M. BROCK.

SHOE SUPPORT.

APPLICATION FILED APR. 27, 1910.

1,066,374.

Patented July 1, 1913.

3 SHEETS—SHEET 1.

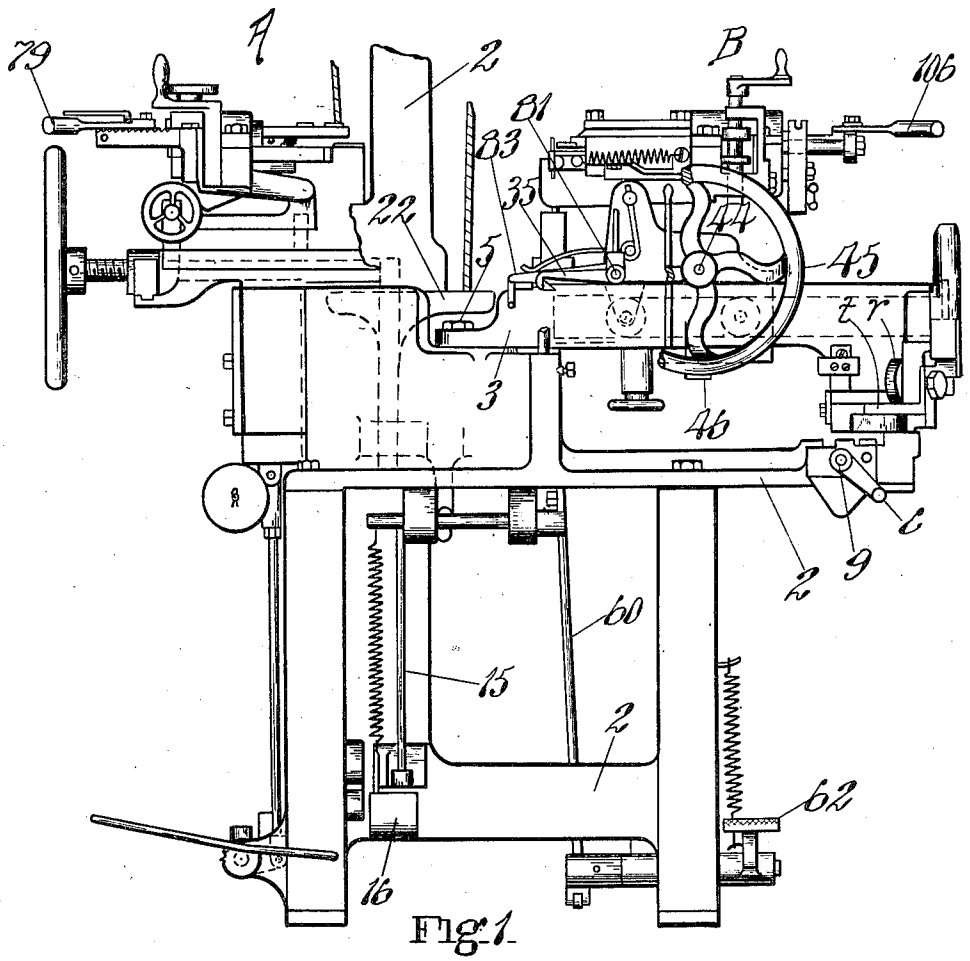

Fig. 1.

WITNESSES.

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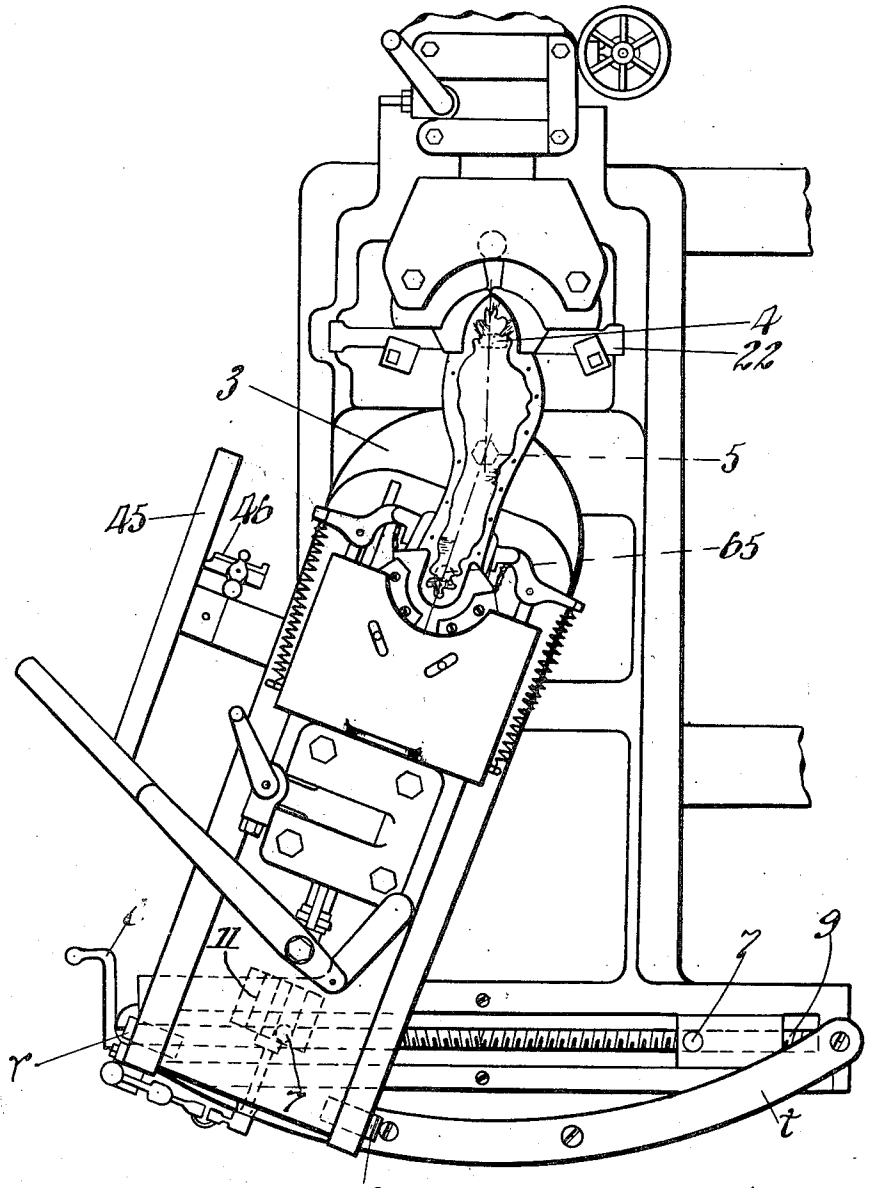

Fig. 2.

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3 SHEETS—SHEET 3.

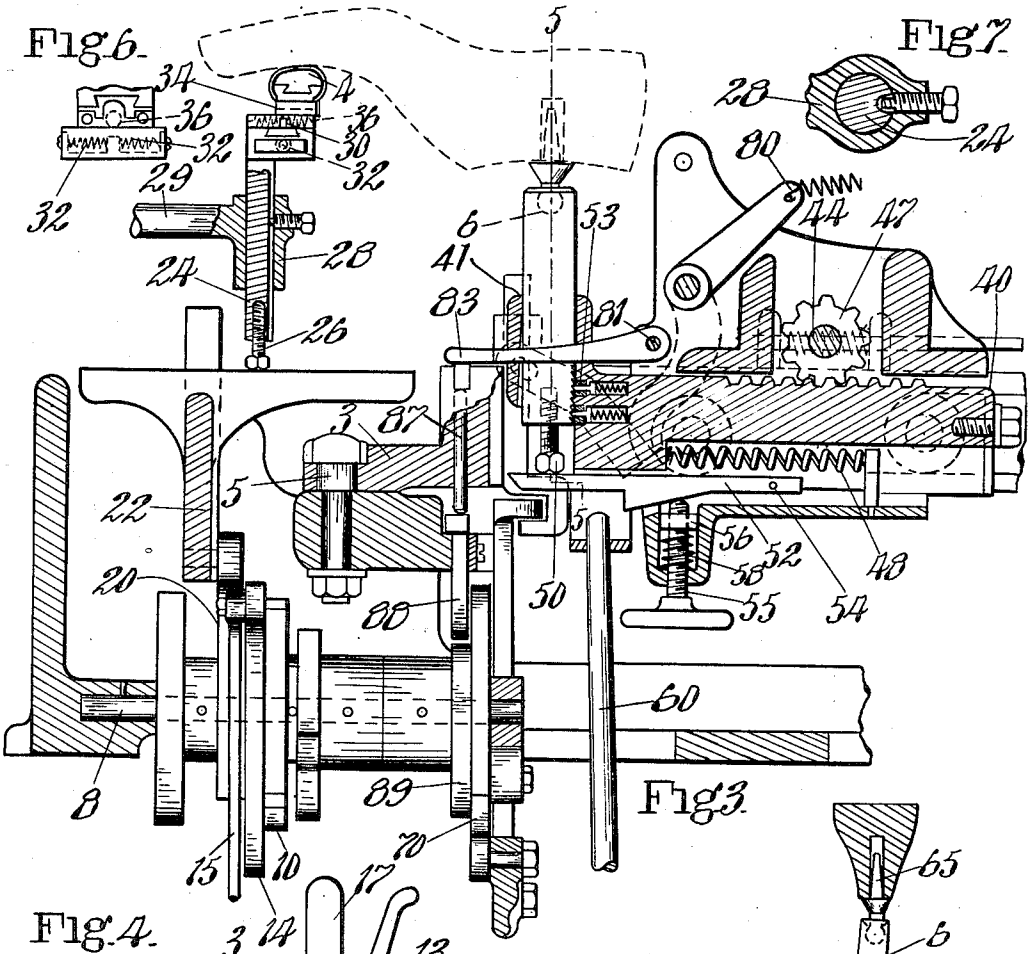

Fig. 3.

Fig. 6.

Fig. 7.

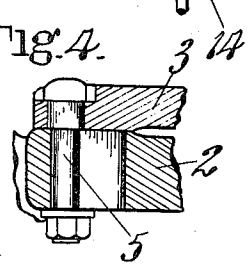

Fig. 4.

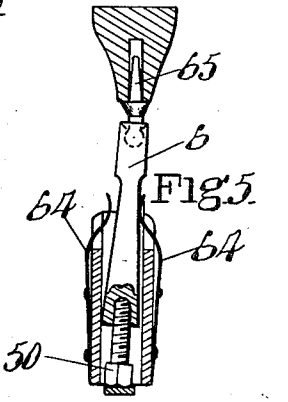

Fig. 5.

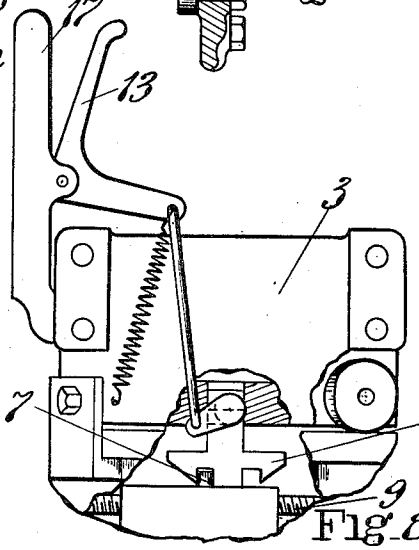

Fig. 8.

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UNITED STATES PATENT OFFICE.

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

SHOE-SUPPORT.

1,066,374. Specification of Letters Patent. Patented July 1, 1913.

Original application filed October 26, 1907, Serial No. 399,313. Divided and this application filed April 27, 1910. Serial No. 557,880.

To all whom it may concern:

Be it known that I, MATTHIAS BROCK, a citizen of the United States, residing at Boston, in the county of suffolk and State of Massachusetts, have invented certain Improvements in Shoe-Supports, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to work supports and is herein shown as embodied in a shoe support adapted for use in lasting shoes.

The present application is a division of my application Serial No. 399,313 filed October 26, 1907 upon which have been issued Letters Patent of the United States No. 1,018,477 for improvements in lasting machines.

An important feature of this invention is found in the combination with a support for one end of a last of a support for the other end of the last which is bodily movable laterally relatively to the first support about a center located between the two supports.

In the illustrated embodiment of the invention the center of movement is located under the last which is to be supported and substantially at the intersection of the median lines of the forepart and the heel part of a crooked last. The center may be adjustable from and toward the relatively stationary end support. This embodiment of the invention is particularly useful in supporting shoes for the operation thereon of end lasting or other mechanisms which it is desirable should work in symmetrical or other predetermined relation to the median lines of the adjacent end portions of each last presented thereto. For example, it is important that a shoe shall be so supported relatively to the heel band of a heel lasting mechanism that the band shall act symmetrically and uniformly in clamping the upper materials adjacent to the two ends of the heel-stiffener firmly against the opposite sides of the last. Also that a welt shoe shall be so supported with relation to the position and the direction of operative movement of the toe lasting plates that said plates shall advance symmetrically relatively to the upper and shall press it uniformly over the edge of the last at the two sides of the shoe and against the channel lip or shoulder to which it is to be secured.

With these considerations in mind the invention is herein embodied for illustrative purposes in a shoe support for a bed lasting machine having a rest for one end of the shoe located in the median line of the machine and relatively to which the lasting mechanism for the adjacent end of the last advances symmetrically, and a rest for the other end of the last which is mounted to move laterally toward either side of the machine in a curvilinear path into the median line of the end of the last which it is to support. In the machine shown a last pin constitutes one example of a heel rest and the heel embracing band constitutes another form of heel rest because it is a heel end face abutment. As I am advised it is new by this invention to provide in a jack the combination with a forepart rest of a heel end face abutment which is supported for bodily lateral movement about a center located in front of said heel end face to adapt its position to that of the heel ends of right and left crooked lasts supported with their foreparts in similar relation to the forepart rest.

Other features of this invention include devices, which may be adjustable, for limiting the lateral movement of the shiftable member of the shoe support, or for locking or both limiting and then locking said member; and further may include means for effecting adjustment together of the devices which limit or lock against movement toward opposite sides of the machine.

A further feature of this invention is to be found in a novel arrangement and construction of a heel support which comprises a holder in which a heel post carrying a last pin is mounted to have a limited lateral movement against springs which normally hold the post centered. This movement of the pin compensates for inaccuracies which are liable to occur in locating the pin holes in lasts and also for slight inaccuracies in lateral adjustment of the heel support toward proper position for the particular

crooked last that is being supported. For further adaptation of the support to the work the usual last pin carried by the heel post has a universal joint connection with the post.

A further feature of this invention consists in a toe rest for the shoe which comprises a shoe engaging member that is movable both lengthwise and transversely of the machine against the action of springs which return and normally center the rest. This mounting for the shoe engaging member obviates all objectionable rubbing of the rest upon the finished surface of the shoe leather and thus prevents injury to the shoe which might otherwise occur.

These and othere features of this invention, including certain details of construction and combinations of parts, will more fully appear from the following description of the illustrated embodiment thereof and will be pointed out in the claims.

The expression "crooked last" is sometimes used herein for convenience in refering to lasts in which the median line of the fore part is oblique to the median line of the heel part.

Figure 1 is a side elevation of a lasting machine equipped with this invention; Fig. 2 is a plan view of the machine showing a left shoe on a crooked last and supported in position for operation of the toe and heel lasting mechanisms symmetrically upon the respective ends of the shoe; Fig. 3 is a longitudinal vertical section of the machine; Fig. 4 is a detail showing provision for adjusting the center about which the heel support turns; Fig. 5 is a section on the line 5—5 of Fig. 3; Fig. 6 is a front view of the toe rest; Fig. 7 is a horizontal section through the toe post; Fig. 8 is a detail view of the locking devices for the heel support as seen from the rear of the machine in Fig. 2.

The frame 2 of the illustrated machine supports the toe-lasting mechanism A and the heel-lasting mechanism B between which are located the toe rest 4 and the heel support 6. The heel support and the heel-lasting mechanism are carried for lateral movement by a plate 3 which is connected pivotally with the frame by a pin 5. This pivot pin is located under the last and at a point removed from both ends of the last and at, or approximately at, the point of intersection of the median lines of the heel part and forepart of the last. If desired, the pin 5 may be adjustable—as, for example, by providing a slot in the frame, as shown in Fig. 4. By this means the center about which the heel support is movable may be differently positioned for lasts in which the point of intersection of the median lines is located farther forward or backward in the last. In the movement about the pin 5 the plate 3 slides freely over the frame, being supported by rolls r as shown in Figs. 1 and 2 which travel on a curved track t, and the movement is limited by stops 7, as shown in Fig. 2. These stops are adjustably mounted equidistant from the middle line of the machine upon a right and left threaded screw 9. The screw is provided with a crank c by which it may be turned for adjusting the two stops together toward or from the middle of the machine. These stops serve to limit the lateral movement of the heel support and when one of them has been adjusted into the right position for a right last, for example, the other one will be correctly located also for the left last and for all lasts of the same style. The heel support is provided with a locking device adapted to coöperate with either of the stops 7. This device comprises a movable block 11 having two hooks or latches, as shown in Fig. 8 and operated through connections with the lever 13 for the purpose of unhooking it. The lever 13 is pivoted to a post 17 which is secured to the plate 3 so that the operator may grasp the lever and the post and by a single movement unfasten the latch block from the stop and then move the heel support laterally about the pivot 5.

In bearings in the frame 2 there is mounted the cam shaft 8, Fig. 3, to which is fixed a ratchet wheel 10 engaged by a pawl, not shown, mounted on a circularly movable pawl carrier 14 and connected by a rod 15 with a treadle 16, shown in Fig. 1, as well known in lasting machines. Mounted upon the shaft is a cam 20 which engages a roll on a vertically movable slide 22, guided in the frame and forming a movable support of the toe rest. This rest includes a rod 24 provided with an adjustable screw 26 at its lower end which sets upon the top face of the slide 22. The rod extends through a guide 28 which is located in the median line of the machine and is adjustable forwardly and backwardly by a stem 29 in the toe lasting head, and is grooved to receive a screw which limits its turning movement. The rod is provided with a head in which a slide 30 is movable transversely of the machine against the pressure of springs 32, shown in dotted lines in Fig. 3 and in Fig. 6. A second slide 34, carrying the pad of the toe rest is movable lengthwise of the machine in the slide 30 and is normally held in a central position by the springs 36, also shown in dotted lines. By this arrangement of the toe rest and its actuating mechanism the toe pad, which is normally stationary as to horizontal position and does not partake of the lateral adjustment of the heel rest about the center 5, may accompany the last in any slight shifting movement of the shoe either lengthwise or transversely of the machine and is raised for lift-

ing the last in the jacking operation. The heel support, together with the heel-lasting mechanism, is movable lengthwise of the plate 3, as in the well known Ideal lasting machine, from a retracted position which permits of the convenient insertion of the last to a predetermined operative position which is maintained during the jacking and lasting operations by the hook 35, carried by the heel lasting head and shown best in Fig. 1, which engages a projection on the side rail of the frame. This hook is mounted on a rock shaft 81 carrying an arm 83, Fig. 3, which rests upon a vertically movable rod 87 that slides laterally with the heel support, over the head of a loose plunger 88 which is operated from a cam 89 on the cam shaft 8 to release the hook. This release takes place as a part of the unjacking operation after the shoe has been lasted and occurs simultaneously with the lowering of the toe rest supporting slide 22.

The heel rest is carried by a slide 40, see Fig. 3, which is movable lengthwise of the machine in the plate 3 from which it obtains its movement laterally about the pivot 5 as does also the heel-lasting mechanism. For effecting movement of the heel rest longitudinally of the machine in the jacking operation the slide 40 is provided on its upper face with rack teeth, which are engaged by a pinion 47 on a shaft 44 which has a hand wheel 45. The hand wheel is provided on its inner face with ratchet teeth which are engaged by a spring-pressed pawl 46, as shown in Fig. 2, to hold the parts in their adjusted position. A spring 48 acting against the slide presses the heel rest forwardly away from the heel-lasting mechanism when the pawl 46 is released from the hand wheel. The heel post is provided in its lower end with an adjusting screw 50 which rests upon a plate 52 connected pivotally to the slide 40 at 54 and having an inclined face which rests upon the end of a screw 55. This screw is freely movable endwise in the carriage of the heel-lasting mechanism and is adjustable in a nut 56, which is supported by a spring 58. The screw thus provides a yielding support for the plate 52 and by its engagement with the inclined face of the plate causes the plate to be lifted as the slide 40 and heel post are moved rearwardly to draw the last into the heel band of the heel-lasting mechanism. This arrangement provides for adjusting the heel post vertically according to the size of the last inasmuch as the extent of the backward movement of the post into the band will vary according to the distance between the pin holes and the rear end of the last, being less for a large last than for a small one. This engagement of the shoe with the band causes the post, as it is pulled backwardly by the engagement of slide 40 with the lower part of the post, to rock or fulcrum about the upper portion 41 of its guideway in the slide 40 so that the lower portion of the post, which is toothed on its rear side as shown in Fig. 3, is forced into engagement with pawls 53, the guideway in the slide being somewhat longer from front to back at its lower portion than is the corresponding dimension of the post so that this movement of the post is permitted. The teeth are formed to hold the post against downward movement, but offer no obstacle to the upward movement of the post. When the post is tipped out of contact with the pawls it is free to move either upwardly or downwardly. A rod 60 is arranged below the plate 52 and connected to a treadle 62, shown in Fig. 1, for raising the heel post and the heel end of the shoe or positively upholding them during the lasting operation if desired. The heel post, which at its lower end fits closely the width of the hole in its holder 40, is reduced somewhat in width at its upper end, as shown in the sectional view Fig. 5 to permit the post to tip sidewise. Springs 64 hold the post normally in its central position but allows it to tip toward or against the walls of the holder which furnish rigid stops to limit its movement. The last pin 65, which enters the pin hole of the last is tapered to permit some movement of the last thereon and is connected to the post by a ball and socket joint. This provision for the post to move laterally and for the pin to move independently upon the post enables the heel support to adapt its position to the position and the inclination of the pin hole in the last. This is an advantage because the pin holes in lasts are not always accurately located, nor are they always drilled at the same inclination to the face of the last, and, moreover, in some very crooked lasts the pin hole is located on the left side of the median line of the heel part of a right last, as in Fig. 5, and on the right hand side of this median line of a left last. The jacking operation effected by the machine is produced by depressing the foot treadle 16 after the last, with the upper materials assembled on it, has been placed upon the heel and toe rests and the heel rest has been moved backwardly by the hand wheel 45 to draw the shoe into the heel band and lock the post against vertical displacement all as above described. This actuation of the treadle turns the cam shaft and causes the cam 20 to raise the toe rest positively, thus forcing the last firmly back into the heel band and clamping it rigidly in position to be lasted. The cam shaft also carries a cam 70 which actuates during this jacking operation devices, not necessary here to consider, which are connected with the heel band for closing the band about

the sides of the heel portion of the last to force the upper materials, including the heel stiffener, snugly into contact with the sides of the last.

In the use of the machine the workman selects the shoe to be lasted and, according as the shoe is for a right or a left foot, he may preliminarily shift the heel-lasting mechanism laterally about the pivot 5 into approximately the position required for that particular crooked last, and cause the latch 11 to interlock with the stud 7, Fig. 8. He then places the shoe upon the heel support and runs the heel-lasting mechanism forwardly into its operative position where it is held by the hook 35, the forward portion of the shoe resting at this time upon the toe support and being adjacent to the toe wipers. The position of the shoe in the machine is then observed and if it is not such that the median line of the forepart of the last coincides with the median line of the machine and the toe-lasting mechanism faces squarely toward the toe end of the last or toward the median line of the forepart of the last the lateral adjustment of the heel support mechanism is corrected to obtain these relative positions by using the crank *c* to turn the screw 9 and slide the plate 3 farther, or retract it as may be required to position a shoe. This movement is transmitted through the plate 3 to swing the heel post 6 around the center 5. The toe rest 4 slides laterally and turns with the shoe during this adjustment so that no abrasion of the upper leather is caused. Then by means of the hand wheel 45 the heel post is moved rearwardly and upwardly for drawing the heel portion of the last firmly into the rear portion of the heel band and raising the last to present the bottom face of the shoe in the plane of the heel wiper plates. In this movement of the last rearwardly the toe rest slides backwardly, Fig. 3. The operator then depresses the treadle 16 for causing the jacking mechanism to be operated. In this operation the toe rest is lifted by its cam 20 to tip the shoe backwardly toward and into the heel band and the heel band is closed through motion communicated from the cam 70 to clamp the sides of the last. These jacking operations having been completed, the workman, by means of the hand levers 79 and 106, connected with the usual lasting devices, works the upper over the toe and heel ends of the last into position to be secured. Usually the foot treadle 62 is employed for raising the last upwardly against the heel lasting plate to compact the overworked upper material against the innersole before it is fastened. When the lasting has been completed the cam shaft is again actuated by the treadle 16 and the cams turned into a position to let the toe rest descend toward its shoe receiving position and to unlock the hook 35, thus permitting the heel post and other devices controlled by said hook to move rearwardly by the contraction of the spring 80 and allowing the heel band to open for unclamping the shoe. In proceeding to prepare for lasting another shoe if it is a shoe for the same foot as the one last operated upon and is the same style of last, no lateral adjustment of the heel-support will be required. If the last is for the same foot but of a somewhat different style, being more or less crooked, a slight lateral adjustment of the heel support will position the shoe with the median line of its forepart symmetrical with relation to the median line of the machine and to the toe-lasting mechanism. When a shoe for the other foot is to be lasted the operator frees the locking block 11 of the heel-lasting mechanism from the stop 7 by manipulating the lever 13 and by movement applied through the post 17 he shifts the plate 3 carrying the heel support and the heel-lasting mechanism to the opposite side of the machine until it engages with the stop 7 at that side where it will be automatically locked by the block 11. The heel support and the heel-lasting mechanism will then be properly positioned with relation to the median line of the machine and to the toe-lasting mechanism for these mechanisms to support and operate upon the right shoe of a pair of shoes, supposing that the previously treated shoe was for the left foot. If at any time after a shoe has been jacked it is found that the median line of the forepart does not bear such relation to the median line of the machine or to the direction of advance of the toe-lasting mechanism that the toe portion of the shoe is presented accurately to the toe wiper plates, or that because of an irregularity in the formation of the channel lip the upper requires to be forced over the last bottom farther on one side of the shoe than on the other side, then the heel support will be adjusted laterally as may be required to shift the last into the required position. In this adjustment the heel support serves as the point of contact through which movement is imparted to the last for turning the latter. This turning movement takes place in practice about a pivotal point at or near the toe of the last, the shoe being more or less confined between the toe wipers. It is to be observed that the pivotal point about which the heel support turns is not necessarily the point about which the last turns. The heel band of the heel-lasting mechanism which is movable with the heel post about the pivot 5 serves, independently of its lasting function, as one form of end face abutment for the last to prevent rearward displacement of the last and, by its lateral

curvilinear adjustment said abutment adapts its position to that of the heel end of a right or left crooked last.

Having explained the nature of this invention and described a preferred construction embodying the invention, I claim as new and desire to secure by Letters Patent of the United States:—

1. In a machine of the class described, the combination with a support for one end of a last, of a support for the other end of the last constructed and arranged for movement laterally about a center located approximately at the point of intersection of the median lines of the fore part and the heel part of the last.

2. In a machine of the class described, the combination with a support for one end of a last, of a support for the other end of the last constructed and arranged for movement laterally with relation to the first mentioned support about a center located under the last and at a substantial distance from either end of the last to adapt it to support similarly the heel parts of right and left crooked lasts.

3. In a machine of the class described, the combination with a support for the fore part of a last, of a support for the heel part of the last constructed and arranged for movement laterally about a center located approximately at the point of intersection of the median lines of the fore part and the heel part of the last, and devices adjustable together in opposite directions to limit the movements of the heel support.

4. In a machine of the class described, the combination with a support for the fore part of a last, of a support for the heel part of the last constructed and arranged for movement laterally about a center located approximately at the point of intersection of the median lines of the fore part and the heel part of the last, devices adjustable together in opposite directions to limit the movements of the heel support, and means coöperating with said devices to lock the heel support.

5. The combination with a support for one end of a last, of a support for the other end of the last constructed and arranged for lateral curvilinear bodily movement relatively to the first mentioned support about a center located between the two supports.

6. The combination with a support for the forepart of a last, of a support for the heel part of the last which is mounted for lateral adjustment relatively to the first mentioned support about a center located between the two supports.

7. The combination with a support for the forepart of a last, of a support for the heel part of the last which is mounted for lateral adjustment relatively to the forepart support about a center located between the two supports to shift a shoe transversely, and a pad on the forepart support which is mounted to move in company with the last in such shifting of the shoe.

8. The combination with a support for the forepart of a last, of a support for the heel part of the last, and means arranged for manual manipulation to produce movement for laterally adjusting the heel support and additional mechanical means for connecting the support with and disconnecting it from the adjusting means.

9. The combination with a support for the forepart of a last, of a support for the heel part of the last which is mounted for lateral adjustment, and means adjustable together for similarly limiting movement of the heel support laterally toward either side.

10. The combination with a support for the forepart of a last; of a support for the heel part of the last which is mounted for movement laterally into positions of different adjustment relatively to the forepart support for right and left crooked lasts the toes of which are rested in like positions on the forepart support, and additional means including separate devices to be used alternatively with right and left adjustments for locking the heel support in selected positions of lateral adjustment.

11. A machine of the class described, having in combination, means for supporting a shoe comprising a holder having a vertical socket, a post arranged in said holder to have a tipping movement limited by the walls of said socket and taking place about a center located a substantial distance below the last to provide for bodily movement of the last laterally, and springs engaging opposite sides of the upper portion of said tipping post to hold it normally upright in central position and to return it thereto after any displacement from such position.

12. In a machine of the class described, means for supporting a shoe, comprising a holder, a heel post arranged in said holder to have a limited lateral tipping movement about a center located a substantial distance below the last to provide for bodily movement of the last laterally, springs for holding the post normally in a central position, and a heel pin mounted on the post for independent lateral tipping movement thereon about a center located a less distance below the last to adapt the pin for inaccuracies in the inclination of the pin holes in different lasts.

13. A heel support comprising a holder having an aperture for a heel post, a post having a width at one portion of its length to fit the aperture substantially and tapering to a narrower width toward its upper end whereby lateral tipping of the post in the holder is allowed, and opposed springs

to maintain the post normally in central position.

14. In a machine of the class described, a toe rest, a support for the rest and connections between the rest and its support, including a slide arranged for movement lengthwise of the last and a slide arranged for movement transversely of the last, combined with yielding means for holding the rest normally in a central position.

15. In an apparatus which is arranged to restrain free lateral movement of the toe end of a shoe, the combination with a forepart support, of a rear part support which is guided for lateral adjustment in a horizontal plane about a predetermined vertical axis located between the supports, said parts being formed and arranged to act in conjunction with the means for restraining free lateral movement of the toe end of the shoe to cause said lateral adjustment to effect movement of the last about a center which does not coincide with said vertical axis.

16. In a jack, a forepart rest and a heel end face abutment for the last which is supported for bodily lateral movement in a curvilinear path about a center located in front of said heel end face to adapt its position to that of the heel ends of right and left crooked lasts supported with their foreparts in similar relation to the forepart rest.

17. In a machine of the class described, last-supporting devices comprising a heel rest arranged for movement laterally with relation to the last about a center which is located under the last and can be shifted lengthwise of the last.

18. In a machine of the class described, last-supporting devices comprising a heel rest arranged for movement laterally with relation to the last about a center which is located approximately at the intersection of the median lines of the heel and toe portions of the last, said machine having provision for permitting the center to be shifted.

19. A work support, having, in combination, a post, a work supporting member, an intermediate slide arranged for substantially horizontal right line movement by the work relative to said post and in a plane substantially parallel to the face of the work, said slide and the work supporting member being also relatively movable by the work in directions at right angles to the direction of said first mentioned movement and in a plane to maintain the plane of the face of the work substantially unchanged.

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

MATTHIAS BROCK.

Witnesses:
ARTHUR L. RUSSELL,
ROSE G. KEENAN.