B. JORGENSEN.

MACHINE FOR SHAPING UPPERS TO LASTS.

APPLICATION FILED MAY 19, 1917.

1,379,924. Patented May 31, 1921.

4 SHEETS—SHEET 1.

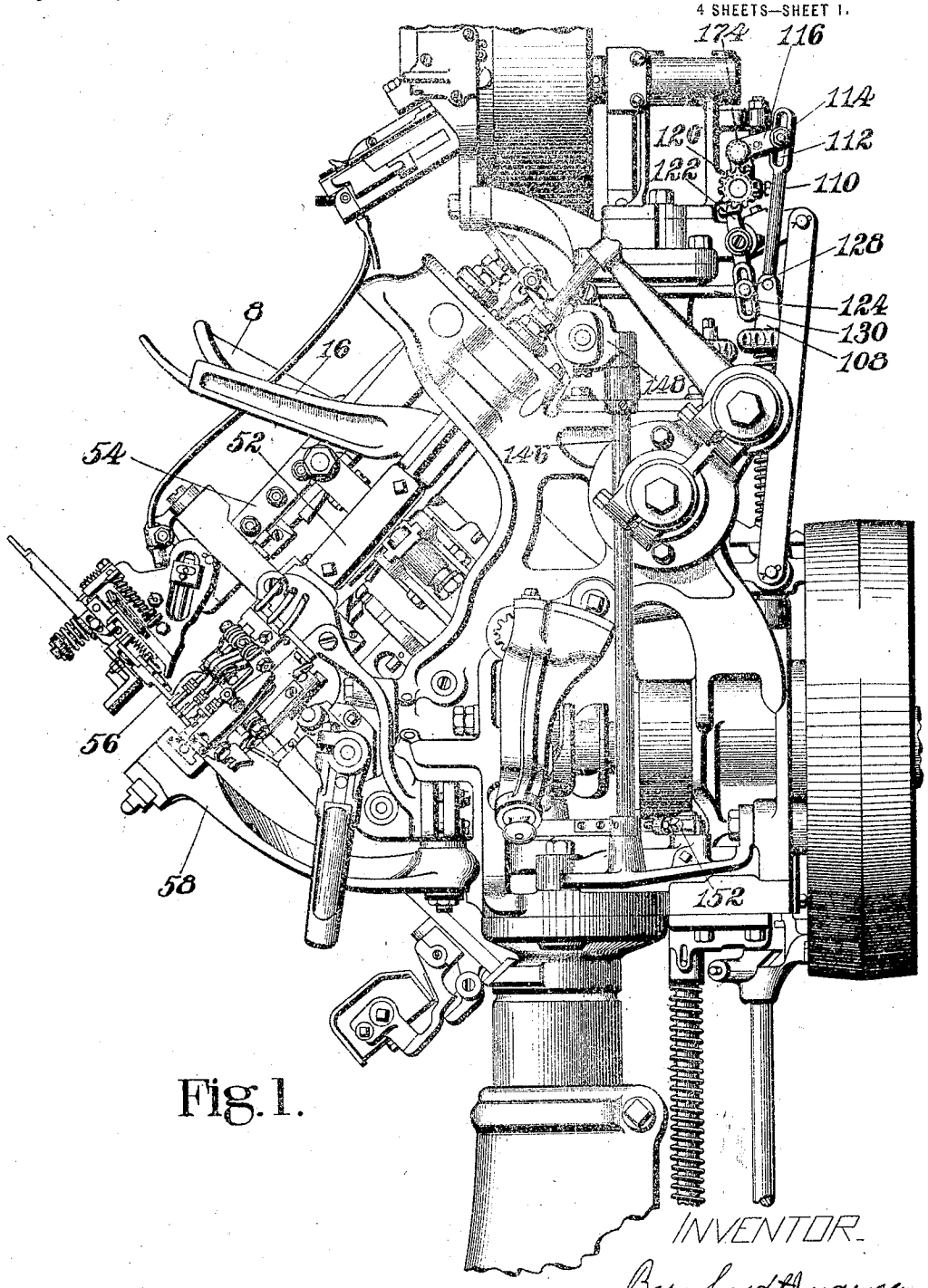


Fig. 1.

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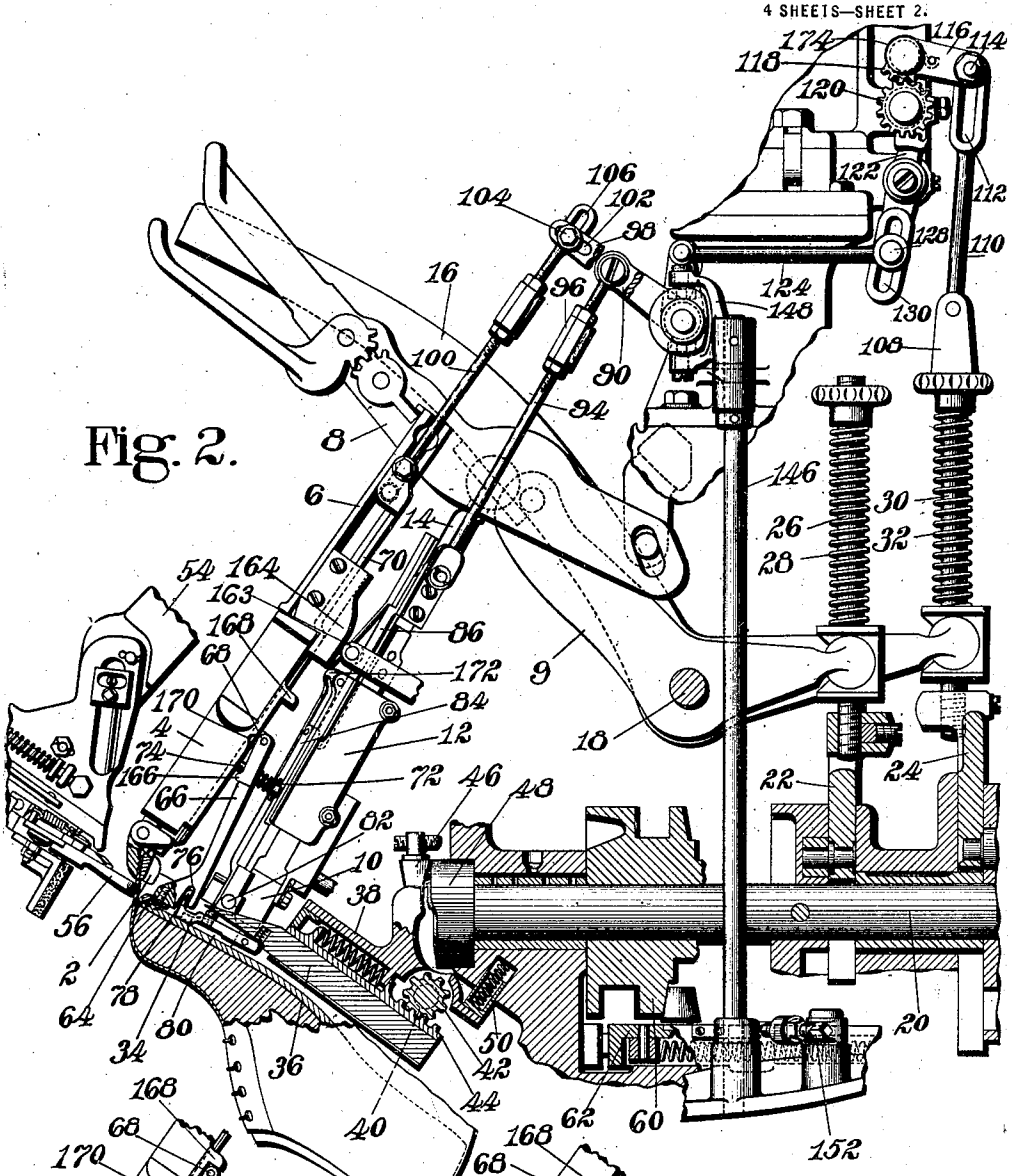


Fig. 2.

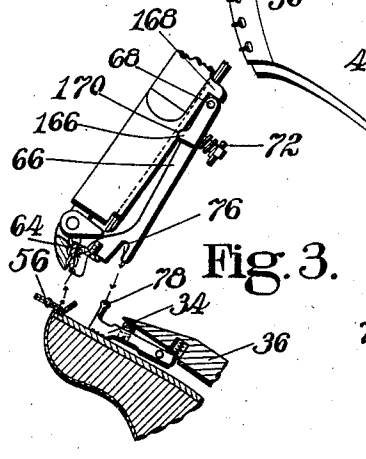


Fig. 3.

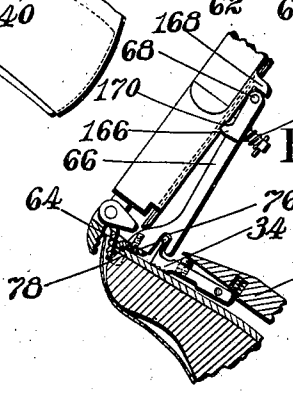


Fig. 4.

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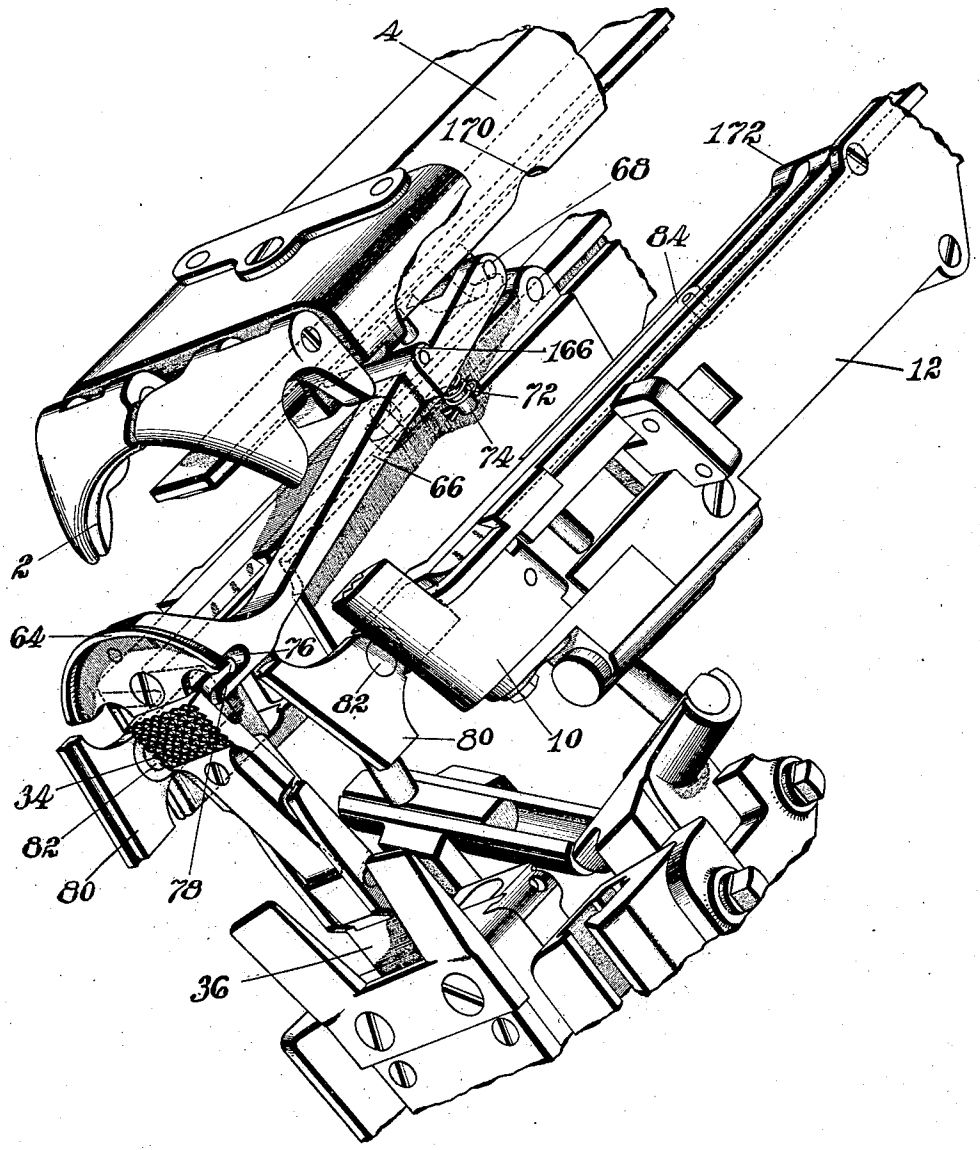


Fig.5.

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4 SHEETS—SHEET 4.

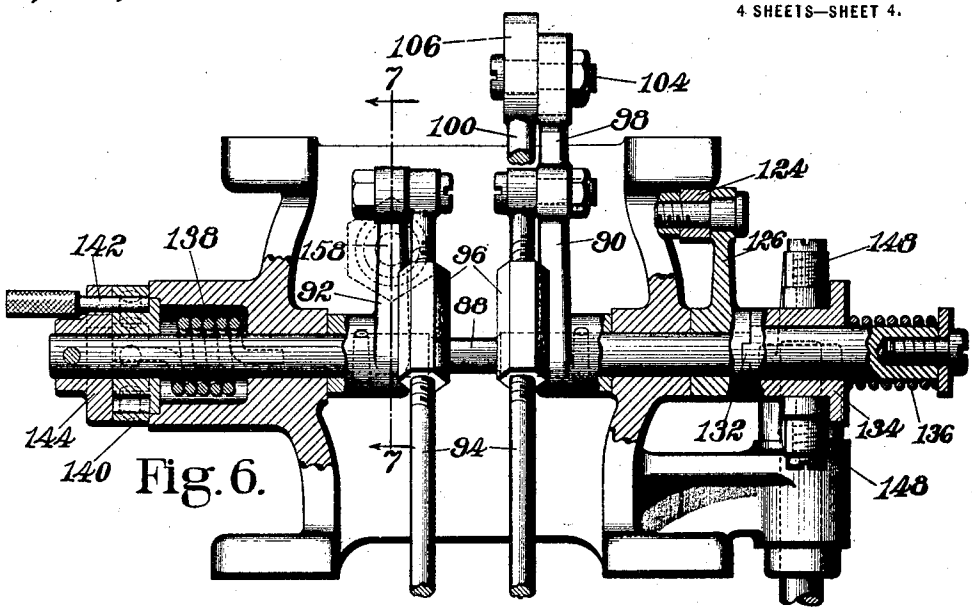


Fig. 6.

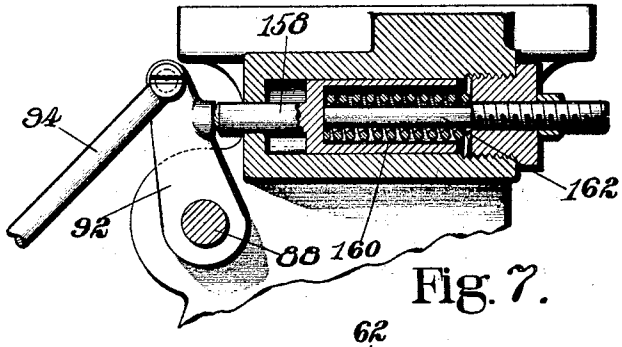


Fig. 7.

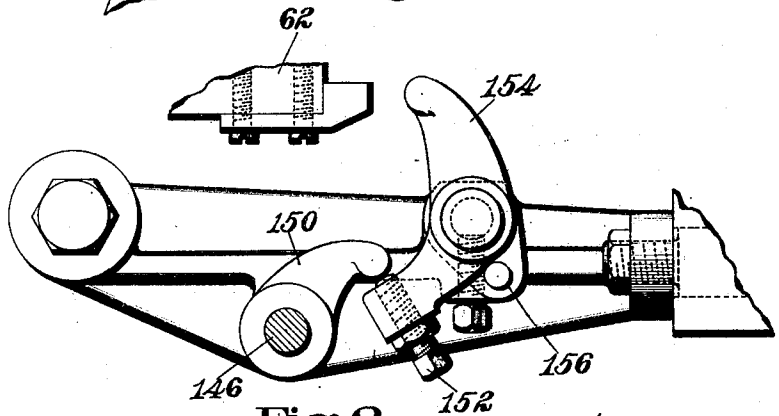


Fig. 8.

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UNITED STATES PATENT OFFICE.

BERNHARDT JORGENSEN, OF BEVERLY, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

MACHINE FOR SHAPING UPPERS TO LASTS.

1,379,924. Specification of Letters Patent. Patented May 31, 1921.

Application filed May 19, 1917. Serial No. 169,756.

To all whom it may concern:

Be it known that I, BERNHARDT JORGENSEN, a subject of the King of Denmark, residing at Beverly, in the county of Essex and State of Massachusetts, have invented certain Improvements in Machines for Shaping Uppers to Lasts, 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 machines for use in the manufacture of boots and shoes for shaping uppers to lasts, and an object of the invention is to provide in such machines improved means for insuring the correct relation of the sole or the innersole to the last during the operation of pulling the upper or of lasting the shoe. The invention is herein shown in its application to a machine having means for pulling over the upper of a shoe and for lasting the toe portion of the shoe, but it will be understood that the invention, in its broader aspects, is not limited to machines for performing both pulling-over and lasting operations.

When the parts of a shoe are assembled on a last, the innersole or the sole of the shoe, hereinafter termed generically the "sole", is usually attached to the bottom of the last at a plurality of points by tacks which are driven through the sole and into the last at a distance from the margin of the sole. Since the margin of the sole to a considerable distance inward from the edge of the last is thus left unattached, there is danger that the margin may be upraised from the last bottom by frictional engagement of the upper or of the pulling-over grippers with the edge of the sole in the pulling-over operation or by the action of lasting wipers in their positioning movement relatively to the shoe preparatory to their overwiping movement, and in the subsequent operation of laying or wiping the upper over the sole, the margin may be turned back in such manner as to prevent the upper from being properly sewed to the sole. This tendency is particularly marked in the case of turn shoes, since the soles of such shoes project beyond the edge of the last bottom and are, moreover, usually reduced in thickness at the margin to provide a shoulder to which the upper is to be sewed, leaving between the shoulder and the edge of the sole a comparatively thin and flexible portion termed the "feather" of the sole.

This invention provides novel means for insuring that the margin of a sole on a last shall be correctly positioned when the upper is carried or wiped inwardly over it. Important features of the invention are to be recognized in a novel construction and arrangement of hold-down members, and also in novel means for rendering a hold-down effective to position the sole and for retracting it from operative position. The illustrative construction provides hold-downs mounted on the pulling-over grippers for engaging the margin of the sole at the sides and at the toe end adjacent to the portions of the upper which are engaged by the respective grippers, and means for moving the hold-downs in the direction of the shoe to insure their effective relation to the sole during the upper pulling operation, and for subsequently retracting the hold-downs clear of the paths of movement of the overlaying and tacking instrumentalities.

The various features of the invention, including certain details of construction and combinations of parts, will now be described with reference to the accompanying drawings and pointed out in the claims.

In the drawings,—

Figure 1 is a view in side elevation of the head portion of a pulling-over machine including mechanism in which the invention is embodied, the machine having means for lasting the toe end of the shoe,

Fig. 2 is a view partly in side elevation and partly in vertical section of a portion of the machine, showing the parts in the position which they assume with the upper under tension and with the hold-down mechanism in holding relation to the sole,

Fig. 3 is a view in side elevation of the toe gripper and associated hold-down mechanism, showing the position of the hold-down mechanism after it has been retracted from the shoe,

Fig. 4 is a view similar to Fig. 3 showing the parts in position to receive a shoe,

Fig. 5 is a diagonal perspective view of the gripper and hold-down mechanism, showing the parts as positioned at the end of the updraw movement of the grippers,

the shoe being omitted in order to show the parts more clearly,

Fig. 6 shows, partly in front elevation and partly in vertical section, a portion of the hold-down operating mechanism,

Fig. 7 is a vertical sectional view on the line 7—7 of Fig. 6, and

Fig. 8 is a plan view of a portion of the mechanism for releasing the hold-downs to permit them to be moved out of engagement with the shoe.

The drawings illustrate the application of the invention to a pulling-over and lasting machine of a well-known type particularly adapted for operation upon turn shoes, the general organization and construction of machines of this type being more fully set forth in United States Letters Patent No. 1,029,387, granted on June 11, 1912 upon an application of R. F. McFeely and further, in respect to certain features applicable particularly to the pulling-over and lasting of turn shoes, in Letters Patent No. 1,280,613, granted on October 1, 1918, upon an invention of Orrell Ashton. In view of the disclosure in said patents, only such portions of the illustrative machine as are intimately related to the features of this invention will be described herein in detail.

The machine includes the usual toe gripper comprising jaws 2, a gripper casing 4 on which the jaws are mounted, and a bar 6 pivoted to an updraw lever 8 which receives its movement from a second lever 9 for operating the gripper. Included also in the machine are side grippers comprising jaws 10, casings 12 and bars 14 connected to updraw levers 16. The levers 9 and 16 are pivoted on a rod 18 and are operated from a cam shaft 20 through slides 22 and 24 respectively. Carried by the slide 22 is a rod 26 having thereon a spring 28 which is compressed by downward movement of the rod and thus brings pressure to bear upon the rear end of the toe gripper lever 9 to operate the lever 8 to effect a yielding updraw movement of the toe gripper. The side gripper levers 16 are operated in a similar manner through rods 30 and springs 32.

The shoe is positioned for the operation of the grippers with its sole on the last bottom in engagement with a sole rest which comprises a foot piece 34 mounted on a slide 36, the slide being adjustable lengthwise of the shoe in a carrier 38 which is pivoted on a shaft 40. Adjustment of the sole rest lengthwise of the shoe is effected by means of a pinion 42 in engagement with a rack 44 on the slide. The carrier 38 is provided with a roll 46 for engagement with a face cam 48 on the shaft 20, and a spring 50 positions the carrier with the roll in engagement with the cam. In the operation of the machine the carrier 38 is rocked about the shaft 40 by the action of the cam 48 to cause the sole rest to depress the last and the sole thereon within the upper as the grippers pull upwardly.

The machine includes also the usual means for laying the upper over the margin of the sole and fastening it, comprising side tacker arms 52 and a front tacker arm 54, wipers 56 being mounted on the front arm 54 for lasting the toe portion of the upper; and also included in the machine are the usual pivoted side clamp arms 58 operated from a cam 60 on the shaft 20 through a slide 62 to cause them to engage and hold the shoe for the lasting and tacking operations. It will be understood that the operation of the machine is effected in successive periods or stages, the machine coming to rest with the upper under tension to permit the usual inspection and adjustment and also the positioning of the wipers 56 manually in engagement with the upper, after which, by the further rotation of the cam shaft, the side clamp arms 58 are moved into engagement with the shoe and the lasting and tacking instrumentalities are caused to perform their functions, laying the upper over the margin of the sole and fastening it in position.

For the purposes of the present invention the illustrative machine is provided with a hold-down for engaging the feather of the sole at the toe end and also with a hold-down associated with each of the side grippers for engaging the feather at opposite sides of the sole. The toe hold-down comprises a plate 64 having a depending lip curved for engagement with the feather of the sole about the toe outside of the upper attaching shoulder or rib, the plate being secured to an arm 66 which is pivoted at 68 on a slide 70 that extends lengthwise of the gripper bar 6 and the casing 4 and is guided on said bar and casing for movement lengthwise with respect thereto. A spring 72 on a rod 74 which projects from the slide 70 tends to position the arm 66 in substantially parallel relation to the slide and the gripper casing with the hold-down member 64 in close proximity to the toe gripper. The arm 66 is provided with a recess 76 to receive a projection 78 on the sole rest member 34, and by this construction the position of the toe hold-down lengthwise of the shoe is determined by the sole rest, while the hinged connection between the arm 66 and the slide 70 permits the toe gripper to have its characteristic pulling movement oblique to the plane of the shoe bottom without affecting the position of the hold-down.

Each of the side hold-downs comprises a plate 80 shaped to engage the feather of the sole outside of the shoulder and in proximity to the adjacent side gripper jaws, the plate being pivoted at 82 on a slide 84 which extends lengthwise of the gripper

casing 12 and is connected to a second slide 86 extending upwardly along the gripper bar 14. The pivotal connection between the plate 80 and the slide 84 permits the plate to turn on the slide about an axis that extends laterally of the shoe and thus to bear evenly upon the sole whatever may be the lengthwise inclination or contour of the shoe bottom.

The operating means for the several hold-downs whereby they are rendered effective upon the sole during the upper pulling operation includes a shaft 88 mounted in bearings in the machine head and provided with crank arms 90 and 92 which are connected respectively by means of rods 94 to the upper slides 86 of the two side hold-downs. Turnbuckles 96 on the rods 94 serve to adjust the hold-downs at different distances from the crank arms. The toe hold-down is operated from an extension 98 of the crank arm 90 through a rod 100 which is pivoted to the slide 70 and is adjustable as to length in the same manner as the rods 94. The extension 98 is provided with a slot 102 at different points in which an operating pin 104 may be secured for imparting to the toe hold-down movements varying in extent in proportion to the distance of the pin from the shaft 88. Effective engagement of the hold-down with the sole may thus be insured, whatever may be the lengthwise curvature of the bottom of the last. The pin 104 is arranged to move the rod 100 downward by engagement with the rod at the lower end of a slot 106 in the rod, the construction thus permitting a certain amount of lost motion between the rod 100 and the crank arm, the purpose and effect of which will be hereinafter explained.

Operative movement in the direction of the shoe bottom is imparted to the several hold-downs during the period of the updraw movement of the grippers while the last is being depressed by the operation of the sole rest. Conveniently, in the construction shown, such movement is effected through means connecting the shaft 88 to one of the rods 30 which is moved downwardly to effect the updraw movement of its connected side gripper. To this end the rod is provided with a projection 108 to which is pivoted a link 110 having a slot 112 which receives a pin 114 on a lever 116 pivoted on the frame. The lever 116 through gear teeth 118 operates a pinion 120 which also engages teeth on a lever 122, the latter lever being connected to the shaft 88 through a link 124 and a crank arm 126. The connection between the lever 122 and the link 124 comprises a pin 128 which may be set at different points along a slot 130 in the lever to vary the extent of the movement imparted to the shaft 88 from the rod 30.

It will be evident from the preceding description by the downward movement of the rod 30 to which the link 110 is connected the shaft 88 will be rocked forwardly during the updraw movement of the grippers and the depressing movement of the last, and that the machine will come to rest at the end of the updraw movement with the several hold-downs in their lowermost position in engagement with the feather of the sole. In order to withdraw the hold-downs from the paths of movement of the overlaying and tacking devices the machine is provided with means for disconnecting the hold-downs from a portion of their operating mechanism and for retracting them immediately prior to the inward movement of the tacker arms 52 and 54. To this end there is a clutch connection between the crank arm 126 and the shaft 88, the crank arm being loosely mounted on the shaft and having a pair of diametrically opposite recesses to receive teeth 132 formed on a clutch hub 134 which is splined to the shaft for sliding movement lengthwise thereof and is normally held by a spring 136 in clutching engagement with the crank arm. A torsion spring 138, anchored at one end to the machine frame and at its other end in a sleeve member 140 on the shaft 88, tends to turn the shaft in the direction to upraise the hold-downs, the member 140 being connected to the shaft by means of a pin 142 which is mounted in a member 144 secured to the end of the shaft and enters one of a series of holes in the member 140 to hold said member in fixed relation to the member 144. By withdrawing the pin 142 and turning the member 140 the tension of the spring may be adjusted. While the machine is at rest prior to its operation upon a shoe, and during the first stage of the cycle of operations, the hub 134 is in clutching engagement with the crank arm 126 to cause the hold-downs to be depressed through their connections with the rod 30 simultaneously with the updraw movement of the grippers. In order to cause the retraction of the hold-downs, means is provided for withdrawing the hub 134 from clutching engagement with the arm 126, thereby releasing the shaft 88 from its connection with the arm and permitting the spring 138 to effect the retraction of the hold-downs by turning the shaft. For sliding the hub 134 in the direction to disconnect it from the arm 126, the machine is provided with a vertical shaft 146 upon the upper end of which is mounted a forked clutch operating member 148 having rolls for engagement with a flange on the hub 134 to retract the hub against the tension of the spring 136. The shaft 146 on its lower end is provided with an arm 150 arranged to be engaged by the end of a screw 152

mounted on one of the arms of a lever 154, this lever being mounted with its other arm in the path of movement of the slide 62 which, as previously explained, is the means whereby the side clamp arms 58 are moved into engagement with the shoe at the beginning of the second stage of the cycle of operations of the machine. By reference to Fig. 8 it will be seen that the slide 62 has some distance to move before it engages the lever, the parts being so arranged that the clutch is disconnected to release the hold-downs just as the side clamp arms engage the shoe and immediately prior to the inward movement of the tacker arms. By adjustment of the screw 152 the time of the release of the hold-downs in relation to the movement of the slide 62 may be varied. A stop pin 156 serves to limit swinging movement of the lever 154 to insure that the lever shall be in position to be operated by the slide 62. In order to avoid excessive shock when the hold-downs are released under certain conditions, a buffer 158 is arranged in position to be engaged by the arm 92, this buffer being mounted for sliding movement in a socket in the frame against the tension of a spring 160. A pin 162 serves as a guide for the spring and also to limit the inward movement of the buffer 158, the pin being adjustable to vary the limit of the turning movement of the shaft 88 and thereby the limit of the upward movement of the hold-downs.

When the machine is idle and in readiness to receive a shoe, the three hold-downs are positioned in such relation to the grippers and the sole rest that as a shoe is presented in engagement with the sole rest in proper position for the upper to be seized and pulled by the grippers the margin of the sole is engaged by the hold-downs, and in the case of a turn shoe that portion of the margin which projects beyond the edge of the last. The toe hold-down 64 at this time is positioned slightly above the edges of the curved toe gripper jaws 2 and in close relation thereto, the grippers curving rearwardly underneath the front portion of the hold-down, as shown in Fig. 4, and the latter thus serves to determine the correct longitudinal position of the shoe while the side hold-downs 80 determine the correct lateral position of the shoe. The shoe having been thus positioned and the margin of the upper entered in the toe and side grippers, the machine is started by the actuation of the clutch. The first effect of the updraw movement of the levers 8 and 16 is to cause the grippers to close firmly upon the upper, and until the grippers have thus closed no movement is imparted to the hold-downs by reason of the lost motion afforded by the slot and pin connection 112, 114, the pin 114 being positioned about midway between the ends of the slot when the machine is started, as shown in Fig. 1. As the grippers begin to pull the upper, the link 110 becomes effective with a downward pull upon the pin 114 and through the connections described begins to turn the shaft 88 forwardly against the tension of the spring 138, thereby depressing the side hold-downs substantially simultaneously with the depression of the sole rest 34 which is caused by the forwardly tipping movement of the carrier 38 effected by the action of the cam 48. In other words, as the shoe is depressed by the sole rest, the side hold-downs follow the shoe and remain in substantially continuous engagement with it. The toe hold-down 64, as previously explained, is first positioned closely at the rear of the toe gripper and above the edges of the rearwardly curved gripper jaws, and by reason of this arrangement the lost motion connection, consisting of the pin 104 and the slot 106, is provided in order to prevent the hold-down from being depressed immediately at the beginning of the updraw movement of the gripper. The toe hold-down may, in fact, be raised slightly by the action of the toe gripper as the latter begins to pull upon the upper, affording time for the gripper to clear the hold-down by its characteristic forward swing which is effected in a manner well understood through the action of an abutment 163 upon a cam 164 on the gripper casing 4 as the gripper is pulled upwardly. A further reason for the slot and pin connection 104, 106 is that the connection to the toe hold-down rod 100 is at a greater distance from the shaft 88 than the connections to the side hold-down rods, and the provision for lost motion in the toe hold-down operating means serves to prevent any tendency to move the toe hold-down too far as compared with the side hold-downs. The hinge connection 68 between the gripper casing and the arm 66 permits the toe gripper to swing forwardly while the toe hold-down is retained in substantially the same relation to the sole rest 34 by the engagement of the projection 78 in the recess 76. When the toe gripper is clear of the hold-down 64 the pin 104 becomes effective in the slot 106 to force the rod 100 downward and thus to depress the toe hold-down, and in case the margin of the sole has been raised from the last prior to such downward movement of the hold-down, the latter acts to replace it in the correct relation to the last. All three hold-downs arrive at their lowermost positions at practically the same time, coinciding with the end of the depressing movement of the last. When the machine comes to rest at the end of the updraw movement of the grippers the hold-downs are thus in effective engagement with the margin of the sole and insure the correct position of said margin with refer-

ence to the last. While the parts are thus positioned the operator, after effecting any necessary adjustment of the upper on the last, advances the wipers 56 into engagement with the upper in the correct relation for closing movement over the margin of the sole and releases the toe gripper from engagement with the upper, as usual in the operation of machines of this type.

When the machine is started a second time to effect the final stage of the cycle of operations, the side clamp arms 58 are first swung inward to engage the shoe by the action of the slide 62, and the side grippers then move inward over the shoe bottom to carry the upper over the margin of the sole, closely followed by the tacker arms 52 which carry the mechanism for laying the upper down upon the margin of the sole at the sides of the shoe and fastening it in position, the side grippers being released from engagement with the upper in the usual manner by the action of the tacker arms. As the side grippers move inward, the toe gripper is swung rearwardly over the sole by the usual overdraw springs, and simultaneously the wipers 56 are forced inward by the front tacker arm 54 and are operated by the front and side arms to wipe the toe portion of the upper over the margin of the sole and tacks are then driven to secure the overwiped upper in position. Immediately prior to the inward movement of the tacker arms the slide 62 by its action upon the arm 154 causes the clutch member 134 to be shifted lengthwise of the shaft 88 to release the shaft from its connection with the crank arm 126, thereby permitting the spring 138 to turn the shaft and cause the three hold-downs to be quickly drawn upward out of the path of movement of the wipers 56 and the tacking instrumentalities. The arm 66 of the toe hold-down is thus disengaged from the sole rest 34 and by the action of the spring 72 it is swung outward toward the toe gripper during its upward movement, such swinging movement being limited by the engagement of a projection 166 on the arm with the gripper casing 4 to permit the hold-down 64 to be moved upwardly past the gripper jaws 2 without engaging them. It will be understood that the toe hold-down, following its upward movement, is carried rearwardly with the toe gripper to make further room for the overlaying and fastening mechanisms. Since the withdrawing movement of the several hold-downs prior to their inward movement with the grippers is away from the plane of the sole, there is no tendency to displace the margin by engagement with the shoulder of the sole. Upward movement of the toe hold-down relatively to the toe gripper is limited by the engagement of the upper end of the arm 66 with a lug 168 on the gripper casing, and when the arm arrives in this position the projection 166 enters a recess 170 in the back of the casing and permits the hold-down to resume its original position close behind the toe gripper jaws. The upward movement of the side hold-downs is limited by engagement of the slides 84 with lugs 172 on the side gripper casings 12. When the grippers are released from the upper they have a further upward movement under the action of the springs 28 and 32, thereby permitting the hold-downs to be further retracted by the action of the spring 138 and bringing the arm 92 against the buffer 158. This buffer is of particular utility in the event that the machine is operated in the absence of any shoe, in which case the hold-downs receive their full upward movement immediately upon their release. A considerable shock upon the parts of the mechanism would result in such a case if a buffer were not provided.

It will be understood that before the machine comes to rest at the end of the final stage of the cycle of operations; the grippers, tacker arms, clamp arms and sole rest are all returned to their initial positions. As the cam slides 22 and 24 are moved upwardly they operate the updraw levers to move the grippers downwardly, and by reason of the engagement of the lug 168 on the toe gripper casing with the upper end of the arm 66 and of the projections 172 on the side gripper casings with the slides 84, the hold-downs and their connected slides and operating rods are carried downwardly with the grippers. During this movement the rods 94 operate the crank arms 90 and 92 to turn the shaft 88 forwardly against the tension of the spring 138. In the meantime the rods 30 and the link 110 move upwardly, and as the pin 114 is released by the link 110, a spring 174 which tends to turn the crank arm 116 in a counter-clockwise direction causes the crank arm 126 through its connections with the arm 116 to be turned in a direction opposite to the direction of turning movement of the shaft 88 until the teeth 132 of the clutch member 134 engage in the recesses in the hub of the crank arm 126, the clutch member having been previously released through the retraction of the slide 62. When the re-engagement of the clutch takes place the grippers are substantially at their limit of downward movement. The cam slides 22 and 24 however continue to rise to effect the opening of the gripper jaws and during this final movement the link 110 moves upwardly relatively to the pin 114 until the pin is substantially midway of the length of the slot 112, as shown in Fig. 1. In the final position of the parts, moreover, the pin 104 is substantially midway of the length

of the slot 106 in the rod 100, this resulting from the fact that the pin 104 moves downward faster than the rod 100 by reason of the greater distance of the pin from the axis of the shaft 88 as compared with the points of connection of the rods 94 with their crank arms 90 and 92.

As the grippers are returned to their starting positions the toe gripper carries the arm 66 of the toe hold-down into position to effect a reëngagement of the projection 78 on the sole rest in the slot 76 in the arm.

While the novel features of the invention have been explained by reference to a machine particularly designed for use in the manufacture of turn shoes, it will be understood that the invention in its broader aspects is not restricted in applicability to machines for operating upon shoes of this particular type.

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

1. In a pulling-over machine, an upper engaging gripper, a hold-down mounted on the gripper for engaging the margin of the sole of the shoe, and means for moving the gripper to pull the upper and for simultaneously moving the hold-down in the direction of the sole to position the margin of the sole with reference to the last.

2. In a pulling-over machine, an upper engaging gripper, a hold-down mounted on the gripper for engaging the margin of the sole of the shoe, and power operated means for moving said gripper and hold-down in substantially opposite directions in time relation.

3. In a pulling-over machine, a gripper for pulling an upper on a last, means for imparting upper pulling movement to said gripper, a hold-down mounted on the gripper for engaging the margin of the sole of the shoe, and power operated means automatically operative to move said hold-down in the direction of the sole while the gripper is moving to pull the upper.

4. In a pulling-over machine, gripper mechanism movable to pull an upper on a last and then to overdraw the upper, a hold-down mounted on said gripper mechanism for engaging the sole of the shoe, and power driven means for moving said hold-down to cause it to press upon the sole.

5. In a pulling-over machine, a gripper for pulling an upper over a last, a hold-down mounted on the gripper for engaging the margin of the sole of the shoe, and power operated means for imparting to said hold-down substantially rectilinear movement relatively to the gripper in the direction of the sole.

6. In a pulling-over machine, the combination with a gripper for engaging an upper on a last, a sole rest, and means for operating the sole rest to move the last relatively to the gripper in a direction to tension the upper, of a hold-down mounted on the gripper for engaging the margin of a sole on the last, and means for moving the hold-down with the last.

7. In a pulling-over machine, a gripper for engaging an upper on a last, means for moving said gripper in a direction transverse to the plane of the last bottom to pull the upper including a power shaft and connections between the shaft and the gripper, a hold-down for engaging the margin of a sole on the last, and means connecting the hold-down to said gripper operating connections for moving the hold-down in the direction of the sole through the movement of said connections.

8. In a pulling-over machine, gripper mechanism, power means for operating said mechanism to pull an upper over a last, a hold-down mounted on said gripper mechanism for engaging the sole of the shoe, and means connecting the hold-down to said operating means for moving the hold-down in the direction of the sole simultaneously with the movement of the gripper mechanism to pull the upper.

9. In a pulling-over machine, a gripper for engaging an upper on a last, gripper operating means comprising a power shaft and connections therefrom to the gripper movable first to close the gripper and then to move the gripper in a direction to tension the upper, a hold-down for engaging the sole of the shoe, and means connecting said hold-down to the gripper operating connections for moving the hold-down through said connections in a direction opposite to the direction of movement of the gripper, said connecting means having provision for lost motion to cause the gripper to be closed before the hold-down is operated.

10. In a pulling-over machine, the combination with means for pulling an upper over a last, of a hold-down constructed and arranged for engagement with the margin of a sole on the last for a substantial distance along the side edge of the last bottom, said hold-down being so mounted as to adjust itself to the lengthwise inclination of the shoe.

11. In a pulling-over machine, the combination with means for pulling an upper over a last, of a hold-down arranged to extend lengthwise of the shoe in engagement with a sole on the last along the side edge of the last bottom, said hold-down being pivotally mounted to permit it to adjust itself to the lengthwise contour of the sole.

12. In a pulling-over machine, the combination with means for pulling an upper over a last, of a hold-down arranged to ex-

tend lengthwise of the shoe in engagement with the side marginal edge of a sole on the last, and a support for said hold-down, the hold-down being mounted on said support to turn about an axis extending laterally of the shoe in response to pressure of the sole against it.

13. In a pulling-over machine, the combination with a toe gripper, of a hold-down carried by the gripper for engaging the feather of a shoe sole at the toe end, means for positioning said hold-down in close relation to the gripper at the back of the gripper jaws, and operating means for moving the gripper and the hold-down in substantially opposite directions, said operating means being constructed to retard the movement of the hold-down relatively to the movement of the gripper.

14. In a pulling-over machine, the combination with a toe gripper having rearwardly curved upper engaging jaws, of a hold-down positioned within the curve of said jaws for engagement with the margin of the sole of the shoe at the toe end when the shoe is presented to the machine, means for operating said gripper with a component of movement in a forward direction lengthwise of the shoe, and operating means for moving the hold-down in the direction of the shoe bottom, said operating means being constructed to retard the movement of the hold-down to permit the gripper to recede from the path of said movement.

15. In a pulling-over machine, the combination with a toe gripper, of a hold-down mounted on said gripper for engagement with the sole of a shoe, the connection between the gripper and the hold-down being constructed to permit relative movement of said parts lengthwise of the shoe during the upper pulling operation.

16. In a pulling-over machine, the combination with a toe gripper and means for operating said gripper to pull an upper over a last, of a hold-down mounted on said gripper for engagement with the sole of the shoe, said hold-down being pivoted on an axis extending laterally of the shoe in such relation to the gripper as to permit relative movement of the gripper and the hold-down lengthwise of the shoe during the upper pulling operation.

17. In a pulling-over machine, the combination with a gripper comprising upper engaging jaws and a gripper casing, of a slide mounted on said casing, a hold-down member carried by said slide for engagement with the sole of the shoe, and interconnected devices for moving the gripper and the slide respectively in opposite directions to pull the upper and to cause the hold-down member to press upon the sole.

18. In a pulling-over machine, the combination with a toe gripper comprising upper engaging jaws and a gripper casing, of a slide mounted on said casing, a hold-down member carried by said slide for engagement with the sole of the shoe, and means for moving the gripper and the slide in opposite directions to pull the upper and to cause the hold-down member to press upon the sole, said hold-down member being pivoted to the slide to permit the gripper to have a component of movement lengthwise of the shoe without alternating the relation of said member to the sole of the shoe.

19. In a pulling-over machine, the combination with a toe gripper and means for operating said gripper to pull an upper over a last with a component of movement lengthwise of the last, of a hold-down mounted on said gripper for engagement with the margin of the toe end of the sole, and means for restraining said hold-down from movement lengthwise of the last.

20. In a pulling-over machine, a toe gripper, means for operating said gripper to pull an upper over a last, a sole rest, a hold-down mounted independently of said sole rest for engagement with the margin of the toe end of the sole, and means for causing the sole rest to determine the position of said hold-down lengthwise of the shoe.

21. In a pulling-over machine, a toe gripper, means for operating said gripper to pull an upper over a last, a sole rest, a hold-down mounted on said gripper for engagement with the margin of the toe end of the sole, the connection between the gripper and the hold-down being constructed to permit the gripper to move relatively to the hold-down in a direction forwardly of the last, and a connection between the hold-down and the sole rest to cause the sole rest to restrain the hold-down from forward movement.

22. In a pulling-over machine, a toe gripper, means for operating said gripper to pull an upper over a last, a sole rest, a hold-down member for engaging the margin of the toe end of the sole, a support for said hold-down member pivotally connected to the gripper to permit relative movement of the gripper and the hold-down member lengthwise of the last, and a projection on the sole rest arranged to engage in a recess in said support to determine the position of the hold-down member lengthwise of the last.

23. In a pulling-over machine, a toe gripper, means for operating said gripper to pull an upper over a last with a component of movement forwardly of the last, a sole rest, a hold-down member for engaging the margin of the toe end of the sole, a support for said hold-down member pivotally connected to the gripper to permit forward movement of the gripper relatively to the hold-down member, a spring tending to swing said support toward the gripper, and a connection

between the support and the sole rest to restrain the hold-down member from movement with the gripper forwardly of the last.

24. In a pulling-over machine, the combination with grippers, a sole rest, and means for relatively moving said grippers and sole rest to pull an upper over a last, of a plurality of hold-downs mounted independently of said sole rest for engaging the margin of the shoe sole at the sides and at the toe end respectively, and means for moving said hold-downs in the direction of the sole during the upper pulling operation.

25. In a pulling-over machine, the combination with grippers and means for operating said grippers to pull an upper over a last, of a plurality of hold-downs for engaging the margin of the shoe sole at the sides and at the toe end respectively, a sole rest, means for operating said sole rest to move the last in a direction substantially opposite to the direction of the pull of the grippers, and a device independent of the sole rest operating means for moving the hold-downs in the direction of the sole simultaneously with the movement of the sole rest.

26. In a machine of the class described, the combination with grippers for engaging an upper at the toe and at opposite sides of a last and mechanism for operating said grippers to pull the upper, of members for engaging the margin of the shoe sole at the toe end and at the sides to prevent the margin from being lifted from the last during the upper pulling operation, and means connected to said members for withdrawing them from the margin of the sole to permit the upper to be carried over the sole into position to be fastened.

27. In a machine of the class described, the combination with means for pulling an upper on a last and means movable inwardly into position to fasten the upper to the shoe sole, of means for engaging the feather of the sole to position it in relation to the last during the operation of the upper pulling means, and means for causing said sole engaging means to be withdrawn from the feather of the sole in a direction transverse to the plane of the sole prior to the inward movement of said fastening means.

28. In a machine of the class described, the combination with means for pulling an upper on a last and means for fastening the upper to the shoe sole, of means for engaging the feather of the sole to position it in relation to the last during the operation of the upper pulling means, and means for withdrawing said sole engaging means from the feather of the sole so constructed as to avoid inwardly directed pressure against the shoulder of the sole.

29. In a pulling-over machine, the combination with grippers and means for operating said grippers to pull an upper over a last, of a plurality of hold-downs for engaging the margin of the shoe sole outside of the upper attaching shoulder at the sides and at the toe end respectively, said hold-downs being arranged with reference to the grippers to determine the lengthwise and sidewise position of the shoe when the shoe is presented to the machine, and means for operating said hold-downs to cause them to press upon the sole in the upper pulling operation.

30. In a pulling-over machine, the combination with a gripper and means for operating it to pull an upper on a last, of a hold-down mounted on the gripper for engaging the margin of the shoe sole, a rock shaft to which the hold-down is connected, and means for operating said rock shaft to depress the hold-down simultaneously with the pulling movement of the gripper.

31. In a pulling-over machine, the combination with grippers and means for operating said grippers to pull an upper over a last, of a plurality of hold-downs associated with said grippers for engaging the margin of the shoe sole at the sides and at the toe end respectively, and means for moving said hold-downs in the direction of the sole comprising a rock shaft having crank arms thereon and mechanism connecting said arms with the hold-downs.

32. In a pulling-over machine, the combination with grippers and means for operating said grippers to pull an upper over a last, of a plurality of hold-down members associated with said grippers for engaging the margin of the sole of the shoe, slides on the grippers for supporting said hold-down members, a rock shaft, means connecting the rock shaft to said slides, and means for operating said rock shaft to move the hold-down members in the direction of the shoe.

33. In a pulling-over machine, the combination with grippers and mechanism for operating said grippers to pull an upper over a last, of a plurality of hold-down members associated with said grippers for engaging the margin of the shoe sole, slides on the grippers for supporting said hold-down members, a rock shaft, means connecting the rock shaft to said slides, and mechanism connecting the rock shaft to the gripper operating mechanism for moving the hold-down members in the direction of the shoe simultaneously with the movement of the grippers.

34. In a machine of the class described, the combination with means for laying the margin of an upper over a sole on a last, of a hold-down for the margin of the sole, means for locking said hold-down in operative position, a spring for retracting the hold-down, and mechanism for tripping said

locking means to permit the hold-down to be retracted by the spring out of the path of movement of said overlaying means.

35. In a machine of the class described, the combination with means for laying the margin of an upper over a sole on a last, of a hold-down for the margin of the sole, means including a clutch for maintaining said hold-down in sole engaging position, means for retracting the hold-down from the sole, and means for operating the clutch to release the hold-down and permit it to be retracted.

36. In a machine of the class described, the combination with means for laying the margin of an upper over a sole on a last, of a hold-down for the margin of the sole, means including a clutch for maintaining the hold-down in operative position, a spring for retracting the hold-down, and means for operating said clutch to permit the spring to retract the hold-down.

37. In a pulling-over machine, the combination with a gripper and means for operating said gripper to pull an upper over a last, of a hold-down mounted on the gripper for engagement with the shoe sole, power operated means for imparting operative movement to the hold-down, means for retracting the hold-down from the sole, and a stop on the gripper for limiting the retracting movement of the hold-down.

38. In a pulling-over machine, the combination with a gripper and means for operating said gripper to pull an upper over a last, of a hold-down mounted on the gripper, a stop on the gripper for determining a position of the hold-down for engagement with the sole of a shoe when the shoe is presented to the machine, means for moving the hold-down relatively to the gripper in the direction of the sole in time relation to the movement of the gripper, and spring means for retracting the hold-down to the position determined by the stop.

39. In a pulling-over machine, the combination with a gripper and means for operating said gripper to pull an upper over a last, of a hold-down mounted on the gripper for engagement with the sole of the shoe, means for moving the hold-down relatively to the gripper in the direction of the shoe, spring means for retracting the hold-down, and automatic means for releasing the hold-down to permit it to be retracted by said spring means.

40. In a pulling-over machine, the combination with a gripper and means for operating said gripper to pull an upper over a last, of a hold-down mounted on the gripper for engagement with the sole of the shoe, means including a rock shaft to which the hold-down is connected for moving the hold-down relatively to the gripper in the direction of the shoe, and a spring for operating said rock shaft to retract the hold-down.

41. In a pulling over machine, the combination with a gripper and means for operating said gripper to pull an upper over a last, of a hold-down for the sole of the shoe, a rock shaft to which the hold-down is connected, means including a clutch for operating said rock shaft to move the hold-down in the direction of the shoe, a spring for retracting the hold-down, and means for operating said clutch to permit the hold-down to be retracted.

42. In a pulling-over machine, the combination with a gripper and means for operating said gripper to pull an upper over a last, of a hold-down for the sole of the shoe, means including a clutch for imparting operative movement to the hold-down, means for releasing said clutch to permit the hold-down to be retracted from the shoe, and means operative subsequently during the cycle of operations of the machine for resetting the clutch.

43. In a pulling-over machine, the combination with a gripper and means for operating said gripper to pull an upper over a last, of a hold-down for the sole of the shoe, a clutch comprising relatively rotatable members to one of which the hold-down is connected, and operating mechanism connected to the other clutch member for effecting an operative movement of the hold-down relatively to the gripper.

44. In a pulling-over machine, the combination with a gripper and means for operating said gripper to pull an upper over a last, of a hold-down for the sole of the shoe, a clutch comprising relatively rotatable members to one of which said hold-down is connected, operating mechanism connected to the other clutch member for effecting an operative movement of the hold-down in the direction of the shoe, a spring for retracting the hold-down from the shoe, and means for disconnecting said clutch members to permit the hold-down to be treated.

45. In a pulling-over machine, the combination with a gripper and means for operating said gripper to pull an upper over a last, of a hold-down mounted on the gripper for engagement with the sole of the shoe, a clutch comprising relatively rotatable members to one of which said hold-down is connected, operating mechanism connected to the other clutch member for effecting an operative movement of the hold-down in the direction of the shoe, a spring connected to said first named clutch member for retracting the hold-down from the shoe, means for disconnecting the clutch members to permit the hold-down to be retracted, and means

for causing the gripper to return said first named clutch member into position to be connected again to the other clutch member.

46. In a pulling-over machine, the combination with grippers, side clamp arms for the shoe, and means including a slide for operating said clamp arms, of a hold-down for the shoe sole, means including a clutch for imparting an operative movement to said hold-down, means for retracting the hold-down from the shoe, and means operated by said slide for releasing said clutch to permit the hold-down to be retracted.

47. In a pulling-over machine organized to tension an upper on a last, to come automatically to a stop with the upper under tension, and to lay the upper over the margin of the shoe sole after the machine has been started a second time, the combination with upper tensioning means and overlaying means, of means for engaging the margin of the sole at the toe end and at the sides to position it on the last, and means operative after the machine has been started subsequent to the upper tensioning period of the cycle of operations for withdrawing said positioning means from the margin of the sole.

48. In a machine of the class described, the combination with means for pulling an upper over a last, means for laying the upper over the margin of a sole on the last and means for fastening the upper to the sole, of means for engaging the margin of the sole to position it on the last during the upper pulling operation, and power operated means automatically operative independently of said overlaying and fastening means to cause said positioning means to move away from the margin of the sole in a direction transverse to the plane of the sole.

49. In a pulling-over machine organized to tension an upper on a last, to come automatically to a stop with the upper under tension, and to overlay and fasten the upper to the sole after the machine has been started a second time, the combination with upper tensioning means and overlaying and fastening means, of means for engaging the margin of the sole to position it in relation to the last, and means operative after the machine has been started subsequent to the upper tensioning period of the cycle of operations for withdrawing said positioning means from the margin of the sole in a direction transverse to the plane of the sole to permit the operation of the fastening means.

50. In a pulling-over machine, the combination with grippers for engaging an upper on a last, means for operating said grippers to pull the upper, and means for laying the upper over the margin of the shoe sole, of hold-downs for engaging the margin of the sole at the toe and at the sides to position the margin relatively to the last during the upper pulling operation, the machine having means for causing said hold-downs to be withdrawn from the margin of the sole prior to the operative movement of said overlaying means.

51. In a machine of the class described, the combination with a gripper and power driven means for moving it transversely of the plane of a sole on a last to pull an upper, said gripper being subsequently movable inwardly along the plane of the sole, of a sole edge hold-down member associated with said gripper to move inwardly with it along the plane of the sole, said gripper and hold-down member being relatively movable in directions transverse to the plane of the sole, and automatically operative controlling means for said member to position it in engagement with the sole in the upper pulling operation.

52. In a machine of the class described, a gripper and a sole edge hold-down member associated for movement together as a unit along the plane of the sole of a shoe and arranged for relative movement in directions transverse to said plane, means for moving the gripper transversely of the plane of the sole to pull the upper, and automatically operative means for controlling said hold-down member to position it in engagement with the sole and to cause it to withdraw from the sole independently of the inward movement of the gripper after the upper has been pulled.

53. In a pulling-over machine, the combination with a gripper for pulling an upper on a last, said gripper being mounted for movement after the upper pulling operation to draw the margin of the upper inward over the sole of the shoe on the bottom of the last, of a hold-down member arranged to engage the marginal edge of the sole to position it on the last during the upper pulling operation, said member being mounted for movement with the gripper inward over the sole, and means for moving said member out of engagement with the sole prior to the inward movement of the gripper.

54. In a pulling-over machine, the combination with a gripper for engaging an upper on a last, and means for effecting relative movement of said gripper and the last to pull the upper, the gripper being mounted for movement inward over the sole of the shoe on the bottom of the last after the upper pulling operation, of a member arranged to engage the feather of the sole to position it on the last during the upper pulling operation, said member being mounted for movement with the gripper inward over the sole, and means for causing said member to move in a direction transverse

to the plane of the sole to withdraw it from engagement with the feather of the sole independently of the inward movement of the gripper.

55. In a pulling-over machine, the combination with a gripper for engaging an upper on a last, and means for effecting relative movement of said gripper and the last to pull the upper, the gripper being mounted for movement after the upper pulling operation to draw the margin of the upper inward over the sole of the shoe on the bottom of the last, of a member arranged to engage the feather of the sole to position it on the last, said member being mounted for movement with the gripper inward over the sole, and means for moving said member first in a direction to cause it to press upon the sole and for subequently withdrawing it from engagement with the feather of the sole to permit it to move inward with the gripper.

56. In a pulling-over machine, the combination with grippers for pulling an upper at the toe and at opposite sides of a last, said grippers being movable inwardly over the bottom of the last after the upper pulling operation, of a plurality of hold-down members for engaging the marginal edge of the sole of the shoe to position it relatively to the last during the upper pulling operation, and means for causing said members to withdraw from operative position prior to the inward movement of the grippers.

57. In a pulling-over machine, the combination with grippers for pulling an upper at the toe and at opposite sides of a last, said grippers being movable inwardly over the bottom of the last after the upper pulling operation, of a plurality of hold-down members for engaging the marginal edge of the sole of the shoe to position it relatively to the last during the upper pulling operation, and spring means for effecting a retractive movement of said members prior to the inward movement of the grippers.

58. In a pulling-over machine, the combination with grippers for pulling an upper at the toe and at opposite sides of a last, said grippers being movable inwardly over the bottom of the last after the upper pulling operation, of a plurality of hold-down members for engaging the marginal edge of the sole of the shoe to position it relatively to the last during the upper pulling operation, said members being mounted for movement inwardly with the grippers, and mechanism connected to said members for withdrawing them from operative position prior to their inward movement.

59. In a pulling-over machine, the combination with grippers for engaging an upper at the toe and at opposite sides of a last, said grippers being movable inwardly over the bottom of the last, of a plurality of members for engaging the marginal edge of the sole of the shoe to position it on the last, said members being movable inwardly with the grippers, and mechanism common to the several members for withdrawing them from operative position.

60. In a pulling-over machine, a gripper for engaging an upper on a last, means for moving the last in a direction to cause the gripper to pull the upper, a member mounted on said gripper for engaging the marginal edge of the sole of the shoe to position it on the last, and means for moving said member relatively to the gripper to maintain it in engagement with the sole in the upper pulling operation.

61. In a machine of the class described, the combination with a gripper for engaging an upper on a last, and means for operating said gripper to pull the upper, of a sole rest, a member mounted on said gripper for engaging the margin of the sole of the shoe to hold said margin in position on the bottom of the last, said member being arranged in position to engage the marginal edge of the sole when the work is initially presented to the machine, and means for moving said member and the sole rest together to force the last into the upper while maintaining said member in operative engagement with the sole.

62. In a machine of the class described, the combination with a gripper for engaging an upper on a last, a sole rest, and means for moving the sole rest relatively to the gripper to tension the upper, the gripper being movable inwardly over the sole of the shoe after the upper tensioning operation, of a member for engaging the marginal edge of the sole to position it on the last, said member being mounted for movement inwardly with the gripper, and means for moving said member relatively to the gripper to maintain it in engagement with the sole during the upper tensioning movement of the sole rest.

63. In a pulling-over machine, the combination with grippers for engaging an upper at opposite sides of a last, of members mounted on said grippers for engaging the marginal edge of the sole of a shoe in locations opposite to the portions of the upper engaged by said grippers to position the margin of the sole in the correct relation to the last, said members being self-adjustable relatively in different angular relations to the grippers in substantial conformity to the lengthwise contour of the bottom surface of the sole.

64. In a pulling-over machine, the combination with a gripper having jaws curved for engagement with an upper around the toe end of a last, and means for effecting relative movement of said gripper and the last to pull the upper, of a member mount-

ed on said gripper for engaging the margin of the sole of the shoe to position said margin on the last, said member being curved similarly to said gripper jaws in substantial conformity to the edge contour of the sole around the toe, and means for maintaining said member in engagement with the sole while the upper is pulled by the gripper.

65. In a pulling-over machine, the combination with an upper engaging gripper, and means for moving said gripper diagonally outward from the bottom edge of the last to pull the upper, of a hold-down member mounted on said gripper for engagement with the marginal edge of the sole of the shoe, said member being pivoted on an axis extending substantially lengthwise of the edge of that portion of the upper engaged by said gripper and in such relation to the gripper as to permit the gripper to pull the upper outward without substantially altering the relation of said member to the sole.

66. In a pulling-over machine, the combination with a gripper movable diagonally outward from the bottom edge of a last to pull an upper and movable subsequently inward over the bottom of the last, of a member for engaging the marginal edge of the sole of the shoe to position it on the last, said member being mounted for movement inward with the gripper, and means for restraining said member from moving outward with the gripper during the upper pulling operation.

67. In a pulling-over machine, the combination with an upper engaging gripper, of a hold-down member mounted on said gripper for engagement with the marginal edge of the sole of the shoe, the connection between said member and the gripper being so constructed as to permit the gripper to pull the upper outward from the edge of the last bottom while the member remains in engagement with the sole, and means for determining the position of said member irrespective of the outward pulling movement of the gripper.

68. In a pulling-over machine, a gripper for engaging an upper on a last, means for moving said gripper in a direction transverse to the plane of the last bottom to pull the upper, a member mounted on said gripper for engaging the marginal edge of the sole of the shoe to position said edge on the last during the upper pulling operation, and means for controlling said member to determine its position during said upper pulling operation irrespective of the movement of the gripper.

69. In a pulling-over machine, the combination with an upper engaging gripper, of a hold-down device for engaging the marginal edge of the sole of the shoe, said device being slidably mounted on the gripper to permit relative movement of said device and gripper in directions transverse to the plane of the sole of the shoe, and means for controlling said hold-down device irrespective of movement of the gripper.

70. In a pulling-over machine, the combination with means for working an upper over a last, and a sole rest, of a hold-down member mounted independently of said sole rest for engagement with the marginal edge of the sole of the shoe, and a connection between said member and the sole rest to determine the position of said member.

71. In a pulling-over machine, the combination with an upper engaging gripper and a sole rest, of a hold-down member mounted on said gripper for engagement with the marginal edge of the sole of the shoe, the connection between said member and the gripper being so constructed as to permit the gripper to pull the upper outward from the edge of the last bottom while the member remains in engagement with the sole, and means connecting said member to the sole rest to determine the position of the member.

72. In a pulling-over machine, the combination with grippers for engaging an upper at the toe and at opposite sides of a last, of a plurality of hold-down members carried by said grippers for engagement with the marginal edge of the sole of the shoe, and mechanism common to the several hold-down members for withdrawing them from operative position.

73. In a machine of the class described, the combination with means for working an upper over a last, of a plurality of hold-down members for engaging the marginal edge of the sole of the shoe, and a common operating mechanism connected to all of said members and constructed to withdraw them from operative position in a direction transverse to the plane of the sole.

74. In a machine of the class described, the combination with means for working an upper over a last, of a plurality of members for engaging the marginal edge of the sole of the shoe to position it on the last, spring mechanism common to said members for withdrawing them from operative position, and tripping means for rendering said mechanism effective to withdraw the members.

75. In a machine of the class described, the combination with means for working an upper over a last, of a plurality of hold-down members for engaging the marginal edge of the sole of the shoe, spring means for withdrawing said members from operative position, and a clutch for controlling the operation of said spring means.

76. In a machine of the class described, the combination with means for working an upper over a last, of a member for engaging the marginal edge of the sole of the shoe to

position it on the last, spring means for withdrawing said member from operative position in a direction transverse to the plane of the sole, and a tripping device for rendering said spring means effective to withdraw the member.

77. In a machine of the class described, the combination with means for working an upper over a last, of a member for engaging the marginal edge of the sole of the shoe to position it on the last, a rock shaft connected to said member, and a spring for operating the rock shaft to withdraw the member from operative position.

78. In a pulling-over machine, the combination with grippers for engaging an upper on a last, side clamp arms for the shoe, and operating means for said clamp arms, of a hold-down member for engaging the marginal edge of the sole of the shoe, means for withdrawing said member from operative position, and mechanism for rendering said operating means for the clamp arms effective to control the operation of said withdrawing means.

79. In a pulling-over machine, the combination with grippers for engaging an upper on a last, side clamp arms for the shoe, and operating means for moving said clamp arms toward the shoe, of a hold-down member for engaging the marginal edge of the sole of the shoe, a spring for withdrawing said member from operative position, and mechanism for rendering said operating means for the clamp arms effective to trip said spring.

80. In a machine of the class described, the combination with end embracing wipers arranged to be positioned manually against the upper of a shoe, and means for subsequently operating said wipers, of means for engaging the marginal edge of the sole of the shoe at the toe end of the shoe to hold it on the last during the positioning of the wipers, and mechanism arranged to be operated in time relation to the operative movement of the wipers for causing said edge engaging means to be withdrawn from engagement with the sole in a direction transverse to the plane of the sole.

81. In a machine of the class described, the combination with means for pulling an upper on a last and for then holding the upper under tension with the machine at rest, end embracing wipers arranged to be positioned manually against the upper while the machine is at rest, and means for operating the wipers when the machine is again started, of means for engaging the marginal edge of the sole of the shoe at the toe end of the shoe to position it on the last during the upper pulling and wiper positioning operations, and mechanism operative in time relation to other parts of the machine for causing said edge engaging means to be withdrawn from engagement with the sole in a direction transverse to the plane of the sole.

82. In a machine of the class described, the combination with a gripper for pulling an upper at the toe end of a last, said gripper being movable inwardly over the bottom of the last after the upper pulling operation, end embracing wipers, and means for operating said wipers, of a member for engaging the marginal edge of the sole of the shoe to position it on the last during the upper pulling operation, said member being mounted for movement inwardly with the gripper, and mechanism operative in time relation to other parts of the machine for causing said member to be withdrawn from operative position prior to its inward movement.

83. In a machine of the class described, a gripper and a sole edge hold-down member associated for movement together as a unit along the plane of the sole of a shoe and arranged for relative movement in directions transverse to said plane, power means for moving the gripper transversely of the plane of the sole to pull the upper, and additional power means for controlling the hold-down member.

84. In a machine of the class described, a gripper and a sole edge hold-down member associated for movement together as a unit along the plane of the sole of a shoe and arranged for relative movement in directions transverse to said plane, and power operated means for moving said gripper and hold-down member in substantially opposite directions for pulling the upper and for positioning the margin of the sole on the last.

85. In a machine of the class described, the combination with opposite side grippers mounted for updrawing and overdrawing movements and power means for operating said grippers, of sole edge hold-down members associated with said grippers to move with them in the overdrawing operation, said grippers and hold-down members being relatively movable in directions transverse to the plane of the sole, and automatically operative controlling means for said hold-down members to determine their relation to the plane of the sole independently of the movements of the grippers.

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

BERNHARDT JORGENSEN.

Corrections in Letters Patent No. 1,379,924.

It is hereby certified that in Letters Patent No. 1,379,924, granted May 31, 1921, upon the application of Bernhardt Jorgensen, of Beverly, Massachusetts, for an improvement in "Machines for Shaping Uppers to Lasts," errors appear in the printed specification requiring correction as follows: Page 1, line 106, for the word "mechanism" read *mechanisms;* page 7, line 76, claim 18, for the word "alternating" read *altering;* page 8, line 24, claim 25, for "a device" read *means;* same page, line 38, claim 26, for the word "means" read *a device;* page 9, line 113, claim 44, for the word "treated" read *retracted;* page 11, line 121, claim 63, strike out the word "relatively"; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 28th day of June, A. D., 1921.

[SEAL.]

KARL FENNING,
Acting Commissioner of Patents.

Cl. 12—4.