipers. There are also blocks 212 secured between the cover plate 210 and the body of the wiper head 208 at the forward corners thereof, which extend inwardly over the forward ends of the wipers and sustain them against upward pressure.

Two separate means are provided for effecting advancing and closing movement of the wipers, one being a manually effected adjustment for the purpose of setting the wipers so that they will correspond to the shape and size of the toe of a shoe being lasted, and the other being a power effected movement of predetermined extent to cause the wipers to tuck the fold of the outturned upper under the edge of the last.

Each wiper carrier 204 is connected by a pin 214 to a link 216 and the rear end of each link is pivotally connected to a cross bar 218 having a rearwardly-extending threaded stem 220. The stem 220 receives a threaded sleeve 222 which is mounted for rotary movement in a boss 224 formed on the wiper head 208 and is held from rearward movement by a flange at its forward end. The rear end of the sleeve 222 is reduced and threaded and carries a hand wheel 226. The hand wheel is adjustable lengthwise upon the threaded end of the sleeve 222 and may be clamped in adjusted position by a lock nut 228. Between the hand wheel 226 and the stationary boss 224 is provided a compression spring 230, tending at all times to move the sleeve 222 and the cross bar 218 connected thereto toward the rear. It will be seen that by turning the hand wheel 226 the threaded sleeve 222 may be turned and the cross bar 218 moved forwardly or rearwardly to adjust the wiper carriers 204 and hence the setting of the wipers 200 and 202, that is, the extent to which they are initially advanced and closed, or retracted and opened, may thus be varied. In order to indicate the adjustment of the wipers in terms of shoe sizes, a curved scale

233 is mounted upon a stationary bracket 232 bolted to the side of the wiper head. A pointer 234 is pivotally mounted upon the stationary boss 224 and connected through a short link 235 to the cross bar 218. It will be seen that the extent of movement of the cross bar from front to rear will thus be indicated by the movement of the pointer 234 upon the scale 233.

The power effected advancing and closing movement of the wipers is caused by pressure applied to the rear end of the sleeve 222 by a cam lever 238 carrying at its upper end an adjustable contact screw 236. The cam lever 238 is fulcrumed to swing about a pin 240 extending between ears projecting rearwardly from the machine frame 10. At its lower end it is provided with a cam roller 242 arranged to engage an edge cam surface on the disk 16, this cam surface being offset laterally with respect to the stop projection 20, already referred to as a part of the clutch mechanism. The timing of the cam lever 238 is such that the wipers are advanced and closed positively a predetermined amount after initial upward pressure has been applied to the shoe carrier through the toggles 52—54 to press the out-turned margin of the upper and the projecting margin of the sole against the wipers, and prior to the final pressure applied by the toggles to the carrier.

In order to clamp the upper to the last in the vicinity of the tip line and prevent undue movement of the upper relatively to the last, a toe clamp or hold-down 250 is provided in line with and above the supporting plate 40. The hold-down or clamp itself is provided with a pad 252 of yielding material for directly engaging the lasted upper and with an upwardly-extending stem 254 which is received within a cylindrical sleeve 256 pivotally connected to the forward end of a bracket arm 258. The sleeve 256 is normally retained in a substantially vertical position but is mounted so that it may be swung bodily in a counter-clockwise direction temporarily to remove the hold-down from above the supporting plate 40 when it is desired to remove or replace the latter. A stiff compression spring 260 encircles the stem of the hold-down and cushions its engagement with the lasted upper. The upper end of the stem 254 is threaded and provided with a knurled nut 262 by which the tension of the spring 260 may be adjusted and regulated. An abutment screw 264 is threaded horizontally through a boss upon the bracket arm 258 in position to engage and locate the sleeve 256 in operative position.

The bracket arm 258 is arranged to swivel horizontally about a spindle 266 which forms the upper end of a vertical rack bar 268. The rack bar is mounted in a stationary casing 270 bolted to the cover plate 210 of the wiper head. It may be adjusted vertically with the hold-down by means of a pinion 272 carried by a short shaft journaled in the casing 270 and provided at its outer end with a hand wheel 274. The rack bar 268 is provided at its upper end and below the spindle 266 with a toothed collar which cooperates with a spring detent 267 in maintaining the bracket arm 258 in its operative position, as shown in Fig. 1, or in an inoperative position displaced substantially 90° therefrom.

The mechanism for gripping and tensioning the forepart of the upper will now be described. This mechanism includes four pincers, each comprising a pair of cooperating jaws, the upper of which is maintained at all times in yielding contact with the under side of one of the wipers. The pincers are mounted so that the lower jaws are moved upwardly to engage the stock preliminarily to the power actuation of the machine, and then, as the lasted shoe is forced upwardly through the wipers, the pincers are drawn outwardly so that they will be clear of the projecting margin of the sole before the final molding pressure is applied to the wiped upper.

The lever 112, which has already been referred to in connection with its operation on the heel-end positioning mechanism of the carrier, has its primary fulcrum upon a pin 115 projecting from the shaft 46. At its inner end the lever 112 carries a head comprising a pair of pivotally mounted sleeves 122, through each of which passes a vertical rod 124 having stop nuts 126 at its lower end. Upon the body of each rod 124 is threaded a nut 128 forming an adjustable stop, between which and the upper end of one of the sleeves 122 is interposed a compression spring 130. The upper ends of both rods 122 pass through a horseshoe-shaped plate 132, best shown in Fig. 3, and each rod is threaded into a vertically disposed angle bar 134. It will be understood that the rods 124 with the plate 132 and the angle bars 134 constitute a rigid assembly which is moved vertically when the lever 112 is rocked in a clockwise direction and which is free also to swing forwardly and rearwardly about its point of connection with said lever as an axis. Each of the angle bars 134 is provided above its rearwardly-extending portion with an upright extension 136 which carries one of the pincers. As best shown in Fig. 4, each pincer comprises a fixed lower jaw 138 secured to the extension 136 by a bolt 139. The extension has also a vertical guideway for the slotted stem 141 of the movable upper jaw 140. At its lower end the stem 141 carries a pin 142, and between this and a stationary pin 144 is interposed a tension spring 143 tending at all times to lift the upper jaw 140 and maintain the pincers open. As already intimated, the upward movement of the upper jaw 140 is limited by its engagement with the under surface of one of the wipers.

The pincers 138—140 above described are located symmetrically to engage the upper at the tip corners. A second pair of pincers is provided for engaging the margin of the upper on opposite sides back from the toe end at substantially the location of the tip line. These side pincers are carried by vertical stems 152, each of which is mounted in a stationary forked block 150 bolted to a part of the machine frame and each resting at its lower end upon the surface of the horseshoe-shaped plate 132 but not connected thereto as are the angle bars 134. At its upper end each stem 152 is provided with an offset head 154 formed integrally with a vertical extension 156. A fixed lower jaw 158 is bolted to each of these extensions, the jaw in this case extending rearwardly and inwardly from the extension with reference to the shoe. A movable upper jaw 160, having a slotted shank 161, is also mounted upon the extension 156 and normally maintained in its uppermost or open position by a tension spring 162, as in the case of the pincers already described. Each of the stems 152 is rotatably mounted in the bearings supplied by the forked clock 150 and is provided with an outwardly-extending arm 164 by which such motion may be imported to it. Each arm 164 has a swivel block 166 mounted at its free end, and these in turn are connected through a rearwardly-extending link to the heads 172 of a cross bar

174. Each of the links comprises differentially threaded sections 168 and 169 adjustably connected by a cylindrical nut 170, and by turning the nut each of the side pincers may be individually adjusted forwardly or rearwardly with respect to the shoe. The cross bar 174 passes through the rear end of the arm of each of the angle pieces 134 and through the arms of a yoke 176. The yoke is connected adjustably to the forward end of a link 178 which, in turn, is connected to the upper end of a cam lever 180 journaled to swing upon the pin 240, already referred to. At its lower end the cam lever is provided with a cam roll 182 and this runs upon the surface of a cam disk 184 fast to the shaft 12.

The lower or open position of the lower jaw of each pincer may be adjusted by an adjusting screw 146 threaded through the horseshoe-shaped plate 132 and engaging a flat surface on the frame 10. Normally this adjustment should be such that the lower jaws 138 are located just above the projecting margin of the sole of a shoe resting upon the plate 40. The adjustment of the plate 132 may be compensated for by the adjustable connection of the rods 124 with the lever 112.

In order to clarify the foregoing description, the operation of the machine will now be followed in detail. Having first equipped the machine with a forepart-supporting plate 40 of the proper size, the shoe is presented to the carrier, the bed plate 80 being swivelled to the right or left to accommodate the swing of the last and adjusted angularly for the spring of the last by use of the adjusting screw 83. The abutment 98 is adjusted longitudinally to clear the counter portion of the shoe by about five-eighths of an inch and the hold-down 250 is adjusted into close proximity to the surface of the lasted upper. The operator then depresses the treadle rod 120, moving the lever 112 first about its primary fulcrum 115. In this movement the rocker 68 is swung inwardly and the abutment 98 engaged with the shoe. At the same time, the inner end of the lever 112 lifts the rods 124 and the horseshoe-shaped plate 132 so that the lower jaws of all the pincers are closed upwardly upon the projecting margin of the upper. Further movement of the treadle, which is also connected to the starting bar 28, now becomes effective to trip the clutch and the toggle links 52—54 begin to straighten, elevating the shaft 46 and the shoe carrier toward the hold-down 250 and with respect to the wipers which initially engage the lasted upper somewhat lightly. During the upward movement of the shoe carrier, the abutment holds the shoe yieldingly against the wipers to cause them to work the upper into conformity with the contour of the last and the four pincers are moved outwardly by the action of the cam lever 180. The instrumentalities of the machine are adjusted so that the wiping operation of the shoe in passing upwardly through the wipers and the withdrawal of the pincers take place in a cooperative manner, the upper stock being maintained under substantial outward tension so that it lies smoothly upon the surface of the last and the pincers being withdrawn beyond the margin of the projecting sole so as not to be pinched between the wipers and the sole. The upward movement of the shoe carrier is interrupted momentarily after the complete withdrawal of the pincers and after the bottom of the last has reached the plane of the wipers and then the advancing and closing movements of the wipers to carry the fold of the outturned upper under the edge of the last are effected. When these movements have been completed, a final upward pressure is exerted upon the carrier, and the machine is brought to rest with the wipper and out-turned margin of the upper held under molding pressure against the margin of the sole between the wipers and the supporting plate 40.

It will be noted that in the upward movement of the shaft 46 with the shoe carrier parts, the lever 112 is also bodily lifted so that the engaged position of the abutment 98 is in no way altered by its connection with the lever 112. Inasmuch, however, as the sleeves 122 are lifted with the lever 112, the springs 130 on the rods 124 are further compressed and the rods are urged upwardly through the medium of the nuts 128 with an increasing yielding pressure. The gripping pressure of the pincer jaws is, accordingly, increased and is made sufficient to tension the upper stock strongly, although the stock is forcibly pulled out of the grippers during the wiping operation. The degree of gripping pressure of the pincers may be regulated in accordance with the character of the upper stock and to avoid danger of tearing by adjusting the initial compression of the springs 130. The upper pincer jaws 140 and 160 each have a flat upper surface adapted to bear upon the under face of the wipers. The swinging movement of the pincers about their axis in the lever 112 is in an arc departing so little from a straight line that in the sliding contact of the pincer jaws on the wipers there is no appreciable angular displacement.

Preferably, as in the machine of my prior patent, the present machine is duplex in type and the operating instrumentalities above described constitute only one side or unit thereof. When this unit is brought to rest with the shoe under pressure, a second shoe may be similarly treated in the other unit of the machine while the first shoe remains under pressure.

In order to relase the shoe, the operator again depresses the treadle rod 28, whereupon the parts are restored to initial position, the abutment 98 being pulled outwardly by the action of the springs 72 upon the rocker 68 and thereafter opening a space at the rear end of the shoe. Thus, ample clearance is provided for removal of the shoe and for the introduction of another shoe of the same size without any adjustments being made.

It will be apparent that while the machine herein shown has been described as operating upon the forepart of a stitchdown shoe, it could with little change be adapted to operate upon the heel-end of the shoe and such use is within the contemplation of my invention. It will also be apparent that the advantages of my invention are in no sense confined to the manufacture of three-sole stitchdown shoes or to any specific type of stitchdown shoe, but that the invention may be embodied with advantage in any machine useful in shoemaking operations which require an upper to be tensioned during part or all of a wiping operation.

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

1. In a machine for shaping the end portion of a stitchdown shoe to its last, the combination of end embracing wipers, and a shoe carrier relatively movable with respect to the wipers for presenting a shoe thereto and including a fore-

part support, a rocker arranged to swing with its free end in a flat arc adjacent to said support, and means controlled by said rocker in its movement for engaging the rear end of the shoe and holding it against retracting movement.

2. In a machine for shaping the end portion of a stitchdown shoe to its last, the combination of end embracing wipers, and a shoe carrier relatively movable with respect to the wipers for presenting a shoe thereto and including a forepart support, a rocker mounted in substantially vertical position adjacent to the support to swing to and from the latter, a bed piece pivotally connected to the free end of the rocker, and an abutment adjustably mounted on the bed piece.

3. In a machine for shaping the end portion of a stitchdown shoe to its last, the combination of end embracing wipers, and a shoe carrier relatively movable with respect to the wipers for presenting a shoe thereto and including a bottom support, a rocker arranged to swing toward the latter from an initial position remote therefrom, a bed piece connected to the free end of the rocker, a slide adjustable upon the bed piece, and an abutment adjustable in the slide.

4. In a machine for shaping the end portion of a stitchdown shoe to its last, the combination of end embracing wipers, and a shoe carrier relatively movable with respect to the wipers for presenting a shoe thereto and including a bottom support, a rocker mounted on the carrier and arranged to swing in a path below and adjacent to the plane of said support, a bed piece connected to the rocker, an abutment mounted in the bed piece for adjusting movement longitudinally of the shoe, and means acting on the rocker to bring the abutment into engagement with the shoe from an initial position spaced therefrom.

5. In a machine for shaping the end portion of a stitchdown shoe to its last, the combination of end embracing wipers, and a shoe carrier relatively movable with respect to the wipers for presenting a shoe thereto and including a bottom support, a rocker arranged to swing at its free end in an arc adjacent to said support, a bed piece connected to the free end of the rocker for movement about axes at right angles to each other, spring means for normally retracting the rocker, an abutment projecting from the bed piece, and treadle-operated mechanism for swinging the rocker to engage the abutment with the end of the shoe.

6. In a machine for shaping the end portion of a stitchdown shoe to its last, the combination of end embracing wipers, and a shoe carrier movable with respect to the wipers for presenting a shoe thereto and including a bottom support, a rocker pivotally mounted in the carrier to swing in a nearly vertical position, an abutment connected to said rocker, and means for consecutively swinging the rocker to bring the abutment into engagement with the shoe and elevating the carrier.

7. In a machine for shaping the end portion of a stitchdown shoe to its last, the combination of end embracing wipers, and a shoe carrier movable with respect to the wipers for presenting a shoe thereto and including a sole supporting plate, a rocker mounted in the carrier to swing in a nearly vertical position, a bed piece pivotally supported at one end by the rocker, means acting at a point remote from the rocker for adjustably positioning the bed piece, an abutment on the bed piece initially spaced from the shoe, and treadle-operated mechanism acting through the rocker to bring the abutment into shoe-engaging position.

8. In a machine for shaping the end portion of a stitchdown shoe to its last, the combination of end embracing wipers, and a shoe carrier relatively movable with respect to the wipers for presenting a shoe thereto and including a sole plate, an oscillatory member mounted in the carrier at the rear thereof and maintained yieldingly at the outer end of its path of movement, a bed piece connected thereto, an adjusting screw carried by the bed piece, an abutment arranged to be positioned thereby longitudinally of the shoe, and treadle-operated mechanism mounted in part on the carrier for swinging the oscillatory member inwardly with its connected parts.

9. In a machine for shaping the end portion of a stitchdown shoe to its last, the combination of end embracing wipers, and a shoe carrier relatively movable with respect to the wipers for presenting a shoe thereto and including a forepart plate, a heel plate spaced therefrom and disposed at substantially the same level, an abutment associated with said heel plate, a rocker arranged to swing beneath a shoe supported by said forepart and heel plates, means for supporting the heel plate from said rocker, and mechanism for swinging the rocker to carry the heel plate and abutment toward the forepart plate.

10. In a machine for shaping the end portion of a stitchdown shoe to its last, the combination of end embracing wipers, and a shoe carrier relatively movable with respect to the wipers for presenting a shoe thereto and including a forepart supporting plate, a rocker arranged to swing in a nearly vertical position near said plate, a bed piece pivoted to the free end of said rocker and extending outwardly therefrom in substantially horizontal position, a slide adjustable in the bed piece, an adjusting screw in said slide extending longitudinally of the shoe, a carrier mounted on the screw and having an abutment and a disengageable nut cooperating with said screw, and an actuating train of mechanism for swinging said rocker to engage the abutment preliminarily to the full movement of the carrier.

11. In a machine for shaping the end portion of a stitchdown shoe to its last, the combination of end embracing wipers, and a shoe carrier relatively movable with respect to the wipers for presenting a shoe thereto and including a forepart supporting plate, a bed piece adjacent to said plate and having an adjustable abutment thereon, an upright post upon which said bed piece rests and with which it has sliding and pivotal connection, and a link for supporting and moving one end of the bed piece to effect engagement of the abutment with the shoe.

12. In a machine for shaping the end portion of a stitchdown shoe to its last, the combination of end embracing wipers constructed and arranged for advancing and closing movements, manually operated means for adjusting the wipers to the end portion of the shoe, means for indicating the degree of such adjustment, a support for a shoe with a projecting sole margin, means for effecting relative movement between the wipers and the support heightwise of the shoe to shape the upper to the last, power-operated means for advancing and closing the wipers, and means for applying pressure to the shoe materials between the wipers and the shoe support.

13. In a machine for shaping the end portion of a stitchdown shoe upper to its last, the com-

bination of a support to receive and support the sole of a shoe on its last including a projecting margin of the sole, end embracing means above said support, means for effecting relative movement heightwise of the shoe between the shoe support and the end embracing means, pincers mounted beneath the end embracing means and arranged to move in paths transversely disposed with respect to the direction of said heightwise movement for gripping the upper and tensioning it, and means for moving the pincers in said paths during said relative heightwise movement.

14. In a machine for shaping the toe portion of a stitchdown shoe upper to its last, the combination of a support to receive the sole of a shoe on its last, a wiper support above said shoe support, a pair of toe embracing wipers on said support, means for effecting relative movement heightwise of the shoe between the shoe support and the wipers to cause the upper to be wiped over the toe of the last, and two-jaw pincers controlled in their effective height by engaging the wipers and arranged to be operated during the relative heightwise movement between the shoe support and the wipers for gripping the upper.

15. In a machine for operating on the toe portions of stitchdown shoes, the combination of end embracing wipers, a shoe support movable heightwise of the shoe relatively to the wipers, gripping devices comprising cooperating jaws relatively movable to clamp the upper below the wipers, means for moving the shoe support to effect shaping of the upper by the wipers over the toe of the last, and means for closing the jaws to engage the upper before the movement of the shoe support is initiated.

16. In a machine for operating on the toe portions of stitchdown shoes, the combination of end embracing wipers, pincers comprising cooperating jaws relatively movable to grip the upper below the wipers, a shoe support, means for effecting relative movement heightwise of the shoe between the shoe support and the wipers to effect shaping of the upper by the wipers over the toe of the last, means for withdrawing the pincers outwardly of the shoe progressively during the upward movement of the shoe support, and means to cause the gripping pressure of the pincer jaws upon the upper progressively to increase during the progressive withdrawal of the pincers.

17. In a machine for operating on the toe portions of stitchdown shoes, the combination of toe embracing wipers, a shoe support movable heightwise of the shoe relatively to the wipers, pincers including jaws relatively movable to grip the upper below the wipers, manually-operated means for effecting preliminary movement of the jaws into gripping position, power-operated means for moving the shoe support to effect shaping of the upper over the toe of the shoe, and means operated by said power means to produce an effective gripping pressure between the jaws of the pincers.

18. In a machine for shaping the toe portion of a stitchdown shoe upper to its last, the combination of a support to receive the sole of a shoe on its last, a pair of toe embracing wipers, pincers comprising cooperating jaws for gripping the upper beneath the wipers, means for effecting relative movement between the wipers and the support heightwise of the shoe to shape the upper to the toe of the last while drawing the upper under tension from the pincers, and means for transversely withdrawing the pincers from position to grip the upper.

19. In a machine for shaping the toe portion of a stitchdown shoe upper to its last, the combination of a support to receive the sole of a shoe on its last, a pair of toe wipers, power-operated means for effecting relative movement heightwise of the shoe between the shoe support and wipers, pincers comprising cooperating jaws movable to grip the margin of the wiper, said jaws being initially widely spaced from each other to permit introduction of the shoe upper, manually operated means for bringing the jaws into position to engage the upper, means operating during said relative heightwise movement between the shoe support and wipers for operating the pincers to grip the upper, and means operating during said relative heightwise movement for moving the pincers into inoperative position.

20. In a machine for shaping the toe portion of a stitchdown shoe to its last, the combination of a support to receive the sole of a shoe on its last, a pair of end embracing wipers, pincers comprising cooperating jaws movable for gripping the upper at the sides of the toe beneath the wipers, means for effecting relative movement heightwise of the shoe between the shoe support and the wipers to shape the upper to the toe of the last and to operate the pincers to hold the upper frictionally between said cooperating jaws.

21. In a machine for lasting stitchdown shoes, the combination of a support to receive the sole of a shoe attached to its last, a wiper support above said shoe support, a pair of end embracing wipers on said wiper support, means for effecting relative movement heightwise of the shoe between the shoe support and the wipers, two-jaw pincers for clamping the upper adjacent to the wipers, and an abutment engaging the rear end of the shoe to hold the shoe against the wipers during the operation of the wipers.

22. In a machine for shaping the end portion of a stitchdown shoe to its last and to the margin of a sole projecting beyond the last bottom, the combination of wipers constructed and arranged for advancing and closing movements, a shoe support, means for effecting relative movement of the support and wipers heightwise of the shoe, to crease the upper at the angle between the side of the last and the projecting margin of the sole, two-jaw pincers located beneath the wipers for gripping the outwardly-projecting margin of the upper during the relative movement between the wipers and the support, means for withdrawing the pincers from operative position, and means for advancing and closing the wipers to cause the crease in the upper to extend under the last bottom.

23. In a machine for shaping the toe portion of a stitchdown shoe, the combination of wipers and a relatively movable shoe support, with pincers for gripping the margin of the upper and tensioning it beneath the wipers, said pincers each comprising an upper jaw yieldingly maintained in engagement with the lower face of the wipers, and a lower jaw movable upwardly into gripping engagement with the interposed upper stock.

24. In a machine for shaping the toe portion of a stitchdown shoe, the combination of wipers and a relatively movable shoe carrier, with a plurality of spaced pincers each having an upper jaw maintained yieldingly in engagement with the lower face of the wipers and a lower jaw arranged to be moved upwardly to grip the interposed upper stock, and cam-operated means

for moving the pincers outwardly in transverse paths while the upper jaw of each slides in contact with the wiper surface.

25. In a machine for operating on stitchdown shoes, end embracing wipers, a shoe support movable relatively thereto with a lasted shoe thereon, and hold-down mechanism including an adjustable post located out of line with the path of movement of the shoe support, an overhanging arm projecting therefrom, and a pad yieldingly supported beneath said arm in position to engage a shoe advanced through the wipers by said support.

26. In a machine for operating on stitchdown shoes, cooperating toe wipers, means for advancing a shoe between the wipers, and hold-down mechanism including a vertically-adjustable post mounted at one side of the wiper opening, an overhanging arm pivotally connected to the post and arranged to be held in position above the wiper opening, a sleeve pivotally mounted at the free end of said arm to swing in a vertical plane, and a hold-down pad having a shank extending through said sleeve and being yieldingly and adjustably maintained in position beneath it.

27. In a machine for operating on the toe portions of stitchdown shoes, the combination of pincers having jaws relatively operable to grip the upper at the end and sides of the toe, a support for the shoe adapted to support a sole member including a portion of the member which extends beyond the periphery of the last bottom, means for relatively actuating the support and the pincers to pull the upper over the toe of the last, toe embracing wipers, and power means for relatively operating the support and the wipers to wipe the tensioned upper over the toe of the last into the angle between the last and said sole member, to press the flange of the upper against the sole member and to bring the parts automatically to rest with the wipers in such pressing engagement.

28. In a machine for operating upon the toe portions of stitchdown shoes, the combination of pincers having jaws relatively operable to grip the upper at the end and sides of the toe, a support for the shoe adapted to support a sole including a marginal portion of the sole which extends beyond the periphery of the last bottom, power-operated means for relatively actuating the support and the pincers to pull the upper over the toe of the last, toe embracing wipers, and power-operated means for relatively operating the support and the wipers heightwise of the shoe to wipe the tensioned upper over the toe of the last into the angle between the last and the projecting margin of the sole, to press the outturned marginal portion of the upper against the projecting marginal portion of the sole and to bring the parts to rest with the wipers in such pressing engagement.

29. In a machine for shaping the end portion of a stitchdown shoe upper to its last, the combination of a support to receive the sole of a shoe on its last and to support the sole including a marginal portion thereof which extends beyond the last bottom, end embracing wipers constructed and arranged for advancing and closing movements and located above the support, means for effecting relative movement heightwise of the shoe between the support and the wipers, and pincers located beneath the wipers and having jaws relatively operable to seize the outstanding portions of the upper about the end of the last, said pincers being movable in a plane parallel to the plane of the sole to avoid interference between them and the sole and work support during the relative heightwise movement between the support and the wipers.

30. In a machine for shaping the end portion of a stitchdown shoe upper to its last, the combination of a support to receive the sole of a shoe on its last and to support the sole including a portion thereof which extends beyond the last bottom, end embracing means above said support and overlying its marginal portion, means for effecting relative movement heightwise of the shoe between the support and the end embracing means, pincers comprising jaws relatively movable to seize the upper, said jaws being initially located between the end-embracing means and the support, and means to move the pincers in paths transversely disposed to the direction of said heightwise movement to cause them to clear the support and to permit the upper and sole to be pressed between the end embracing means and the support.

31. In a machine for shaping the end portion of a stitchdown shoe upper to its last, the combination of a support to receive the sole of a shoe on its last and to support the sole including a portion thereof which extends beyond the last bottom, end embracing means above said support and overlying its marginal portion, power-operated means for effecting movement of the shoe support toward the end embracing means, pincers having jaws relatively operable to seize the upper and initially located between the end embracing means and the support, said pincers being arranged to move in paths transversely disposed to the direction of movement of the support to cause them to clear the support and to permit the support to press the sole and upper against the end embracing means, and means for so moving the pincers.

32. In a machine for shaping the end portion of a stitchdown shoe upper to its last, the combination of a support to receive the sole of a shoe on its last and to support the sole including a marginal portion thereof which extends beyond the last bottom, end embracing wipers constructed and arranged for advancing and closing movements and located above the support, means for effecting relative movement heightwise of the shoe between the shoe support and the wipers, pincers comprising jaws relatively movable to seize the upper, said pincers being located beneath the wipers in position to engage the outstanding portions of the upper about the end of the last, and means for operating the pincers to tension the upper during the relative heightwise movement between the support and the wipers.

33. In a machine for operating on the toe portions of stitchdown shoes, the combination of toe embracing wipers, a shoe support movable heightwise of the shoe relatively to the wipers, said support being adapted to support the shoe bottom including a projecting margin of the sole, pincers including jaws relatively movable to grip the upper below the wipers, power-operated means for moving the shoe support to effect shaping of the upper over the toe of the shoe by the wipers, and power-operated means to apply gripping pressure to the jaws and to operate the pincers to tension the upper.

34. In a machine for operating on the toe portions of stitchdown shoes, the combination of toe embracing wipers, a shoe support movable heightwise of the shoe relatively to the wipers,

said support being constructed and arranged to sustain the sole including a projecting margin thereof, pincers including jaws relatively movable to grip the outstanding portion of upper below the wipers, power-operated means for moving the shoe support to effect shaping of the upper over the toe of the shoe by the wipers, means operated by said power means to close the pincer jaws to grip the upper, and power-operated means to move the pincers to apply tension to the upper.

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