M. BROCK.
HOLD-DOWN FOR LASTING MACHINES.
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Fig. 1.

Fig. 2.

INVENTOR

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By his Attorney,
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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 Commonwealth of Massachusetts, have invented certain Improvements in Holddowns for Lasting-Machines, 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 lasting mechanism and particularly to means for holding down the work for the operation of toe embracing wipers. In the operation of lasting boots and shoes it is important that the shoe be held down firmly upon the shoe supporting means to resist the tendency of the wipers to lift the shoe during their upward movement against the last at the toe. It is also important that the rib or lip of the innersole in welt work be supported at the toe so that the wipers in their operation of wiping the margin over the feather of the inner sole against the rib will not deform, displace, crush down, or otherwise injure the rib. It has been proposed to provide a hold-down mechanism which comprises an arched extending transversely of the machine and of the shoe to bear upon the ball of the shoe and a finger extending forwardly from the arm to bear upon the toe end of the shoe and support the innersole rib. Most last bottoms slope downwardly from the ball to the toe and some have much more spring than others. This has required that the finger be yielding or else be allowed to turn in a vertical plane on the arm in order that it should adapt itself to the spring of different last bottoms. These working conditions have led to the practical necessity of making the finger short in order to get adequate pressure at the toe, and this brings the arm so far forward on the shoe as to be in the way of the workman during the toe lasting and toe binding operations.

In accordance with one feature of this invention, these conditions are dealt with by providing a hold-down in which a lever is substituted for the finger of the described construction, the finger arm of the lever being made as long as needful to bring the bar back out of the way and the rear arm of the lever being arranged to bear upon the shank of the shoe and providing adequate leverage to hold the finger arm against the innersole at the toe. In the illustrative construction the finger arm is resilient metal and the hold-down has a bearing face substantially under the arm which comes into contact with the shoe bottom only after the lever has tipped to bear equally at its two ends on the work and after the finger arm has yielded.

Another feature of the invention consists in providing on the finger arm of the hold-down lever a rib support which is adjustable to the width of the toe and will adapt itself without attention to the reverse swings of right and left crooked lasts. As I am advised, it is new to provide a hold-down lever of the illustrated type with any kind of rib supporting means. A novel characteristic of the rib supporting means herein shown is that it is mounted for movement about a vertical axis located adjacent to the innersole rib, and approximately at the point of the toe for adjustment to the swing of right and left crooked lasts. As illustrated, it comprises members each of which is pivoted on said axis and adjusting means by which to set said members in definite relation to each other for different widths of toes while permitting the members to swing together to the right or the left about said axis to adapt them to the shape of the toe.

The hold-down lever, which for convenience will be herein designated as the foot, is mounted for movement relatively to its supporting bar about an axis extending longitudinally of the last and also about a vertical axis for adaptation to the shapes and lengths of different lasts, and the rear end of the foot is provided with a shank engaging member which is movable to adapt the foot to different lengths and shapes.

These and other features of the invention will appear more fully from the following detailed description when read in connection with the accompanying drawings and will be pointed out in the appended claims.

In the drawings,

Figure 1 is a perspective view of the hold-down mechanism operatively positioned upon the bottom of a shoe being operated upon by the toe embracing wipers of a lasting machine; and

Fig. 2 is a plan view of the hold-down in position on a shoe bottom.
The means for operating the hold-down to bring it into firm engagement with the bottom of a shoe is substantially similar to that shown in United States Letters Patent No. 1,120,822, granted December 15, 1914, on application of Eugene L. Keyes, and comprises a vertically movable post 2 upon which is rotatably mounted a block 5 having a guideway formed therein, in which a carrier arm 6 is movable endwise. The arm 6 when in operative position extends transversely of the shoe bottom and is provided with a pivot pin 8 upon which a block 10 is mounted to tip about an axis extending transversely of the shoe bottom. To the block 10 is pivoted a member 12 having ears 20 at each end through which and through the block passes a substantially horizontal pivot pin 14 at right angles to the pivot pin 8. A foot 16 is pivotally mounted on the under face of the member 12 by a pin 18 (see Fig. 2) for movement in a substantially horizontal plane and has a bearing face 19 adapted to engage the shoe at the ball. Since the pins S, 14 and 18 are at right angles each to the others, the foot 16 has universal movement. Movement of the foot about the pin 18 enables the foot to yield or tip in a vertical plane and come into bearing on lasts of different slope or spring and excess movement is prevented by flanges 21 arranged to contact with the sides of the arm 6 after a limited movement of the block 10 relatively to the arm. Movement of the member 12 on the pin 14 adapts the foot to bear on lasts of lateral inclination of roll and excess movement about the pin 14 is limited by the proximity of the lower face of the block to the upper face of the member.

The foot 16 has a stem 22 extending rearwardly which may be somewhat resilient and upon which a block 24 is adjustably held by a set screw 26. The rear part of the block 24 is provided with a split clamp in which a stem 28 is held by tightening a screw 29. A shank engaging member or presser 30 is mounted on the stem 28 by a ball and socket joint which enables the presser to assume firm bearing relation with the surface of the shoe shank whatever may be its inclination. This is particularly desirable when the last is twisted; that is, when the plane of the forepart has a lateral inclination to the plane of the heel seat. The forwardly extending portion or finger arm of the foot 16 is a resilient plate shaped like the toe of the shoe but at least as narrow as the narrowest toe. At the toe end of the finger arm of the foot a rib supporting means comprising two members 40 is provided, the members being each pivoted at its front end upon a vertical axis 41 located adjacent to the innersole rib and approximately at the point of the toe. The rear ends of the members 40 are slotted at 42, the slots engaging pins 44, 46 on the ends respectively of adjusting levers 48, 50. The adjusting levers are pivoted between their ends at 52, 54 to the finger arm of 70 the foot 16 and at their rear ends are provided with ears 56, 58 which are pivoted to the levers. A rod 60 is mounted for rotation in the ear 56 and is threaded through the ear 56. The rod 60 may be turned by means of a thumb head 62 and thereby the ends of the adjusting levers are moved toward and from each other, the opposite ends of the levers carrying the pins 44, 46 being thereby adjusted in the opposite direction to vary the width of the rib supporting means.

By this construction it will be seen that for a given adjustment of the rod 60 the members 40 are held from movement with respect to each other and are free to move about the axis 41 in accordance with the right or left swing of the last and to arrange themselves at substantially equal angles with respect to the longitudinal median line of the forepart of the shoe.

The hold-down foot is yieldingly held at one limit of its movement about the axis 8 by a spring bar 64 which is attached at one end to the arm 6 by a screw 66, extends over a screw 68 as a fulcrum and has its opposite end engaging under an extension of the pivot 14. The rib engaging means mounted on the finger arm of the foot may be raised against the tension of the spring bar 64 and will then be resiliently held against the shoe bottom by the spring until the presser 30 comes into engagement with the shank, the pressure of the foot being then substantially evenly distributed between the rib supporting means 40 and the shank presser 30. Further pressure upon the hold-down, however, causes the foot to yield by reason of the resiliency of the finger arm of the foot 16 or of the rear arm or both, so that the bearing face 19 may come into firm bearing upon the ball of the shoe to assist the rib support and the presser in preventing displacement of the shoe during the toe lasting operation.

In the operation of the hold-down, a shoe 115 is placed upon the shoe supporting means of the bed lasting machine, the arm 6 is swung about the pivot 2 and adjusted lengthwise to bring the hold-down foot over the shoe bottom. The foot may then be moved about the axis 18 to position the presser 30 over the shank portion of the shoe, while at the same time the rib supporting means is located adjacent to the rib of the innersole at the toe. If necessary, the hold-down foot is adjusted to the length of the shoe being operated upon by loosening the set screw 26 and adjusting the block 24 on the stem 22: The presser 30 is also adjusted vertically by moving the stem 28 in the split clamp on
the block 24. This adjustment will be such that the presser 30 and the rib supporting means 40 will bear respectively at the Shank and toe portions of the shoe while the surface 19 on the foot 16 is still out of contact with the sole at the ball. Before the application of holding pressure on the hold-down, the thumb head 62 will be operated to spread apart or close the rear ends of the members 40 to adjust the rib supporting means to the width of toe being operated upon, the rib supporting means moving about the pivot 41 to adapt itself automatically to the right or left swing of the toe by reason of unbalanced pressure of the innersole rib at the two sides of the rib supporting means. These adjustments having been effected, pressure is applied to the hold-down foot which at first is substantially evenly distributed between the rib supporting means and the shank presser 30, and, as further pressure is applied, the foot yields to allow the bearing face 19 of the foot to bear with substantial pressure upon the ball portion of the shoe.

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

1. A hold-down for lasting machines having, in combination, a supporting and operating bar extending transversely across the machine and the shoe and a hold-down lever pivoted on the bar and having a yielding finger arm extending forwardly over the toe of the shoe and a rear arm extending to and engaging the shank of the shoe, and a bearing face located under the bar and held out of contact with the shoe until the ends of the lever have both made engagement with the work and force enough has been applied through the bar to cause the resilient finger arm to yield.

2. A hold-down for lasting machines having, in combination, a supporting and operating bar extending transversely across the machine and the shoe and a hold-down lever pivoted on the bar and having a yielding finger arm extending forwardly over the toe of the shoe and a rear arm extending to and engaging the shank of the shoe and adjustable in length for shoes of different sizes.

3. A hold-down for lasting machines having, in combination, a supporting and operating bar extending transversely across the machine and the shoe and a hold-down lever pivoted on the bar and having a yielding finger arm extending forwardly over the toe of the shoe and a rear arm extending to and engaging the shank of the shoe and an innersole engaging member which is vertically adjustable for the purpose described.

4. In a hold-down apparatus, the combination of a foot projecting forwardly over the fortopart of the last, plates pivoted at one end to the foot, adjusting levers pivoted to the foot and engaging the free ends of said plates, and a screw connected to the levers to effect lateral adjustment of the plates about their pivot for different widths of toes.

5. A hold-down apparatus comprising, in combination, a foot, rib supporting means comprising plates pivoted to the foot at one end and having their other ends slotted, adjusting levers pivoted between their ends upon the foot and each having a pin at one end to engage one of the slots, and a screw connecting the opposite ends of the adjusting levers to effect adjustment of the slotted ends of the plates.

6. A hold-down for lasting machines having, in combination, a forward extension and a rearward extension, rib supporting means mounted on the forward extension, and shank engaging means mounted for universal movement on the rearward extension.

7. A hold-down for lasting machines comprising a supporting arm extending transversely of the shoe bottom, a hold-down foot mounted on the arm for movement about a horizontal axis extending transversely of the shoe in response to press...
sure of the shoe, toe engaging means upon one end of the foot, and shank engaging means carried by the foot at the rear of the axis and constructed and arranged to adjust itself automatically to the plane of the shank at the area of contact.

12. A hold-down for lasting machines having, in combination, a foot mounted for movement about a transverse axis, said foot having an arm extending forward of its axis and an arm extending rearward of its axis, a rib supporting member mounted on the forward arm, and a shank engaging member mounted on the rear arm and arranged for tipping movement to allow it to come into bearing upon the shank of a twisted last.

13. A hold-down for lasting machines having, in combination, a yielding foot mounted for movement about a transverse axis, a rib supporting member mounted on the forward end of the foot, a member mounted on the other end of the foot to contact with the shank portion of the shoe, and a projection on the foot between said members arranged to bear on the shoe bottom when the foot yields to pressure applied between said members.

14. A hold-down for lasting machines having, in combination, a foot mounted on an axis extending transversely of the shoe and having a face adapted to bear on the ball of the shoe, innersole rib supporting means mounted on the foot, and shank engaging means mounted on the foot for adjustment vertically to bring the foot into bearing relation with the shoe bottom at the toe, ball and shank.

15. A hold-down apparatus having, in combination, a member adapted to extend forwardly over the forepart of the shoe, and rib supporting means having a marginal portion constituting the innersole rib engaging face and shaped to fit a welt innersole back of the rib on both sides of the toe, said rib supporting means being pivoted to said member for bodily movement about a point approximately at the end of the toe to accommodate the swing of right and left lasts.

16. In a hold-down apparatus, a rib supporting means comprising members pivoted each to the other at one end and adapted to fit against and form a continuous support for the innersole rib on opposite lateral sides of the toe portion of a shoe bottom, and means for effecting lateral adjustment of the free ends of said members for wide and narrow toes.

17. In a hold-down apparatus, the combination of a foot, a rib support comprising members pivoted to said foot by a common pivot at their front ends and having their rear ends free to move about said pivot, and means for positively varying the degree of separation of said rear ends.

18. A hold-down foot comprising a forward extension, rib supporting members pivoted to the extension for relative adjustment about a point adjacent to the innersole rib and arranged for movement together about said pivot to accommodate lasts of different or opposite swing.

19. A hold-down for lasting machines comprising supporting and operating means and having a forward extension, innersole rib supporting means, connecting means between the extension and the rib supporting means permitting rotary movement of the rib supporting means in the plane of the shoe sole to adapt the said rib supporting means to innersoles of opposite swing, and means for effecting adjustment of the rib supporting means to fit wide and narrow toes of such innersoles.

20. A hold-down for lasting machines having, in combination, rib supporting means comprising a pair of plates, a support to which the plates are pivoted for movement together about a common axis, and means for maintaining the amount of lateral separation of the free ends of the plates but permitting lateral swinging movement of the plates about said axis.

21. A hold-down for lasting machines comprising flexible rib supporting means constructed and arranged for lateral adjustment for different widths of toes, and means for moving said supporting means to effect such adjustment and for positively maintaining said means in adjusted position.

In testimony whereof I have signed my name to this specification.

MATTHIAS BROCK.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D.C."