

July 22, 1924.

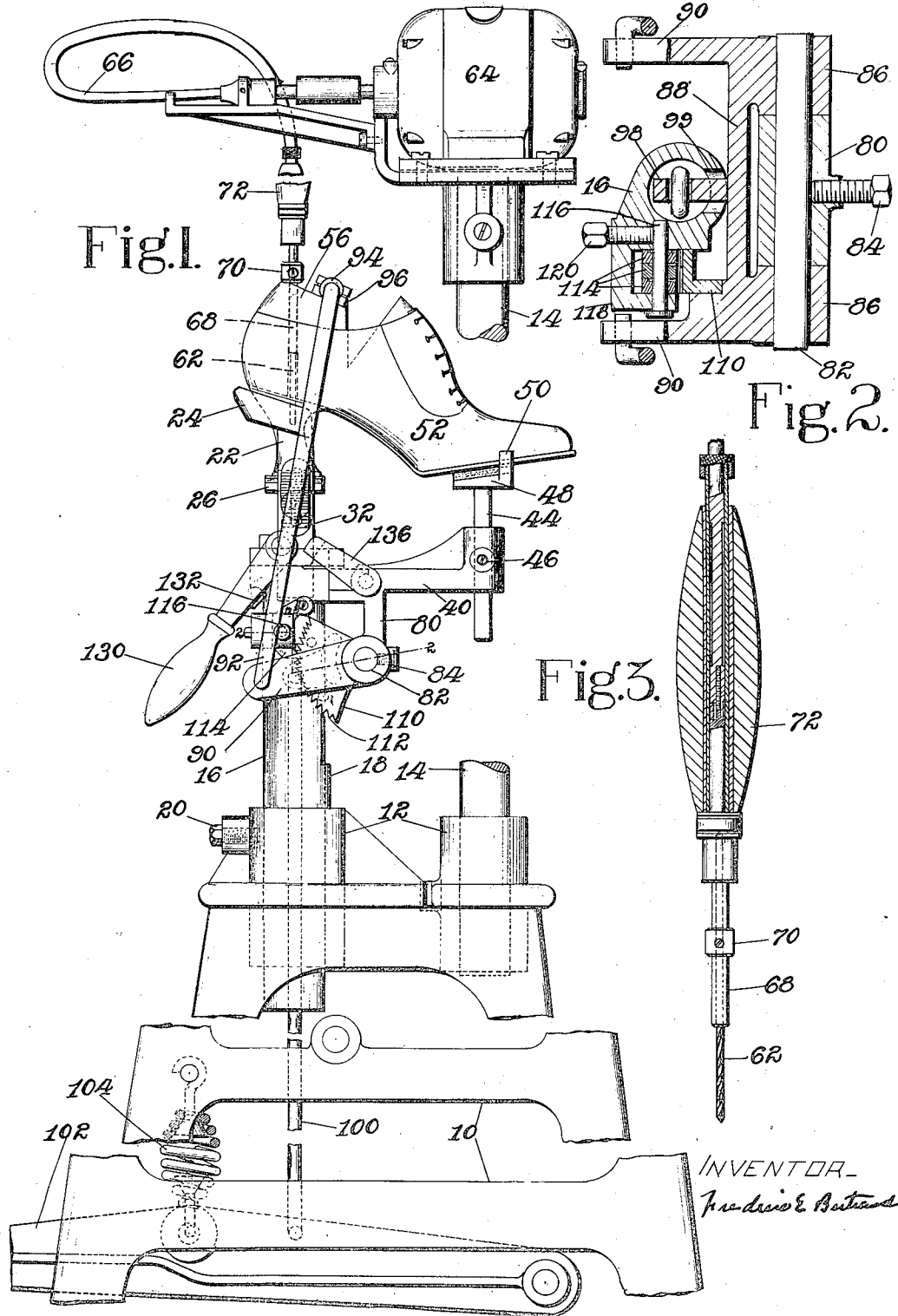
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F. E. BERTRAND

HEEL CLAMPING MACHINE

Filed Aug. 9, 1920

2 Sheets-Sheet 1



INVENTOR
Frederic E. Bertrand

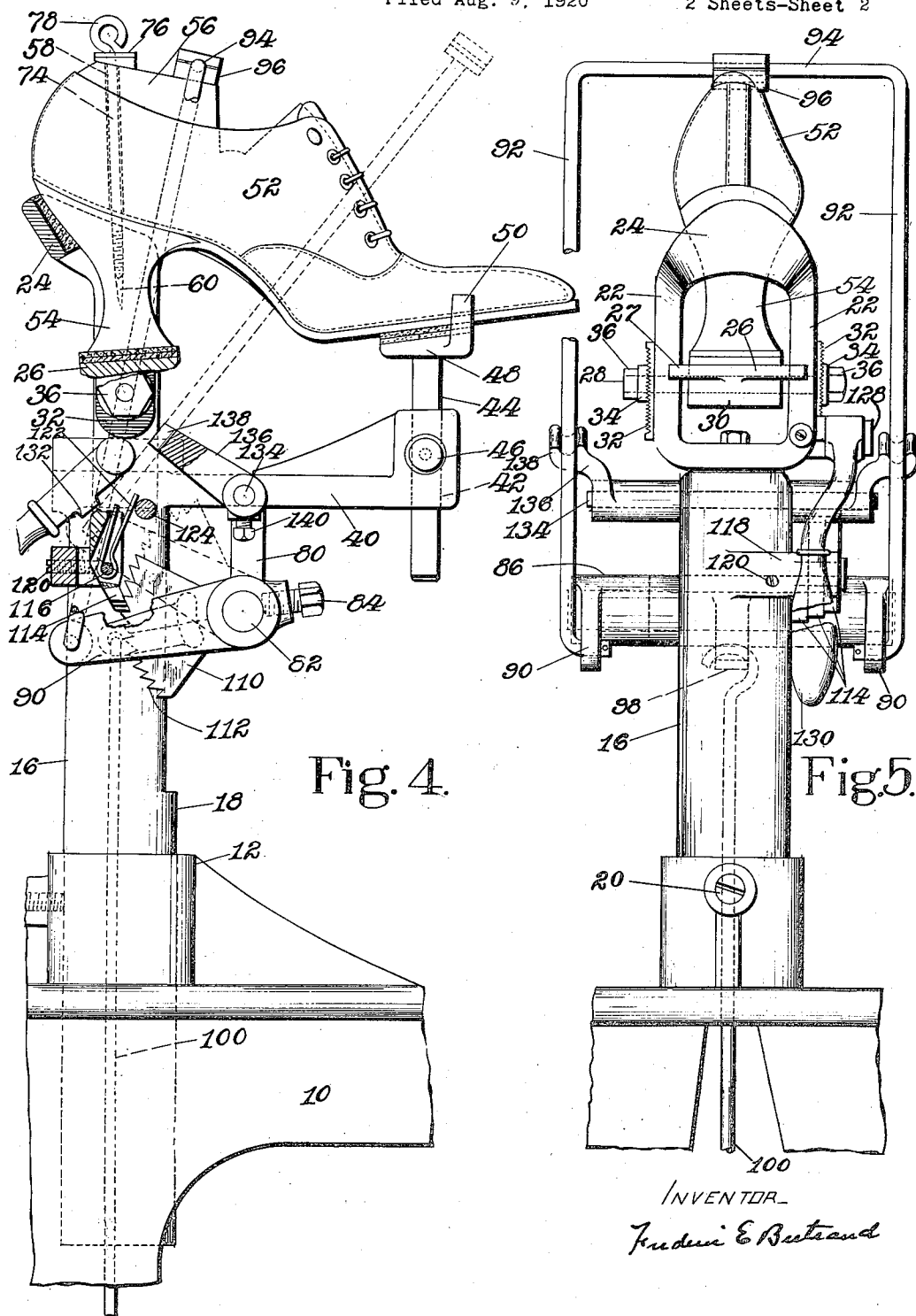
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INVENTOR
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UNITED STATES PATENT OFFICE.

FREDERIC E. BERTRAND, OF LYNN, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

HEEL-CLAMPING MACHINE.

Application filed August 9, 1920. Serial No. 402,281.

To all whom it may concern:

Be it known that I, FREDERIC E. BERTRAND, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain Improvements in Heel-Clamping 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 heel clamping machines of the type which is adapted more especially for use in securing wood heels to shoes.

It has been customary, heretofore, to apply an adhesive to the wood heel and the heel seat of the shoe and then to clamp the heel to the shoe by means of an iron C clamp which is left on the shoe for a sufficient period of time to allow the adhesive to set. For quantity production this necessitates a large number of bulky clamps and interposes a long interval before other operations can be performed on the shoe. According to a superior method described and claimed in United States application Serial No. 367,173, filed Mar. 19, 1920, on application of Maurice Bresnahan, the heel may be fastened temporarily to the shoe by a screw which passes through a last on which the shoe is supported and enters the heel. This screw takes the place of the large clamps previously referred to and permits other operations to be performed on the shoe while the adhesive sets.

It is an object of this invention to provide, without sacrifice of other utility, an improved device for clamping a shoe and heel together, as when boring the heel for the reception of the screw above referred to. In the illustrated embodiment, there is provided a support for a heel and for a shoe on a last and means is provided to engage the front part of the cone of the last to force the shoe against the heel to receive a temporary fastening. In accordance with this feature, the shoe and heel are clamped together while in their normal upright position and the clamp or jack is of a nature which leaves the greater part of the shoe unobstructed so that easy access is afforded for performing other operations.

Another object is to provide improved mechanism for preparing a heel for attachment to a shoe. In accordance with this feature, there is provided a last with a guide hole through the heel seat portion, means to clamp together a heel and a shoe on the last, and a drill guided by the hole in the last for boring a hole in the heel to receive a fastening.

These and other features of the invention will appear from the following description and accompanying drawings of a preferred embodiment of the invention, and the invention will then be particularly pointed out in the claims.

Fig. 1 is a side elevation, partly broken away;

Fig. 2 is a horizontal section on the line 2-2, Fig. 1;

Fig. 3 is a detail sectional view of the drill and associated parts;

Fig. 4 is a side elevation, similar to Fig. 1, on an enlarged scale and partly in section;

Fig. 5 is a front elevation, partly broken away.

For supporting a shoe and a motor operated drill, the base or framework 10 is provided with bosses 12 carrying posts 14 and 16, the latter having a key 18 engaging a similar keyway in one of the bosses to prevent the post from turning. A set screw 20 is provided to adjust this post 16 vertically properly to adapt the work for different operators. As shown best in Fig. 5, there is provided a heel support or cup having spaced arms 22 offset at their upper ends and joined by a curved arm 24 which may be provided with a layer or two of felt to avoid marring the heel with which it engages. A heel tread plate 26 which may also be provided with layers of felt to engage the tread face of a heel is mounted between the arms 22 and has forked extremities 27 which loosely engage the arms. Depending from the plate 26 is a bearing 30 through which passes a rod 28, the rod extending through slots both in the arms 22 and in the serrated plates 32 and the rod may be held in vertically adjusted position by means of serrated washers and clamp nuts 36. This mounting for the plate 26 allows it to rock slightly since the forked

extremities 27 fit the arms 22 loosely and the plate may also be adjusted vertically to fit differently shaped or differently sized heels.

5 To support the tread surface of a shoe a bracket 40 extends from the post 16 and is provided near its extremity with a guide slot 42 in which is vertically adjusted a stem 44 carrying at its upper end a shoe tread support 48. A set screw 46 may be used to
10 clamp this stem in position and a prong 50 may be provided on the tread support 48 which will prevent lateral turning of the shoe when the screw 74 hereinafter referred
15 to is threaded into the heel. In Figs. 1 and 4 a shoe 52 and heel 54 are shown in position on the supports and a last 56 having a hole 58 through the cone and heel seat portion is shown in place in the shoe. This hole
20 58 through the last is to be associated with a drill 62 for boring a hole 60 in the heel as will be described. The drill is connected by a flexible shaft 66 with a motor 64 mounted
25 on the post 14 and a sleeve 68 surrounding the drill is adapted to enter the opening 58 in the last, this sleeve acting as a guide for the drill. A collar 70 is adjustably secured to the sleeve 68 by means of a set screw and
30 acts as a gage to co-operate with the cone of the last to determine the depth which the drill shall enter the heel. The motor and drill are carried at a higher elevation than the last and the drill may be hung on a bracket secured to the post 14. This main-
35 tains it in a convenient position for removal and insertion in the guide hole. The drill may be manipulated by the handle 72 and when it is removed from the last a screw 74 will be pushed through the hole in the last
40 and turned into the hole 60 in the heel. If desired, a series of washers 76 may be placed between the last and the head of the screw to limit the inward movement of the screw and any suitable tool may be inserted in the
45 eye 78 to turn the screw.

To a downward extension 80 of the bracket 40 is fixed by means of a set screw 84 a pivot rod 82 and surrounding the ends of the rod are the hubs 86 joined together by
50 the bar 88 and carrying a pair of arms 90 which straddle the hollow post 16. To the end of the arms 90 are pivotally secured the links 92 which are joined at their upper ends by the bar 94, this bar carrying a clamp
55 member 96. This member preferably engages the front portion of the cone of the last, leaving the rear portion unobstructed and it may be serrated if desired to prevent slipping. This position of the member 96
60 also causes the links 92 to assume an inclined position so that one component of the clamping force is exerted rearwardly to hold the shoe from forward movement. In other words, the force is exerted in a direction ap-

proximately normal to the heel seat. An
65 actuating arm 98 extends from the bar 88 through an aperture 99 in the hollow post 16 and here it is pivotally connected to a rod 100 extending down through the post and joined to a treadle 102 by which it is
70 operated. A spring 104 normally holds the treadle raised but upon operation of the treadle the clamping mechanism above described may be brought into operation to
75 clamp the last and shoe down against the heel. For locking the clamping mechanism in clamped position there is provided on one of the arms 90 a sector-shaped bracket 110 provided with comparatively coarse teeth
80 112 and these teeth can be engaged by one of a series of pawls 114 mounted on a pivot rod 116. This rod is secured in apertures of the post 16 and of a bracket 118 formed
85 thereon and is held in place by a set screw 120. Suitable springs 122, surrounding the pivot rod 116 and engaging a pin 124 on the post, are provided to hold the pawls in en-
90 gagement with the teeth. The pawls 114 are made of unequal length in order that coarser teeth may be used on the ratchet and thus give greater strength. For releasing the
95 pawls there is pivoted on the stud 128 secured to the arms 22 a handle 130 carrying a pawl tripping projection 132 movable against the tails of the pawls to release them.
100 When the clamping links 92 are released they swing forwardly and are supported in the forked ends 138 of the arms 136 fixedly secured to a shaft 134 by means of the set screw 140.

In the operation of this mechanism the heel and shoe to which an adhesive has been applied are placed on the supports as shown particularly in Fig. 4. The bar 96 on the
105 ends of the links 92 is then swung rearwardly over the cone of the last and the treadle depressed to force the last engaging member 96 against the last. The clamping mechanism is locked in this position by the
110 pawls, as has been described, and then the operator inserts the drill 62 and sleeve 68 into the aperture 58 of the last. The sleeve 68 serves as a guide for the drill and when the boring movement is completed the clamp
115 70 engages the last. Upon the removal of the drill the screw 74 is inserted, as has been described. The operator then pushes down on the handle 130 and trips the pawls 114. The spring 104 then raises the rod 100, arms
120 90, and links 92 the weight of the last engaging member 96 swinging these links on their pivots and over the forepart of the shoe where the links remain in engagement with the forked arms 136. The shoe may
125 then be removed without waiting for the adhesive to set and since there are no projecting members the shoe may go forward in the factory to have other operations performed.

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

1. In a machine of the class described, a support for a heel and for a shoe on a last, a member engaging the front part of the cone of the last and leaving the rear portion of the last unobstructed, and means to move said member toward the support to clamp the shoe and last against the heel to receive a fastening, said means being constructed and arranged to enable said member to swing relatively to said support to facilitate the removal of the shoe.
2. In a machine of the class described, a frame, means rigidly secured to said frame for supporting a heel and a shoe on a last, a pair of links straddling the shoe and the heel supporting means, and means to move the links to engage the last to clamp the shoe against the heel.
3. In a machine of the class described, a support for the tread faces of both a heel and a shoe, a rock member, and connections from the rock member to the shoe including a work-engaging member carried by a pair of links to force the rear end of the shoe down against the heel.
4. In a machine of the class described, a support for a heel and for a shoe mounted on a last, a rock member, a pair of connected links pivoted to the rock member and adapted to straddle the shoe and engage the last, and means to operate the rock member to clamp the last and shoe against the heel.
5. In a machine of the class described, a support for a heel and for a shoe on a last, a pair of links straddling the shoe and the last, a stop mounted on the support to hold the links in shoe receiving position, and a rock member for actuating the links and being pivoted to the latter to allow them to swing over the shoe into engagement with the last.
6. A heel clamp comprising a jack provided with a device constructed and arranged to support the tread and side surfaces of a heel, a clamp member co-operating therewith and arranged to engage the cone of a last, and means for relatively moving said member and jack to clamp the heel to the heel seat of a shoe mounted on the last while the heel and last are in their natural upright positions with a component of pressure against the part of said device which supports the side of the heel.
7. A wood heel clamp comprising a jack provided with a heel cup and a support for the forward portion of the sole of a shoe, a clamp member arranged to engage the cone of a last, and means for causing relative movement of said clamp member and said heel cup to clamp a heel supported by the heel cup to the heel seat of the shoe mounted on the last with the shoe and last in their natural upright positions.
8. In a device of the class described, a support for a heel and for a shoe on a last, a clamp comprising a member to engage the forward portion of the cone of the last while leaving the rear portion unobstructed to permit work to be performed thereon, and automatic means to lift the clamp member from the cone of the last and carry it over one end of the shoe.
9. In a machine of the class described, a support for a heel comprising members to engage spaced surfaces thereof, a clamp to force a shoe against the heel and including a link at the side of the shoe, means to release the clamp, and automatic means to move the link to a position allowing removal of the shoe.
10. In a machine of the class described, a support for a heel, a clamp to force a shoe against the heel and comprising a pair of links which normally straddle the rear of the shoe, and means to move the links automatically over the forepart of the shoe when the shoe is unclamped.
11. In a machine of the class described, a support for a shoe mounted in upright position on a last, a heel cup having a pair of arms straddling the heel, a top lift engaging plate slidable between the arms, and means to clamp the plate at different points along the arms to provide for the support of heels of different heights.
12. In a machine of the class described, a support for a shoe mounted in upright position on a last, a heel cup, a top lift engaging plate slidable on the heel cup, and means to clamp the plate in different positions on the heel cup to provide for heels of different heights.
13. In a machine of the class described, a support for a shoe mounted on a last in upright position, a heel cup having a curved portion to engage the rear of the heel, a top lift engaging plate movable on the heel cup to engage different heels, means to clamp the plate in adjusted position, and a last engaging clamp to hold the last and shoe against the supported heel.
14. In a machine of the class described, a post having a support for a shoe on a last, a heel cup having a pair of arms straddling the heel, a top lift engaging plate slidable between the arms, and means to clamp the plate at different points along the arms to provide for the support of heels of different heights.
15. In a machine of the class described, a heel support comprising arms straddling a heel, a top lift engaging plate slidable on the arms of the heel support, means to clamp the plate in different positions on the heel support to provide for heels of different heights, and a work engaging clamp to force a shoe against a heel in the support.
16. In a machine of the class described, a

support for a shoe on a last, means to vary the position of the shoe support, a heel cup having a curved portion to engage the rear of the heel, a top lift engaging plate movable on the heel cup to engage different heels, means to clamp the plate in adjusted position, and a last engaging clamp to hold the last and shoe against the supported heel.

17. In a machine of the class described, a support comprising a member to engage the rear surface of a heel, a tread engaging plate slidably and rockably mounted on the heel support, and means to clamp the plate in different positions on the heel support to provide for different heels.

18. In a machine of the class described, a hollow post having a support for a heel and for a shoe, a rock member pivoted to the support and having an arm, means to connect the arm with the shoe, an actuating arm on the rock member and a rod within the hollow post to rock the member to clamp the shoe and heel together.

19. In a machine for attaching heels to shoes, a support for a heel and for a shoe on a last, a link to engage the last, a rock member pivoted to the link, means to rock the member to clamp the shoe and heel, a ratchet secured to the rock member and having coarse teeth, and a plurality of pawls of unequal length for engagement with a tooth to lock the shoe and heel in clamped position.

20. In a machine of the class described, a hollow post having a support for a heel and a shoe, a rock member pivoted on the support and having a pair of arms, links pivoted to the arms and straddling the shoe, a rock arm on the rock member and extending into the hollow support, and a treadle actuated rod connected to the rock arm for actuating the links to clamp the shoe to the heel.

21. In a machine of the class described, a framework, a hollow post on the framework and having a support for a heel and for a shoe on a last, a rock member pivoted to the support and having a pair of arms straddling the post, links to connect the arms with the last, an actuating arm on the rock member and a rod within the hollow post to rock the member to clamp the shoe and heel together.

22. In a machine for attaching heels to shoes, a support for a heel and for a shoe, a rock member pivoted to the support, connections from the rock member to the shoe, means to rock the member to clamp the shoe and heel, a ratchet secured to the rock member and having coarse teeth, and a plurality of pawls of unequal length for engagement with a tooth to lock the shoe and heel in clamped position.

23. In a machine of the class described, a hollow support having means to hold a heel and a shoe on a last, a rock member

pivoted on the support and having a pair of arms, links pivoted to the arms and straddling the shoe, a rock arm on the rock member and extending into the hollow support, and a treadle actuated rod connected to the rock arm for actuating the links to clamp the last and shoe to the heel.

24. In a machine of the class described, means for clamping in an upright position a heel to the heel seat of a shoe mounted upon a last provided with an approximately vertical hole through the rear portion thereof, and a boring tool constructed and arranged to be inserted by hand and to be guided by the hole through the rear portion of the last to bore a hole through the heel seat portion of the shoe into the heel.

25. In a machine of the class described, a jack provided with means for clamping a heel to the heel seat of a shoe mounted upon a last provided with an approximately vertical hole through the rear portion thereof, a boring tool to be inserted manually in the hole to be guided thereby, a motor, and a flexible driving connection therefrom for operating said boring tool to bore a hole through the heel seat portion of the shoe into the heel.

26. In a machine of the class described, a last carrying a shoe and having a hole through the heel seat portion, a support for a heel, a clamp to hold the shoe against the heel, a drill having a supporting sleeve engaging the hole in the last to guide the drill and a gage on the sleeve to limit the boring movement of the drill into the heel seat.

27. In a machine of the class described, a last carrying a shoe and having a hole through the heel seat portion, means to clamp a heel temporarily to the shoe in an upright position, a drill having a sleeve guided by the hole in the last, and means including a flexible driving connection to rotate the drill to bore a hole in the heel seat to receive a fastening.

28. In a machine of the class described, a last having a guide hole through the heel seat portion perpendicular to the tread surface of a heel thereon and at an acute angle to the heel seat, means to clamp a heel to the last by pressure against the tread and side surfaces of the heel in a direction perpendicular to the seat surface of the last, and a drill guided by the hole through the heel seat of the last for boring a hole in the heel to receive a fastening.

29. In a machine of the class described, a last supported in upright position and having a guide hole through the heel seat portion, means to clamp a heel to the last, and a motor operated drill supported above the last for insertion in the guide hole when boring the heel to receive a fastening.

30. In a machine of the class described,

a framework having a pair of posts, a motor operated drill supported at one elevation by one post, the other post having means to clamp a heel to a shoe on a last at a lower elevation, a last having a guide opening through the heel seat portion, and a means on the drill to engage the opening to guide the drill in boring the heel.

31. In a machine of the class described, a framework having posts of unequal length, a last supported in upright position on one post and having a guide hole through the heel seat portion, means to clamp together a heel and a shoe on the last, and a motor operated drill mounted higher than the last on another post and adapted for guided boring movement down through the hole in the last into the heel.

32. The combination of a heel support, a support for the forepart of a shoe, a last having a hole through the heel seat portion and a prong on one side of the forepart support to prevent turning of the shoe when a screw is passed through the hole in the last and turned down into a hole in the heel.

33. In a machine of the class described, a support for a heel and for a shoe mounted on a last, there being a guide hole through the heel seat portion of the last and through the rear part of the cone of the last, means to engage the front portion of the cone of the last to clamp the shoe and heel together, and a drill constructed and arranged to be guided by the hole in the last when boring a hole in the heel.

34. In a machine of the class described, a support for a heel having an inclined seat portion and a support for a shoe on a last, and means engaging the last and acting in a direction normal to the heel seat to clamp the shoe and heel together.

35. A heel-clamping device comprising, in combination, a support for a shoe to which a heel is to be clamped, a cup for the heel comprising spaced arms having a tread-engaging plate secured between them and a rear-surface engaging strap connecting said arms and provided with a yielding surface and a connection between said heel cup and said plate permitting relative tilting of the plate and strap in engaging and supporting heels of different shapes, and means to impart relative movement to the support and the cup to clamp the heel to the shoe.

36. A heel-clamp comprising, in combination, a support for the forepart of a shoe, a support for a last in the shoe, a heel supporting yoke arranged to straddle a Louis heel on the heel-seat of the shoe and to engage its rear surface, a plate rigidly secured to the sides of said yoke for engaging the tread face of the heel, and manually-operable means including a one-

way clutch device for imparting relative movement of varying extent to said supports for clamping the heel against the heel-seat of the shoe.

37. A heel-clamp comprising, in combination, a member to engage the cone of a last at its front end only, a heel cup having a portion adapted to engage the rear curved surface of a Louis heel on the heel-seat of a shoe on the last, a manually-operable lever, and connections from said lever including a one-way clutch device for relatively moving the said members to clamp the heel against the heel-seat of the shoe under any desired pressure within the limits of the machine.

38. A heel-clamp comprising, in combination, a member to engage a last, a head including spaced members for engaging the tread and rear surfaces of a heel on a shoe on the last and connections between said members comprising arms straddling the heel, a manually-operable lever, and connections from said lever including a one-way ratchet device for relatively moving the last-engaging member and the heel-engaging head to clamp the heel against the shoe with any desired pressure within the limits of the machine.

39. A heel-clamp as defined by claim 38, in which the tread and rear surface engaging members of the head are relatively adjustable for heels of different sizes.

40. A heel clamp comprising, in combination, a support to engage different surfaces of a Louis heel to hold it with its tread surface down, a pivotally-mounted U-shaped member adapted to straddle a lasted shoe and to be rocked toward the support to press the heel-seat of the shoe against the top of heel, and means relatively to move said support and said member to hold the shoe with its heel seat clamped against the heel.

41. A device for use in making shoes comprising, in combination, spaced members to support a Louis heel right side up by engaging the tread and lateral surfaces thereof, and a manually-operable pressure device constructed and arranged to press a last and shoe against the heel in a manner to afford convenient access to the rear top surface of the last.

42. A device for use in passing a fastening through the heel-seat of a shoe into a heel pressed thereagainst through a perforation in a last in the shoe comprising, in combination, a member engaging the heel, means for supporting the shoe in assembled relation with the heel, a member engaging the last, manually-operable means relatively to move said members to press the last and the shoe and the heel together, a bench, and a post slidably clamped in the bench for vertical adjustment and carrying said members and said means.

43. In a machine of the class described, in combination, a support for a heel and for a shoe on a last, there being a guide hole through the heel seat portion of the last and through the cone of the last, means for engaging the cone of the last to clamp the shoe and heel together, a drill adapted to be projected through said hole and to

bore a hole in the heel, a sleeve on the shank of the drill for entering said hole to guide 10 the drill, and a collar on said sleeve to limit the extent of operation of the drill.

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

FREDERIC E. BERTRAND.