

Oct. 27, 1942.

T. P. COURCHENE ET AL

2,299,800

LASTING MACHINE

Filed July 17, 1941

2 Sheets-Sheet 1

Fig. 1.

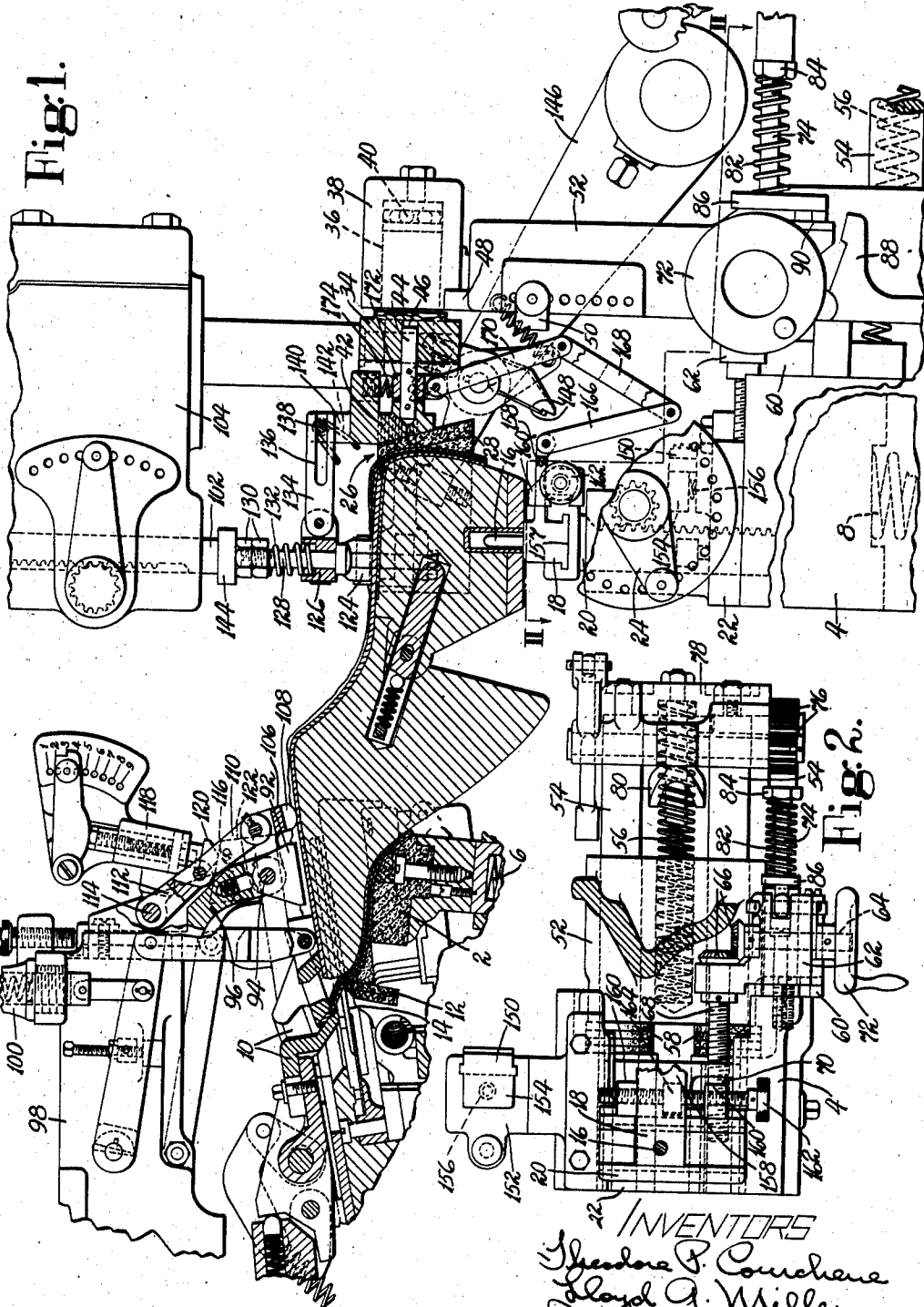


Fig. 2.

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2 Sheets-Sheet 2

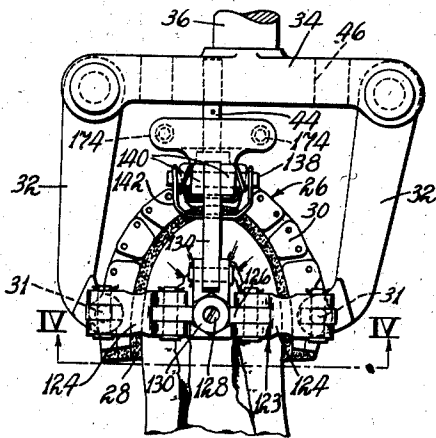


Fig. 3.

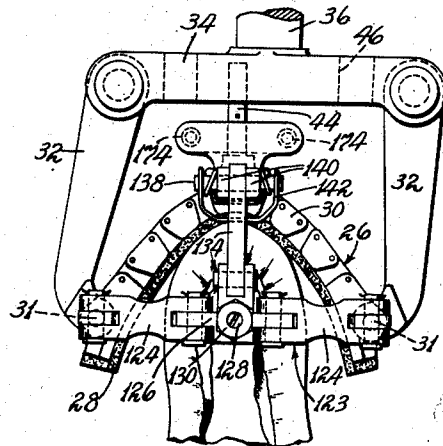
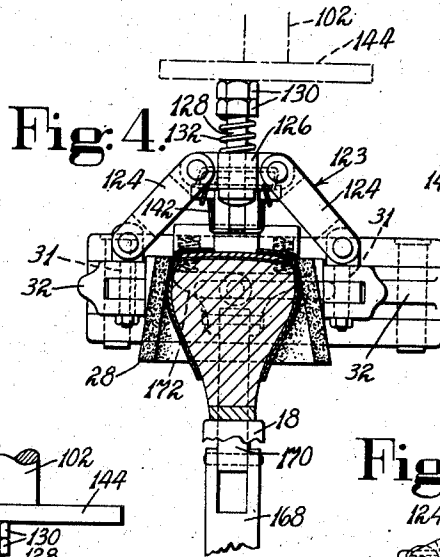


Fig. 5.



UNITED STATES PATENT OFFICE

2,299,800

LASTING MACHINE

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Application July 17, 1941, Serial No. 402,776

47 Claims. (Cl. 12-12)

This invention relates primarily to lasting machines, and is herein illustrated as applied to a machine constructed generally as disclosed in United States Letters Patent No. 2,075,852, granted on April 6, 1937, on an application of B. Jorgensen, but modified in certain respects as further disclosed in Letters Patent No. 2,101,069, granted on December 7, 1937, also on an application of B. Jorgensen. It will be understood, however, that in various novel aspects the invention is not limited to machine organizations of that particular character.

A machine of the type illustrated in the above-mentioned Letters Patent is provided with toe-lasting means which tensions the toe-end portion of the upper and wipes it heightwise of the last in response to heightwise movement of the last, the last and shoe being moved in this manner against the resistance of a spring-controlled toe rest and a spring-controlled heel-end support by presser feet engaging the insole near its toe and heel ends, respectively. In this operation the shoe is held against lengthwise displacement in a heelward direction by a heel rest comprising a flexible band which embraces and clamps the shoe about its heel end and partakes of the heightwise movement of the shoe. The toe-lasting means further includes wipers which after such heightwise movement of the shoe wipe the margin of the toe end of the upper inwardly over the insole, whereupon the above-mentioned presser feet engaging the toe and heel ends of the insole are somewhat retracted to permit the shoe to be pressed more forcibly against the toe wipers by the spring-controlled toe rest. Associated with the toe-lasting means, as disclosed more particularly in Letters Patent No. 2,075,852, is a device which by engagement with the bottom of the forepart of the shoe may tip the shoe laterally to position it in proper relation to the toe wipers prior to the heightwise movement of the shoe by the presser feet, the heel rest being so mounted as to permit it to tip with the shoe. This device is thereafter retracted from the shoe so as not to interfere with substantial equalization of the pressure of the wipers on the margin of the upper at the opposite sides of the toe when the shoe is pressed more firmly against the wipers by the toe rest.

While the means for tipping the shoe laterally as above described by engagement with the bottom of its forepart has proved to be generally satisfactory, it has been found that under some conditions the heel rest does not leave the shoe sufficiently free for lateral tipping movements to

insure that it will be accurately positioned in the best relation to the toe wipers by the forepart-engaging means. An object of the present invention, in one of its aspects, accordingly, is to improve the machine in this respect. For the purpose in view, the construction herein shown is such that at the time when the shoe is tipped to position it relatively to the toe wipers it is engaged by the heel rest with comparatively light pressure, so that the heel rest may more readily tip on its support and the shoe also may tip somewhat relatively to the heel rest, after which the pressure of the heel rest on the shoe is increased to insure that the shoe will be properly held against lengthwise displacement in the toe-lasting operation. Provision for engagement of the shoe by the heel rest with such light pressure is afforded by adjusting means heretofore included in machines of the illustrated type, as more particularly hereinafter described. The increase of the pressure of the heel rest on the shoe, as herein illustrated, is effected by forcing the opposite ends of the flexible heel band apart, which tends to straighten the band and thereby tightens it against the heel-end face of the shoe. For this purpose the opposite ends of the band are connected to a toggle device which extends over the bottom of the heel end of the shoe and is operated yieldingly through a spring to force the ends of the band apart by a member which is supported by the toggle device and is movable toward the bottom of the shoe. This member is operated by another member which takes the place of the presser foot heretofore provided for engaging the heel end of the insole and for moving the shoe heightwise relatively to the toe-lasting means as hereinabove described. In the construction herein shown such heightwise movement of the heel end of the shoe is effected through the member which is supported by the toggle device, this member being movable by the other member into engagement with the insole and being then further movable thus to act on the shoe.

When the means for imparting the heightwise movement to the shoe is retracted to permit the toe end of the shoe to be pressed more forcibly against the toe wipers by the toe rest, as hereinbefore described, it is likewise desirable that the shoe be as free as possible to tip laterally so that the pressure of the toe wipers on the margin of the upper at the opposite sides of the toe will be substantially equalized. Accordingly, the present invention provides a construction whereby the pressure of the heel rest on the shoe is somewhat relieved at this time to facilitate

the tipping of the shoe. Such relief of pressure in the construction herein shown results from the retractive movement of the member above referred to as taking the place of the usual heel presser foot, since this permits a corresponding retractive movement of the toggle device controlling the ends of the heel band, so that the pressure of the band on the heel-end face of the shoe is decreased.

When right and left shoes are presented with their toe ends in position to be operated upon by the toe-lasting means in a machine of the illustrated type, it is desirable under some conditions that their heel ends shall occupy positions in which they are somewhat offset laterally in opposite directions respectively. Accordingly, in the construction herein shown the heel-end support for the shoes, which is provided with a last pin arranged to enter the usual spindle hole in the heel end of each last, is so constructed that the last pin is movable in directions widthwise of the shoes to different positions corresponding to such different positions of the heel ends of right and left shoes, relatively adjustable stops being provided for determining the different positions of a block on which the pin is mounted. The invention further provides means whereby the heel rest and the above-mentioned member which engages the heel end of each insole to impart the heightwise movement to the heel end of the shoe are caused to assume different positions for right and left shoes, respectively, in accordance with the different positions of the last pin. For this purpose, in the construction herein shown, the heel rest and this member are connected to the block which supports the last pin to move in directions widthwise of the shoes with the pin. The insole-engaging member is thus positioned for engagement with the heel end of each insole in a location substantially midway between the opposite sides of the shoe, thus avoiding any tendency for it to tip the shoe such as might result from its engagement with the insole nearer one side of the shoe than the other side. The other member which acts on this member as above described to impart the heightwise movement to the shoe is so constructed as to act effectively thereon in whatever position the insole-engaging member may be located.

The above and other features of the invention, including various novel details of construction and combinations of parts, will now be more particularly described with reference to the accompanying drawings and thereafter pointed out in the claims.

In the drawings,

Fig. 1 is a view partly in front elevation and partly in vertical section of a portion of a machine of the type illustrated in the above-mentioned Letters Patent with the novel features of the present invention embodied therein, the parts being shown in the positions which they occupy after the shoe has been tipped laterally to position it in proper relation to the toe-lasting means but prior to its heightwise movement relatively to the toe-lasting means;

Fig. 2 is a section on the line II—II of Fig. 1;

Fig. 3 is a plan view of the heel rest and the parts closely associated therewith, with the parts in the positions which they occupy when the heel rest is first applied to the shoe;

Fig. 4 shows the heel rest and associated parts in elevation with the parts in the same positions

as in Fig. 3, the shoe being in section on the line IV—IV of Fig. 3;

Fig. 5 is a view similar to Fig. 3, but showing the parts as they appear when the opposite ends of the heel band are forced apart to increase the pressure of the band on the heel-end face of the shoe;

Fig. 6 is a view similar to Fig. 4, but showing the parts in the same positions as in Fig. 5;

Fig. 7 is a view also similar to Fig. 4, but showing the parts as they are positioned when the pressure of the heel band on the shoe is relieved at the time when the shoe is forced more firmly against the toe wipers by the toe rest; and

Fig. 8 is a view in vertical section illustrating the relation of the toe end of the shoe to the toe-lasting means at the time when the shoe is thus forced against the toe wipers.

In a machine of the illustrated type the last and shoe, herein sometimes referred to inclusively as the shoe, are supported at the toe end by a toe rest 2 and at the heel end by a vertically movable slide 4, the toe rest and the slide being controlled respectively by springs 6 and 8 against the resistance of which they are movable downwardly with the shoe, in the course of the power operation of the machine, relatively to means provided for lasting the toe end of the shoe. The toe-lasting means includes a gripper 10 which grips the margin of the toe end of the upper and applies a pull to the upper in response to the downward movement of the last, a toe former 12 which at the same time embraces the upper around the toe and wipes it heightwise of the last, and wipers 14 which are thereafter operated to wipe the margin of the toe end of the upper inwardly over an insole on the last into position to be secured to the insole by an adhesive.

Similarly to the disclosure of Letters Patent No. 2,101,069, the heel support slide 4 carries a last pin 16 arranged to enter the usual spindle hole in the heel end of the last, this pin being mounted on a block 18 supported on a post 20 which is vertically adjustable in a holder 22 guided for movements in directions lengthwise of the shoe on the upper end of the slide 4. By rack-and-pinion mechanism operated by a hand crank 24 the post 20 may be adjusted vertically to different positions for shoes of different styles or sizes. Similarly also to the disclosure of the last-mentioned Letters Patent, the machine herein shown is not provided with heel-lasting means, but has a heel rest 26 for engaging the heel end of the shoe to assist in controlling the shoe in the toe-lasting operation. The heel rest includes a flexible heel band 28 of leather or other suitable material arranged to embrace the heel end of the shoe and secured to a chain 30 (Figs. 3 and 5) the end links of which are pivotally connected by pins 31 to arms 32 mounted for swinging movements in directions widthwise of the shoe on a crossbar 34. This crossbar is provided midway between its opposite ends with a stem 36 extending horizontally lengthwise of the shoe and rotatably mounted in a socket formed in the upper end of a holder 38. In engagement with the end of the stem 36 is a ball thrust bearing 40 to facilitate turning of the heel rest about the axis of the stem. Secured to the intermediate link 42 (Fig. 1) of the chain 30 is a short rod 44 which in the construction herein shown, as distinguished from the construction disclosed in Letters Patent No. 2,101,069, extends into a horizontal slot 46 in the crossbar 34, not

only to support the intermediate portion of the heel band but also to permit movements of that portion of the band relatively to the crossbar in directions widthwise of the shoes for a purpose hereinafter explained. The holder 38 has a depending shank portion 48 vertically adjustable by means of a lever 50 in a guideway formed in a slide 52, substantially as disclosed in the last-mentioned Letters Patent, the slide 52 being movable in directions lengthwise of the shoe on a pair of horizontal rods 54 which are secured to the shoe support slide 4. By reason of this construction the heel band moves with the shoe and the slide 4 in directions heightwise of the shoe, but is movable relatively to the shoe in directions lengthwise thereof. Initially the slide 52 is held retracted toward the right against the resistance of a spring 56 by means not herein shown but disclosed in both the previously mentioned Letters Patent, this means being movable by the operator to release the slide and thus to cause the heel band to be moved toward the heel end of the shoe by the action of the spring 56 prior to the starting of the power operation of the machine. The movement of the heel band in this direction is limited by engagement of the slide 52 with washers 58 (Fig. 2) mounted on the rods 54. Substantially at the time when the movement of the heel band toward the shoe is stopped by the washers 58 the shoe is carried into engagement with the band by movement of the holder 22 in the opposite direction along guideways on the slide 4. The means for thus moving the holder 22 is more fully disclosed in Letters Patent No. 2,026,539, granted on January 7, 1936, on an application of B. Jorgensen. Briefly, as shown particularly in Fig. 2, there is supported on a bracket 60 fast on the slide 4 a slide 62 movable relatively to the bracket in directions lengthwise of the shoe, and rotatably mounted in the slide 62 is a shaft 64 connected by bevel gears 66 to a shaft 68 also rotatably mounted in the slide 62. The shaft 68 is provided with screw threads in engagement with a nut 70 mounted in a recess in the holder 22. On the shaft 64 is a hand wheel 72 for turning it. It will thus be seen that by turning the hand wheel the holder 22 may be adjusted in directions lengthwise of the shoe relatively to the slide 62 and that this slide and the holder are held by the adjusting means in fixed relation to each other to move as a unit in directions lengthwise of the shoe. By means of a link 74 the slide 62 is connected to gearing 76 which is supported on a bracket 78 fast on the rods 54 and by which return movement toward the left (Figs. 1 and 2) is imparted to the slide 62 and the holder 22 in response to engagement of the slide 52 with an arm 80 connected to the gearing when this slide is moved toward the right to carry the heel band away from the shoe, as fully disclosed in the last-mentioned Letters Patent. This operation results in compression of a spring 82 which surrounds the link 74 and is held between a nut 84 on the link and a plate 86 fast on the bracket 60. The slide 62 and the holder 22 are held in the positions to which they are thus moved by the link 74 by means of a spring-controlled latch 88 (Fig. 1) which is pivoted on the bracket 60 and is arranged to engage a plate 90 on the slide 62. By means not herein shown, which is carried by the slide 52, the latch 88 is retracted from the plate 90 to release the slide 62 just before the movement of the slide 52 toward the shoe is stopped by the washers 58, whereupon the spring

82 acts through the link 74 to move the slide 62 and the holder 22 toward the right and thus to carry the shoe into engagement with the heel band 28.

The previously mentioned downward movement of the shoe with the toe rest 2 and the heel-support slide 4 takes place shortly after the starting of the power operation of the machine, the heel band 28 having been applied to the shoe as above described. This downward movement of the shoe is effected by depressing means acting on the toe and heel-end portions of the insole. The toe-end portion of the insole is engaged for this purpose by a presser foot 92 mounted on a pin 94 which is carried by a bracket 96 fast on an arm 98, this arm being mounted for forward swinging movement to carry the presser foot into position over the insole and for downward movement thereafter to depress the toe end of the shoe. The operator swings the arm forwardly by means of a handle 100, and this movement of the arm results in the starting of the power operation of the machine. Corresponding downward movement of the heel-end portion of the shoe is effected by a rod 102 which corresponds to the presser foot 62 shown in Letters Patent No. 2,101,069 but in the construction herein shown acts on the shoe through mechanism hereinafter described instead of directly engaging the shoe. Like the earlier presser foot 62, the rod 102 is vertically adjustable in a carrier 104 which in the power operation of the machine swings the rod to a position over the shoe and also moves it downwardly. Supported on the above-mentioned arm 98 which carries the toe presser foot 92 is mechanism constructed substantially as disclosed in Letters Patent No. 2,075,852 for tipping the shoe laterally into proper relation to the toe wipers 14 if it is not already in that relation prior to the beginning of the downward movement of the shoe. Briefly, this mechanism includes a member 106 mounted to swing in directions heightwise of the shoe about the pin 94 and provided with a pair of downwardly extending lugs arranged to engage the bottom of the forepart of the shoe near its opposite sides, respectively, one of these lugs being shown at 108 in Fig. 1. Initially the member 106 is held in fixed relation to the arm 98 with its lugs 108 extending to positions somewhat lower than the presser foot 92 by a pair of pivotally connected toggle links 110 and 112, the link 110 being pivotally connected to the member 106 and the link 112 being fast on a rockshaft 114 in the bracket 96. Initially the toggle thus provided is held substantially straight by a spring 116 to position the member 106 as above described. Accordingly, this member acts to tip the shoe in the manner required before the presser foot 92 has been moved downward far enough to engage the shoe. Immediately thereafter, in response to further downward movement of the arm 98, the toggle is broken to retract the member 106 from the shoe and permit the presser foot 92 to engage the shoe. For this purpose there is fast on the rockshaft 114 a device 118 provided with a member 120 arranged to be engaged by a relatively fixed abutment 122. For a more complete understanding of the construction and operation of this mechanism Letters Patent No. 2,075,852 may be consulted.

It will be evident that if the member 106 is to tip the shoe in the manner required to position it in proper relation to the toe wipers, the shoe must be sufficiently responsive to the action

of this member thereon. While the heel band 28 is so controlled as to permit it to tip with the shoe and while the ball thrust bearing 40 is provided to facilitate such tipping of the band, substantially as in the construction disclosed in Letters Patent No. 2,101,069, it is obvious that the greater the pressure with which the shoe is held against the band the less freedom there is for the band to tip by reason of friction. In order, therefore, to afford increased insurance that under any conditions the member 106 will effectively perform its intended function, it is contemplated that for purposes of the present invention the heel band 28 will engage the shoe with comparatively light pressure, substantially less than that required to prevent heelward displacement of the shoe in the toe-lasting operation, at the time when the member 106 acts on the shoe. For this purpose the holder 22 which carries the last pin 16 will be adjusted so far toward the left by rotation of the hand wheel 72 that when the shoe has been moved into engagement with the heel band by the action of the spring 82 this spring will have so far expanded as to hold the shoe against the band with only light pressure. This will facilitate the turning of the stem 36 in its holder 38 and will also leave the shoe free to tip somewhat relatively to the band in response to the action of the member 106 thereon.

In order to render the heel band thereafter effective to hold the shoe against heelward displacement when the toe former 12 and the wipers 14 operate thereon, the invention in its illustrated embodiment provides mechanism for forcing the opposite ends of the band apart and for thereby tightening the band against the heel-end face of the shoe by the tendency thus to straighten it. This mechanism comprises a toggle device 123 having a pair of toggle links 124 pivotally connected to heads formed on the upper ends of the pins 31 which connect the chain 30 to the arms 32, and having a crossbar 126 connecting the links 124 together and arranged to extend over the bottom of the heel end of the shoe. Slidingly mounted for vertical movements in this crossbar is a pin 128 having an enlarged lower end to limit its upward movement in the crossbar, and between the crossbar and nuts 130 threaded on the upper end of the pin is a compression spring 132 which normally holds the pin at the limit of its upward movement in the crossbar. Pivotaly connected to the crossbar is a link 134 provided with a slot 135 (Fig. 1) through which extends a pin 138 supported in a forked upward extension 140 of the intermediate link 42 of the chain 30. Coiled about the pin 138 is a spring 142 portions of which are in engagement respectively with the upward extension of the chain link 42 and with the link 134, this spring tending to lift the crossbar 126 and holding it initially with the toggle links 124 in such positions that the heel end of the shoe will readily enter the heel band 28. When the shoe is pressed against the band by the spring 82 the parts are positioned substantially as illustrated in Figs. 3 and 4, with the band lightly clamping the shoe and the lower end of the pin 128 spaced above the insole. In the power operation of the machine a crossbar 144 formed on the lower end of the rod 102 is arranged to engage one of the nuts 130, or the pin 128 if the nuts are far enough down on the pin, and thereby to impart downward movement to the pin. When the parts are positioned as

shown in Fig. 1, the member 106 has just performed its positioning action on the shoe and the crossbar 144 has begun to move the pin 128 downwardly, but without any substantial increase as yet in the pressure of the heel band on the shoe. Immediately thereafter, as the pin is forced farther downwardly by the crossbar 144, the crossbar 126 is operated yieldingly through the spring 132 to cause the toggle links 124 to spread the opposite ends of the heel band far enough apart to increase substantially the pressure of the band on the heel-end face of the shoe, as illustrated in Fig. 5. In its downward movement the pin 128 arrives in position to engage the heel end of the insole substantially at the time when the toe presser foot 92 becomes effective on the toe-end portion of the insole, and thereafter the crossbar 144 acts through the pin to impart downward movement to the heel end of the shoe simultaneously with the downward movement of its toe end by the toe presser foot. During the downward movement of the shoe, and thereafter as the toe wipers are operated to wipe the margin of the upper inwardly over the insole, the heel band 28 controlled as described effectively prevents any heelward displacement of the shoe in response to the action of the toe-lasting means thereon.

In a machine of the illustrated type, after the toe wipers have wiped the margin of the upper inwardly over the insole, the means for depressing the shoe is retracted a short distance to permit the toe end of the shoe to be pressed more firmly up against the toe wipers by the spring-controlled toe rest. That is, in the machine herein shown, the arm 98 and the carrier 104 are moved upwardly a short distance for this purpose. Since the toe end of the shoe can actually receive but little upward movement toward the toe wipers, the machine herein shown is provided with means constructed substantially as heretofore for limiting upward movement of the heel support slide 4, so that the heel end of the shoe will not be lifted far enough to tip the shoe relatively to the toe wipers. The construction and operation of this limiting means are disclosed in detail in Letters Patent No. 2,075,852. Briefly, there is provided a swinging arm 146 corresponding to the arm 470 shown in the last-mentioned Letters Patent, this arm supporting a pair of pawls 148 which by the downward movement of the arm are carried into engagement with teeth formed on a slide 150 mounted for vertical movements in a bracket 152 (Fig. 2) fast on the heel support slide 4. By the action of the arm 146 and the pawls 148 the slide 150 is thus locked against upward movement at the time when the toe wipers are operated to wipe the margin of the upper inwardly over the insole. There is, however, provision for a short upward movement of the slide 4 to permit the heel end of the shoe to be raised enough to compensate for such upward movement as the toe end of the shoe receives from the action of the toe rest 2, this movement of the slide 4 being limited by a lug 154 which is formed on the slide 150 and is spaced initially from the top of the bracket 152 as illustrated in Fig. 1. Between this lug and the bracket 152 is a spring 156 which holds the slide 150 initially in its normal relation to the slide 4. Since the rod 102 and its crossbar 144 are moved upwardly by the carrier 104 a greater distance than the heel support slide 4 is permitted to move, it will be evident that this results in a relief of the

pressure of the heel band 28 on the heel-end face of the shoe, since the ends of the band are permitted by the toggle links 124 to move somewhat inwardly toward each other, as illustrated in Fig. 7. Accordingly, at the time when the toe end of the shoe is pressed upwardly toward the toe wipers by the toe rest, the relief of the pressure on the heel end of the shoe affords greater freedom for the shoe to tip laterally in such manner as to insure that the pressure of the toe wipers on the margin of the upper at the opposite sides of the toe will be substantially equalized.

While machines of the illustrated type have been provided heretofore with means whereby the toe wipers are adjusted automatically to different positions in operating respectively on right and left shoes, it is desirable under some conditions, especially if there are pronounced differences between right and left lasts with respect to lateral "swing" of the forepart, that the heel ends of the shoes shall occupy positions in which they are somewhat offset laterally in opposite directions relatively to the toe-lasting means. In the machine herein shown, therefore, the block 18 which supports the last pin 16 is mounted for movements in directions widthwise of the shoes in a straight guideway 157 (Fig. 1) formed in the upper end of the post 20, the movements of the block in opposite directions being limited by engagement of a bar 159 projecting from the block with stops 160 (Figs. 1 and 2) which are adjustable toward and from each other along a guideway on the post 20. The stops are adjusted simultaneously equal distances toward or from each other by a screw 162 having right and left threads in engagement respectively with the different stops, the screw being provided with a flange 164 which extends into a recess in the post 20 to prevent any lengthwise movement of the screw. In presenting the work to the machine the operator moves the block 18 by means of the last to the position determined by one of the stops 160 if a right shoe is to be operated upon and to the position determined by the other stop if a left shoe is to be operated upon. The last pin 16 on the block 18 is made somewhat smaller in diameter than the spindle hole in the last to permit such tipping movement of the last and shoe as may be required for the member 106 to position the shoe in proper relation to the toe wipers in the manner hereinbefore described.

The construction herein shown is further such that the heel band 28 and the pin 128 through which the heel end of each shoe is depressed are caused to assume different positions in accordance with the positions of the last pin 16 for right and left shoes, respectively. For this purpose the bar 158 extending from the block 18 is connected by a series of links 166, 168 and 170 to a block 172 which is mounted on the previously mentioned rod 44 extending from the intermediate link 42 of the chain 30 into the slot 46 of the crossbar 34. Accordingly, movements of the block 18 in directions widthwise of the shoes are accompanied by corresponding movements of the intermediate portion of the heel band 28, the rod 44 moving along the slot 46; and since the link 134 connects the chain link 42 to the crossbar 126, corresponding movements also are imparted to the pin 128 in this crossbar and, through the toggle links 124, to the ends of the heel band. The heel band, therefore, is adjusted to a laterally offset position for a right or

a left shoe, so that it will be in proper alignment with the heel end of the shoe, as will be evident by reference to Figs. 3 and 5, and the pin 128 also is so positioned that it will engage the bottom of the heel end of each shoe substantially midway between the opposite sides of the shoe, thus avoiding any tendency which it might otherwise have to tip the shoe laterally when it moves it downwardly. Between the block 172 and portions of the upward extension 140 of the intermediate link 42 of the chain 30 are mounted two comparatively light springs 174 which tend to maintain the heel band in a horizontal position but permit it to tip with the shoe in the manner hereinbefore described when the shoe is tipped by the member 106. It will be evident that the series of links connecting the bar 158 to the block 172, which links are relatively movable only about axes extending widthwise of the shoe, permit relative movements of the heel band and the heel-end support for the shoe in directions lengthwise and heightwise of the shoe.

The manner of operation of the machine, in so far as it is of interest with reference to the present invention, will now be briefly summarized. In presenting the work to the machine the operator mounts the heel end of the last on the pin 16 and the block 18 and by means of the last moves the block to the position determined by one or the other of the stops 160, depending upon whether the shoe is a right or a left shoe, if the block is not already in that position. Through the connections between the block 18 and the heel band 28 and the pin 128 any movement thus imparted to the block is imparted also to the heel band and to the pin, so that the heel band is in proper relation to the shoe widthwise thereof and the pin will be substantially midway between the opposite sides of the shoe when it is over the heel end of the shoe. The operator then releases the slide 52 to the action of the spring 56 to cause the slide to carry the heel band toward the shoe. Near the end of this movement of the slide the latch 88 is retracted to release the holder 22 to the action of the spring 82, whereupon this spring moves the shoe lengthwise into engagement with the heel band, the holder 22 having been previously so adjusted by the hand wheel 72 that the pressure of the heel band on the shoe as the result of this action of the spring 82 is a comparatively light pressure. The relation at this time between the shoe and the heel band is illustrated in Figs. 3 and 4. Thereafter the operator closes the toe gripper 10 on the margin of the toe end of the upper by the means provided for that purpose in a machine of the illustrated type. By means of the handle 100 he then swings the arm 98 forwardly to bring the toe presser foot 92 and the shoe-positioning device 106 to positions over the bottom of the forepart of the shoe, the power operation of the machine being started by this movement of the arm. Immediately after the machine is thus started the arm 98 and the carrier 104 are moved downwardly, the carrier also receiving a swinging movement to carry the crossbar 144 on the rod 102 to a position over the upper end of the pin 128. Before the toe presser foot 92 engages the insole the member 106 acts on the bottom of the forepart of the shoe to tip the shoe laterally into proper relation to the toe wipers if it is not already in that relation, as illustrated in Fig. 1. Such tipping of the shoe is facilitated by the fact that the heel band at this time engages the shoe with comparatively

light pressure, as above described, the band being permitted to tip with the shoe and the shoe also being capable of tipping more or less relatively to the band. Substantially at the time when the member 106 completes its positioning action on the shoe the crossbar 144 arrives in the position illustrated in Fig. 1, having begun to swing the toggle links 124 but without any substantial increase as yet in the pressure of the heel band on the shoe. Thereafter, as the arm 98 and the carrier 104 continue their downward movements, the member 106 is swung upwardly away from the insole, the toe presser foot 92 then coming into engagement with the insole and acting during further movement of the arm 98 to depress the toe end of the shoe. As control of the toe end of the shoe is thus being transferred from the member 106 to the presser foot 92, the crossbar 144 acts through the spring 132 on the toggle links 124 to spread the ends of the heel band far enough apart to increase the pressure of the band on the heel-end face of the shoe, as illustrated in Fig. 5. Substantially at the time when the toe presser foot 92 begins to depress the toe end of the shoe the pin 128 has been moved downwardly far enough by the crossbar 144 to engage the heel end of the insole, as illustrated in Fig. 6, and, accordingly, both the toe and heel ends of the shoe are thereafter moved downwardly together to cause the gripper 10 to apply a pull to the toe end of the upper and the toe former 12 to wipe it heightwise of the last. At the end of such downward movement of the shoe the toe wipers 14 are operated to wipe the margin of the toe end of the upper inwardly over the insole, and at substantially the same time the arm 146 is swung downwardly to carry the pawls 148 into engagement with the teeth of the slide 150. Thereafter the arm 98 and the carrier 104 are moved upward a short distance to permit the toe end of the shoe to be forced more firmly up against the toe wipers by the spring-controlled toe rest 2, as illustrated in Fig. 8. By reason of the action of the pawls 148 on the slide 150, only a very short upward movement of the heel support slide 4 and the heel end of the shoe is at this time permitted, and, accordingly, the upward movement of the carrier 104 and the crossbar 144 permits enough retractive movement of the toggle links 124 to relieve substantially the pressure of the heel band on the heel-end face of the shoe, so that the shoe can more readily tip in such manner as to insure that the pressure of the toe wipers on the upper at the opposite sides of the toe will be substantially equalized. Before the toe wipers are withdrawn from over the bottom of the shoe the arm 98 and the carrier 104 are again moved downwardly far enough to relieve the pressure of the shoe on the wipers, after which the various parts of the machine are returned to their starting positions in a manner which requires no further description for an understanding of the present invention.

Having described the invention, what we claim as new and desire to secure by Letters Patent of the United States is:

1. In a lasting machine, a shoe support, means for lasting the toe end of a shoe on said support, a heel rest for engaging the upper at the heel end of the shoe exteriorly of the shoe bottom to control the shoe in the lasting operation, means for tipping the shoe laterally to position it relatively to the toe-lasting means while it is engaged by said heel rest with comparatively light

pressure, and means for increasing the pressure of the heel rest on the shoe after the shoe has thus been positioned.

2. In a lasting machine, a shoe support, means for lasting the toe end of a shoe on said support, a heel rest for engaging the upper at the heel end of the shoe exteriorly of the shoe bottom to control the shoe in the lasting operation, a device movable heightwise of the shoe into engagement with the bottom of its forepart for tipping the shoe laterally to position it relatively to the toe-lasting means while it is engaged by said heel rest with comparatively light pressure, and means timed to operate automatically after the shoe has thus been positioned by said device to increase the pressure of the heel rest on the shoe.

3. In a lasting machine, a shoe support, means for lasting the toe end of a shoe on said support, a flexible heel band for embracing and clamping the shoe about its heel end, a device for tipping the shoe laterally by engagement with the bottom of its forepart to position it relatively to the toe-lasting means while it is engaged by said heel band with comparatively light pressure, and means for tightening the heel band against the heel-end face of the shoe after the shoe has thus been positioned.

4. In a lasting machine, a shoe support, means for lasting the toe end of a shoe on said support, a flexible heel band for embracing and clamping the shoe about its heel end, means for tipping the shoe laterally to position it relatively to the toe-lasting means while it is engaged by said heel band with comparatively light pressure, and means for increasing the pressure of the heel band on the heel-end face of the shoe by forcing its opposite ends apart after the shoe has thus been positioned.

5. In a lasting machine, a shoe support, means for lasting the toe end of a shoe on said support, a heel band for embracing and clamping the shoe about its heel end, a device for tipping the shoe laterally by engagement with the bottom of its forepart to position it relatively to the toe-lasting means while it is engaged by said heel band with comparatively light pressure, mechanism arranged to extend over the bottom of the shoe and movable to increase the pressure of the heel band on the heel-end face of the shoe, and means movable heightwise of the shoe and arranged thus to operate said mechanism after the shoe has been positioned by said forepart-engaging device.

6. In a lasting machine, a shoe support, means for lasting the toe end of a shoe on said support, a flexible heel band for embracing and clamping the shoe about its heel end, a device for tipping the shoe laterally by engagement with the bottom of its forepart to position it relatively to the toe-lasting means while it is engaged by said heel band with comparatively light pressure, a toggle device connected to the opposite ends of the heel band, and means for operating said toggle device to increase the pressure of the heel band on the heel-end face of the shoe by forcing the opposite ends of the band apart after the shoe has been positioned by said forepart-engaging device.

7. In a lasting machine, a shoe support, means for lasting the toe end of a shoe on said support, a flexible heel band for embracing and clamping the shoe about its heel end, a device for tipping the shoe laterally by engagement with the bottom of its forepart to position it relatively to the toe-lasting means while it is engaged by said heel band with comparatively light pressure, a toggle

device arranged to extend over the bottom of the heel end of the shoe and connected to the opposite ends of the heel band, said toggle device being movable to increase the pressure of the heel band on the heel-end face of the shoe by forcing the opposite ends of the band apart, and means movable heightwise of the shoe and arranged thus to operate said toggle device after the shoe has been positioned by said forepart-engaging device.

8. In a lasting machine, a shoe support, means for lasting the toe end of a shoe on said support, a heel rest for engaging the upper at the heel end of the shoe exteriorly of the shoe bottom to control the shoe in the lasting operation, means for tipping the shoe laterally to position it relatively to the toe-lasting means while it is engaged by said heel rest with comparatively light pressure, and means for increasing the pressure of the heel rest on the shoe after the shoe has thus been positioned and for also moving the shoe heightwise with the heel rest relatively to the toe-lasting means.

9. In a lasting machine, a shoe support, means for lasting the toe end of a shoe on said support, a heel rest for engaging the upper at the heel end of the shoe exteriorly of the shoe bottom to control the shoe in the lasting operation, means for tipping the shoe laterally to position it relatively to the toe-lasting means while it is engaged by said heel rest with comparatively light pressure, and means movable in a direction heightwise of the shoe over the bottom thereof to increase the pressure of the heel rest on the shoe after the shoe has thus been positioned and also to move the shoe heightwise with the heel rest relatively to the toe-lasting means.

10. In a lasting machine, a shoe support, means for lasting the toe end of a shoe on said support, a heel rest for engaging the upper at the heel end of the shoe exteriorly of the shoe bottom to control the shoe in the lasting operation, a device for tipping the shoe laterally by engagement with the bottom of its forepart to position it relatively to the toe-lasting means while it is engaged by said heel rest with comparatively light pressure, mechanism arranged to extend over the bottom of the heel end of the shoe and movable to increase the pressure of the heel rest on the shoe, and means movable in a direction heightwise of the shoe thus to operate said mechanism after the shoe has been positioned by said forepart-engaging device and then to move the shoe heightwise with the heel rest relatively to the toe-lasting means.

11. In a lasting machine, a shoe support, means for lasting the toe end of a shoe on said support, a flexible heel band for embracing and clamping the shoe about its heel end, means for tipping the shoe laterally to position it relatively to the toe-lasting means while it is engaged by said heel band with comparatively light pressure, and means movable in a direction heightwise of the shoe to increase the pressure of the heel band on the heel-end face of the shoe by forcing its opposite ends apart after the shoe has thus been positioned and also to move the shoe heightwise with the heel band relatively to the toe-lasting means.

12. In a lasting machine, a shoe support, means for lasting the toe end of a shoe on said support, a flexible heel band for embracing and clamping the shoe about its heel end, a device for tipping the shoe laterally by engagement with the bottom of its forepart to position it relatively

to the toe-lasting means while it is engaged by said heel band with comparatively light pressure, mechanism arranged to extend over the bottom of the heel end of the shoe and movable to increase the pressure of the heel band on the heel-end face of the shoe by forcing its opposite ends apart, and means movable in a direction heightwise of the shoe thus to operate said mechanism after the shoe has been positioned by said forepart-engaging device and then to move the shoe heightwise with the heel band relatively to the toe-lasting means.

13. In a lasting machine, a shoe support, means for lasting the toe end of a shoe on said support, a heel rest for engaging the upper at the heel end of the shoe exteriorly of the shoe bottom to control the shoe in the lasting operation, means for tipping the shoe laterally to position it relatively to the toe-lasting means while it is engaged by said heel rest with comparatively light pressure, a member arranged to be positioned opposite the bottom of the shoe, and means for increasing the pressure of the heel rest on the shoe by movement of said member toward the bottom of the shoe after the shoe has thus been positioned, the shoe support being thereafter movable with the shoe and the heel rest relatively to the toe-lasting means by further movement of said member in the same direction.

14. In a lasting machine, a shoe support, means for lasting the toe end of a shoe on said support, a heel rest for engaging the upper at the heel end of the shoe exteriorly of the shoe bottom to control the shoe in the lasting operation, means for tipping the shoe laterally to position it relatively to the toe-lasting means while it is engaged by said heel rest with comparatively light pressure, a member arranged to be positioned opposite the bottom of the heel end of the shoe, means for increasing the pressure of the heel rest on the shoe in response to movement of said member toward the bottom of the shoe after the shoe has thus been positioned, and means movable in a direction heightwise of the shoe thus to operate said member and then to move the shoe heightwise with the heel rest relatively to the toe-lasting means by further movement of said member.

15. In a lasting machine, a shoe support, means for lasting the toe end of a shoe on said support, a flexible heel band for embracing and clamping the shoe about its heel end, means for tipping the shoe laterally to position it relatively to the toe-lasting means while it is engaged by said heel band with comparatively light pressure, a member arranged to be positioned opposite the bottom of the heel end of the shoe, mechanism for forcing the opposite ends of the heel band apart to increase its pressure on the heel-end face of the shoe by movement of said member toward the bottom of the shoe after the shoe has thus been positioned, and means for thus operating said member and for thereafter moving the shoe heightwise with the heel band relatively to the toe-lasting means by further movement of said member in engagement with the bottom of the shoe.

16. In a lasting machine, a shoe support, means for lasting the toe end of a shoe on said support, a flexible heel band for embracing and clamping the shoe about its heel end, means for tipping the shoe laterally to position it relatively to the toe-lasting means while it is engaged by said heel band with comparatively light pressure, a member arranged to be positioned opposite the

bottom of the heel end of the shoe, a toggle for forcing the opposite ends of said heel band apart to increase its pressure on the heel-end face of the shoe in response to movement of said member toward the bottom of the shoe after the shoe has thus been positioned, a spring for thus operating the toggle yieldingly by said member, and means for operating said member thus to increase the pressure of the heel band on the shoe and thereafter to move the shoe heightwise with the heel band relatively to the toe-lasting means by further movement of said member in engagement with the bottom of the shoe.

17. In a lasting machine, a shoe support, means for lasting the toe end of a shoe on said support, a heel rest for engaging the upper at the heel end of the shoe to control the shoe in the lasting operation, means movable in a direction heightwise of the shoe to move the shoe and the heel rest in that direction relatively to the toe-lasting means, and mechanism arranged to be operated by the means for thus moving the shoe to increase the pressure of the heel rest on the shoe.

18. In a lasting machine, a shoe support, means for lasting the toe end of a shoe on said support, a heel rest for engaging the upper at the heel end of the shoe to control the shoe in the lasting operation, means movable heightwise of the shoe into engagement with the bottom of the shoe and further movable thereafter in the same direction to move the shoe and the heel rest relatively to the toe-lasting means, and mechanism arranged to be operated by the means for thus moving the shoe to increase the pressure of the heel rest on the shoe prior to the movement of the shoe.

19. In a lasting machine, a shoe support, means for lasting the toe end of a shoe on said support, a heel rest for engaging the upper at the heel end of the shoe to control the shoe in the lasting operation, a member arranged to be positioned opposite the bottom of the heel end of the shoe, means for moving said member heightwise of the shoe into engagement therewith and for further moving it thereafter in the same direction to move the shoe and the heel rest relatively to the toe-lasting means, and mechanism for increasing the pressure of the heel rest on the shoe by the movement of said member toward the shoe.

20. In a lasting machine, a shoe support, means for lasting the toe end of a shoe on said support, a flexible heel band for embracing and clamping the shoe about its heel end, means movable in a direction heightwise of the shoe to move the shoe and the heel band in that direction relatively to the toe-lasting means, and mechanism arranged to be operated by the means for thus moving the shoe to force the opposite ends of the heel band apart and thereby to increase the pressure of the band on the heel-end face of the shoe.

21. In a lasting machine, a shoe support, means for lasting the toe end of a shoe on said support, a flexible heel band for embracing and clamping the shoe about its heel end, a member arranged to be positioned opposite the bottom of the shoe, means for moving said member heightwise of the shoe into engagement therewith and for further moving it thereafter in the same direction to move the shoe and the heel band relatively to the toe-lasting means, and mechanism arranged to be operated by the movement of said member toward the shoe to force the opposite ends of the heel band apart and thereby to increase the

pressure of the band on the heel-end face of the shoe.

22. In a lasting machine, a shoe support, means for lasting the toe end of a shoe on said support, a flexible heel band for embracing and clamping the shoe about its heel end, a toggle device connected to the opposite ends of said heel band and arranged to extend over the bottom of the shoe, a member movable into engagement with the bottom of the shoe, spring means for operating the toggle device yieldingly by that movement of said member to force the opposite ends of the heel band apart and thereby to increase the pressure of the band on the heel-end face of the shoe, and means for thus moving said member and for further moving it thereafter in the same direction to move the shoe and the heel band relatively to the toe-lasting means.

23. In a lasting machine, a shoe support, means for lasting the toe end of a shoe on said support, a flexible heel band for embracing and clamping the shoe about its heel end, a pair of toggle links connected respectively to the opposite ends of the heel band, a crossbar connecting said links together and arranged to extend over the bottom of the heel end of the shoe, a member supported by said crossbar and movable into engagement with the bottom of the shoe, means for yieldingly operating the toggle links by that movement of said member to force the opposite ends of the heel band apart and thereby to increase the pressure of the band on the heel-end face of the shoe, and means for thus moving said member and for further moving it thereafter in the same direction to move the shoe and the heel band relatively to the toe-lasting means.

24. In a shoe machine, a shoe support, a heel rest for engaging the heel end of the upper of a shoe on said support exteriorly of the shoe bottom to control the shoe, a member arranged to be positioned opposite the bottom of the heel end of the shoe, and means for increasing the pressure of the heel rest on the shoe by movement of said member heightwise of the shoe toward the bottom thereof.

25. In a shoe machine, a shoe support, a heel rest for engaging the heel end of the upper of a shoe on said support exteriorly of the shoe bottom to control the shoe, a member arranged to be positioned opposite the bottom of the heel end of the shoe, another member arranged to move heightwise of the shoe into engagement with said first-named member and then to move the latter toward the bottom of the shoe, and means for increasing the pressure of the heel rest on the shoe by the movement of said first-named member toward the bottom of the shoe.

26. In a shoe machine, a flexible heel band for embracing and clamping an upper about the heel end of a last, and means for tightening said heel band against the heel-end face of the upper by moving its opposite ends apart.

27. In a shoe machine, a flexible heel band for embracing and clamping an upper about the heel end of a last, and a toggle device connected to the opposite ends of said heel band to move said opposite ends apart and thereby to increase the pressure of the band on the heel-end face of the upper.

28. In a shoe machine, a flexible heel band for embracing and clamping an upper about the heel end of a last, mechanism connected to the opposite ends of said heel band and arranged to extend over the bottom of the last, said mechanism being movable to force the opposite ends of the

band apart and thereby to increase the pressure of the band on the heel-end face of the upper, and means movable heightwise of the last thus to operate said mechanism.

29. In a lasting machine, wipers for wiping the margin of the toe end of an upper inwardly over an insole on a last, a heel rest for engaging the heel end of the upper to hold the shoe against lengthwise displacement in a heelward direction when the wipers thus act on the upper, means for moving the shoe heightwise toward said wipers to increase their pressure on the overwiped margin of the upper, and means for decreasing the pressure of said heel rest on the heel end of the upper to facilitate tipping of the shoe laterally when it is thus moved heightwise toward the wipers.

30. In a lasting machine, wipers for wiping the margin of the toe end of an upper inwardly over an insole on a last, a heel rest for engaging the heel end of the upper to hold the shoe against lengthwise displacement in a heelward direction when the wipers thus act on the upper, shoe-controlling means arranged to act on the bottom of the shoe to position the shoe heightwise relatively to the wipers, said shoe-controlling means being movable heightwise of the shoe in a direction away from the bottom of the shoe to permit the shoe to be pressed more firmly against said wipers when they are over the insole, and mechanism for decreasing the pressure of said heel rest on the heel end of the upper in response to such movement of the shoe-controlling means.

31. In a lasting machine, wipers for wiping the margin of the toe end of an upper inwardly over an insole on a last, a flexible heel band for embracing and clamping the shoe about its heel end, mechanism movable to spread the opposite ends of said heel band apart to increase its pressure on the heel-end face of the shoe and thus to hold the shoe against lengthwise displacement in a heelward direction when the wipers are operated, and means for moving the shoe heightwise toward said wipers to increase their pressure on the overwiped margin of the upper, the mechanism for spreading the ends of the heel band apart being reversely movable in time relation to such movement of the shoe to decrease the pressure of the band on the shoe and thus to facilitate tipping of the shoe laterally when it is pressed against the wipers.

32. In a lasting machine, wipers for wiping the margin of the toe end of an upper inwardly over an insole on a last, a flexible heel band for embracing and clamping the shoe about its heel end, mechanism movable to spread the opposite ends of said heel band apart to increase its pressure on the heel-end face of the shoe, and means movable heightwise of the shoe thus to operate said mechanism and also to move the shoe heightwise relatively to said wipers before they wipe the margin of the upper inwardly, said means being reversely movable to permit the shoe to be pressed more firmly against the wipers when they are over the insole and also to permit reverse movement of said mechanism to relieve the pressure of the heel band on the shoe.

33. In a lasting machine, wipers for wiping the margin of the toe end of an upper inwardly over an insole on a last, a flexible heel band for embracing and clamping the shoe about its heel end, a toggle device arranged to extend over the bottom of the shoe and movable to spread the opposite ends of said heel band apart and thus to increase its pressure on the heel-end face of

the shoe, and means movable heightwise of the shoe thus to operate said toggle device and also to move the shoe heightwise relatively to said wipers before they wipe the margin of the upper inwardly, said means being reversely movable to permit the shoe to be pressed more firmly against the wipers when they are over the insole and also to permit reverse movement of said toggle device to relieve the pressure of the heel band on the shoe.

34. In a lasting machine, toe-lasting means arranged to operate on right and left shoes presented with their heel ends in different laterally offset positions respectively, and a member for engaging the bottom of the heel end of each shoe and for moving the shoe heightwise relatively to the toe-lasting means, said member being movable in directions widthwise of the shoes to different positions corresponding to the different positions of the heel ends of right and left shoes for engaging the bottom of each shoe substantially midway between the opposite sides of the shoe.

35. In a lasting machine, toe-lasting means arranged to operate on right and left shoes presented with their heel ends in different laterally offset positions respectively, a member for engaging the bottom of the heel end of each shoe and for moving the shoe heightwise relatively to the toe-lasting means, said member being movable in directions widthwise of the shoes to different positions corresponding to the different positions of the heel ends of right and left shoes, and another member movable in an invariable path heightwise of the shoes into engagement with said first-named member to operate it in the different positions which it thus assumes.

36. In a lasting machine, toe-lasting means arranged to operate on right and left shoes presented with their heel ends in different laterally offset positions respectively, a member for engaging the bottom of the heel end of each shoe and for moving the shoe heightwise relatively to the toe-lasting means, said member being movable in directions widthwise of the shoes to different positions corresponding to the different positions of the heel ends of right and left shoes, and means controlled by the heel ends of the shoes for thus positioning said member as determined by the shoes.

37. In a lasting machine, toe-lasting means arranged to operate on right and left shoes presented with their heel ends in different laterally offset positions respectively, a member for engaging the bottom of the heel end of each shoe and for moving the shoe heightwise relatively to the toe-lasting means, said member being movable in directions widthwise of the shoes to different positions corresponding to the different positions of the heel ends of right and left shoes, a heel rest also movable to different positions for right and left shoes respectively, and means connecting said member and the heel rest for movements together to their different positions.

38. In a lasting machine, toe-lasting means arranged to operate on right and left shoes presented with their heel ends in different laterally offset positions respectively, a member for engaging the bottom of the heel end of each shoe and for moving the shoe heightwise relatively to the toe-lasting means, a heel rest movable in directions widthwise of the shoes to different positions corresponding to the different positions of the heel ends of right and left shoes, and means for supporting said member by the heel rest for

movements widthwise of the shoes with the heel rest.

39. In a lasting machine, toe-lasting means arranged to operate on right and left shoes presented with their heel ends in different laterally offset positions respectively, a member for engaging the bottom of the heel end of each shoe and for moving the shoe heightwise relatively to the toe-lasting means, a flexible heel band for embracing and clamping each shoe about its heel end, said heel band being movable in directions widthwise of the shoes to different positions corresponding to the different positions of the heel ends of right and left shoes, and a support for said member connected to the opposite ends of said heel band for positioning the member relatively to each shoe with the heel band.

40. In a lasting machine, toe-lasting means arranged to operate on right and left shoes presented with their heel ends in different laterally offset positions respectively, a heel-end support for each shoe and its last having a pin arranged to enter the spindle hole in the last, said pin being movable in directions widthwise of the shoes to different positions corresponding to the different positions of the heel ends of right and left shoes, a member for engaging the bottom of the heel end of each shoe and for moving the shoe heightwise relatively to the toe-lasting means, and connections between said member and pin for moving said member in directions widthwise of the shoes with the pin.

41. In a lasting machine, toe-lasting means arranged to operate on right and left shoes presented with their heel ends in different laterally offset positions respectively, a heel-end support for each shoe and its last having a pin arranged to enter the spindle hole in the last, said pin being movable in directions widthwise of the shoes to different positions corresponding to the different positions of the heel ends of right and left shoes, stops for limiting such movements of the pin, a member for engaging the bottom of the heel end of each shoe and for moving the shoe heightwise relatively to the toe-lasting means, and means for moving said member in directions widthwise of the shoes by the movements of the pin to position the member in proper relation to right and left shoes respectively.

42. In a lasting machine, toe-lasting means arranged to operate on right and left shoes presented with their heel ends in different laterally offset positions respectively, a heel-end support for each shoe and its last having a pin arranged to enter the spindle hole in the last, said pin being movable in directions widthwise of the shoes to different positions corresponding to the different positions of the heel ends of right and left shoes, a heel rest movable to different positions for right and left shoes respectively, connections between said pin and the heel rest for moving the heel rest in directions widthwise of the shoes with the pin, a member for engaging the bottom of the heel end of each shoe and for moving the shoe heightwise relatively to the toe-lasting means, and means connecting said member to the heel rest for moving it in directions widthwise of the shoes with the heel rest.

43. In a lasting machine, toe-lasting means arranged to operate on right and left shoes presented with their heel ends in different laterally offset positions respectively, a heel-end support for each shoe and its last having a pin arranged to enter the spindle hole in the last, said pin being movable by the lasts in directions width-

wise of the shoes to different positions corresponding to the different positions of the heel ends of right and left shoes, a heel rest movable to different positions for right and left shoes respectively, and connections between said pin and the heel rest for moving the heel rest widthwise of the shoes by the movements of the pin.

44. In a lasting machine, toe-lasting means arranged to operate on right and left shoes presented with their heel ends in different laterally offset positions respectively, a heel-end support for each shoe and its last having a pin arranged to enter the spindle hole in the last, said pin being movable in directions widthwise of the shoes to different positions corresponding to the different positions of the heel ends of right and left shoes, a heel rest movable to different positions for right and left shoes respectively, and means connecting said pin and the heel rest for moving the heel rest in directions widthwise of the shoes by the movements of the pin, said connecting means including members movable relatively to each other to permit relative movements of the pin and the heel rest in directions other than widthwise of the shoes.

45. In a lasting machine, toe-lasting means arranged to operate on right and left shoes presented with their heel ends in different laterally offset positions respectively, a heel-end support for each shoe and its last having a pin arranged to enter the spindle hole in the last, said pin being movable in directions widthwise of the shoes to different positions corresponding to the different positions of the heel ends of right and left shoes, a flexible heel band for embracing and clamping each shoe about its heel end, means connected to the intermediate portion of said heel band for moving that portion of the band in directions widthwise of the shoes by the movements of said pin, arms connected to the opposite ends of the heel band and mounted for swinging movements in directions widthwise of the shoes, and means for swinging said arms also by the movements of said pin.

46. In a lasting machine, the combination with toe-lasting means, of a block arranged to support the heel ends of shoes and their lasts presented to said toe-lasting means and provided with a pin arranged to enter the spindle holes in the lasts, a support for said block having a guideway along which the block is slidably movable with said pin in directions widthwise of the shoes, a heel rest for engaging the heel ends of the shoes to hold them against lengthwise displacement in a heelward direction, and means connecting said block and heel rest for moving the heel rest in directions widthwise of the shoes by the movements of the block.

47. In a lasting machine, the combination with toe-lasting means, of a heel-end support for shoes and their lasts presented to said toe-lasting means, said heel-end support having a pin arranged to enter the spindle holes in the lasts and movable in directions widthwise of the shoes, a heel rest for engaging the heel ends of the shoes to hold them against lengthwise displacement in a heelward direction, and means connecting the heel rest to said pin to move with the pin in directions widthwise of the shoes, said connecting means including a plurality of links relatively movable only about axes extending widthwise of the shoes.

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