

1,358,137.

Patented Nov. 9, 1920.
2 SHEETS—SHEET 1.

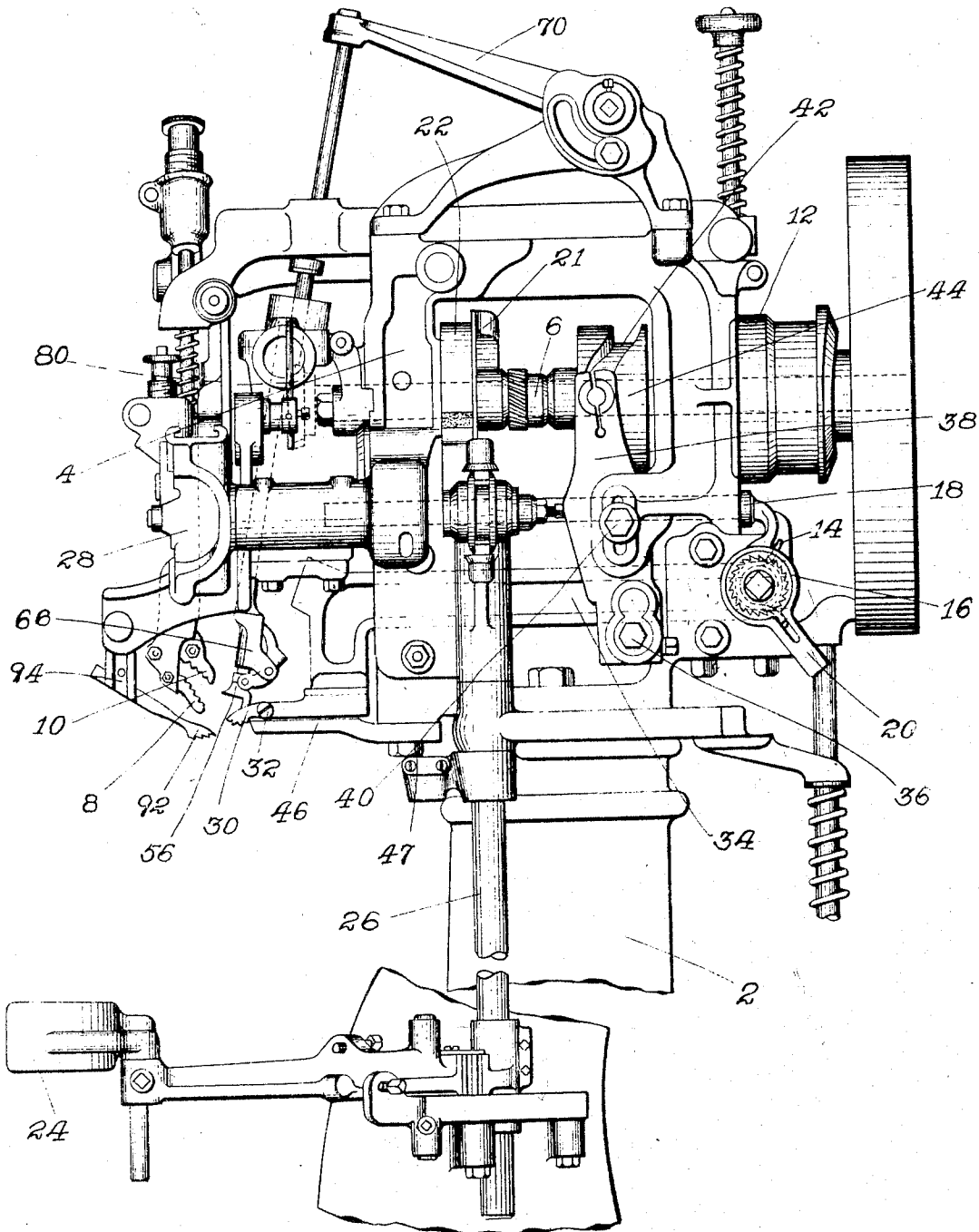


Fig. 1.

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1,358,137.

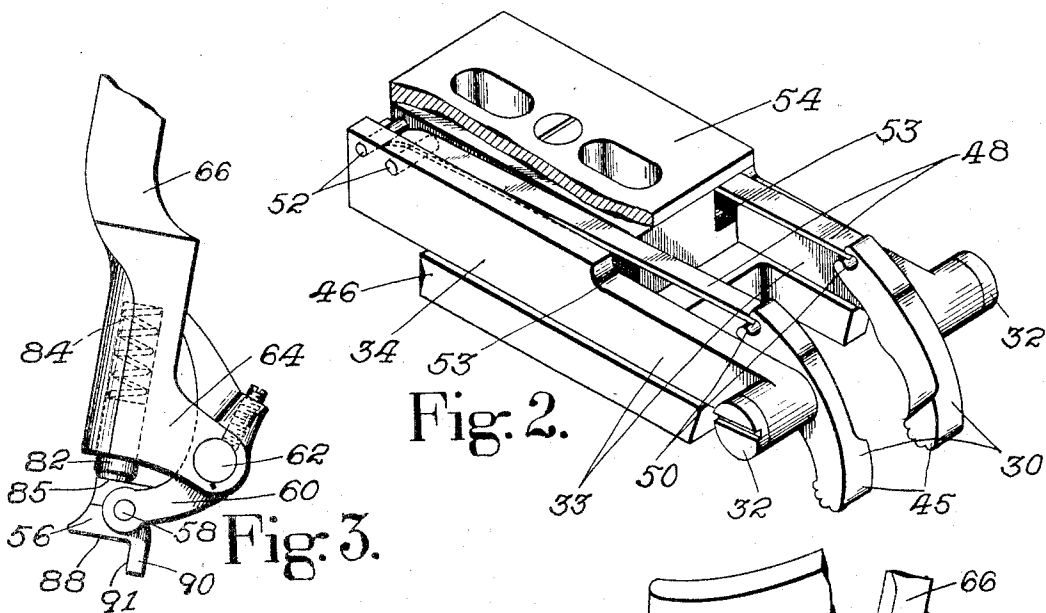
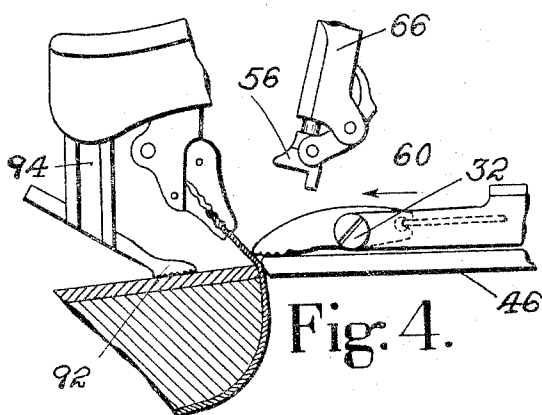
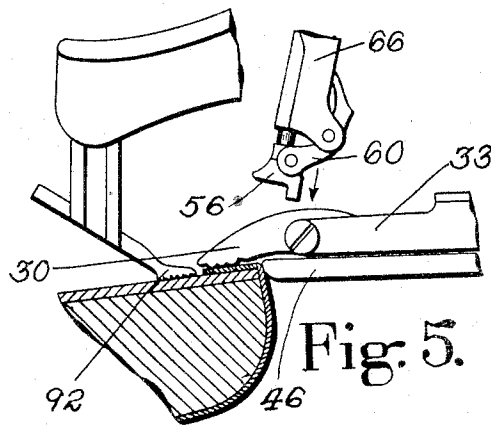
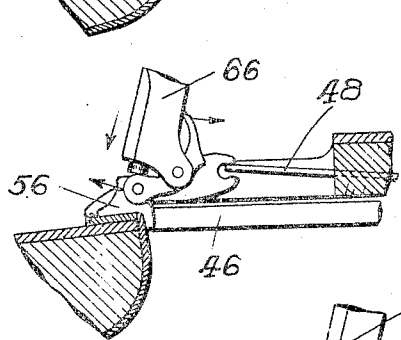
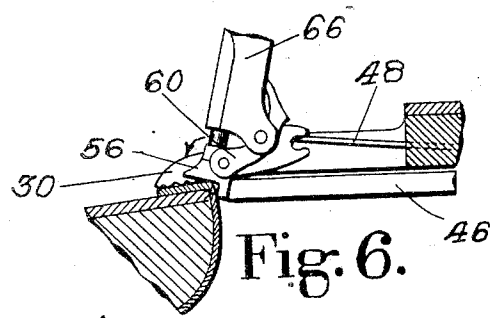


Fig. 7.

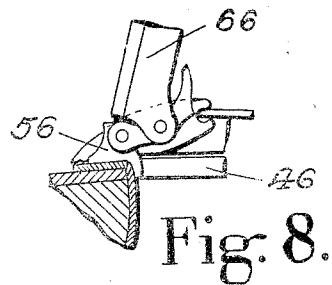


Fig. 8.

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UNITED STATES PATENT OFFICE.

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

LASTING-MACHINE.

1,358,137.

Specification of Letters Patent.

Patented Nov. 9, 1920.

Application filed December 16, 1916. Serial No. 137,353.

To all whom it may concern:

Be it known that I, LOUIS A. CASGRAIN, a citizen of the United States, residing at Beverly, in the county of Essex and State of Massachusetts, have invented certain Improvements in Lasting-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to machines which are especially adapted for use in connection with the lasting of shoes and is herein shown and described in an embodiment particularly designed for use in lasting shoes of the type having an outer sole of rubber composition vulcanized to the upper of the shoe. In the manufacture of vulcanized rubber soled shoes of the type in which an inexpensive molded rubber compound known as "rag stock" is used for an innersole, and cement used to attach the upper to the innersole, the lasting operation on the shoe has heretofore been performed entirely by hand, the operator drawing the upper over on to the innersole and sticking it down in lasted position on the innersole by his fingers. This hand process of lasting these shoes has been necessitated primarily because of the fact that the types of lasting machines ordinarily employed for lasting leather shoes use metallic fastenings for a temporary fastening medium which the "rag stock" innersoles of vulcanized rubber soled shoes are not adapted to receive and hold against the strain of the tensioned upper. It is obvious that there are numerous disadvantages which result from lasting these shoes by hand and that the cost of hand lasting is far in excess of what might be expected to be a reasonable ultimate cost if the lasting were to be done by an efficient machine. In the first place, it is practically impossible to apply any substantial amount of tension to the upper by the fingers to draft the upper snugly about the last and, unless the lasted-in portion of the upper is firmly attached to the innersole by the cement, which usually involves a separate operation known as "rolling down," considerable difficulty is experienced in obtaining a proper vulcanization of the various bottoming materials including the outsole to the shoe. Further-

more, the quality of the work obtained by the practice of the hand process of lasting varies considerably and therefore does not enable a uniform grade of shoes to be produced, but this process produces a large number of shoes which have to be sold as "seconds" below the cost of production, and the loss on these seconds must be added in in computing the ultimate cost of hand lasting.

An object of the present invention is to provide a power-operated machine for use in the lasting of shoes which will be especially adapted to effect the lasting of vulcanized rubber soled shoes and by the use of which the upper may be conformed to the last more accurately and uniformly and with greater efficiency than can be obtained by the hand process of lasting heretofore employed.

In accordance with an important feature of the lasting machine of the present invention, the shoe upper is drafted about the last by power-operated upper tensioning means, and novel cooperating means are provided to wipe in the marginal portion of the upper on to the innersole and to press the overwiped portion on to the innersole while the upper is still under tension by the upper tensioning means.

It is extremely important in a machine for lasting shoes of this type to keep the portion of the upper which is to be wiped over on to the innersole away from the upper surface of the innersole until the upper has been sufficiently tensioned about the last, otherwise the cement-coated marginal portion of the shoe upper would adhere or become attached to the surface of the innersole before the upper was properly positioned thereon, which conditions would necessitate relasting the shoe with a consequent loss of time and labor. To this end the upper tensioning means of the machine of this invention is constructed and arranged to hold the shoe upper away from the upper surface of the innersole while it is under tension until such time as the wiping means is operated to wipe the portions of the tensioned upper into lasted position on the innersole. In the embodiment of the invention herein illustrated and described, the means for wiping the marginal portion of the upper over on to the innersole comprises

two wiping fingers located on either side of the upper tensioning means and adapted to wipe the tensioned portions of the upper into lasted position on the innersole at either side of the upper tensioning means and to press it down firmly into contact with the innersole.

A further important feature of the invention is found in the association with the upper tensioning means and the wiping means of additional means for lasting in that portion of the upper which is held out of contact with the innersole by the upper tensioning means during the operation of the wiping fingers on either side of the upper tensioning means. This means, as herein shown, is preferably operated after the upper tensioning means has completed the tensioning of the portion of the upper acted upon by it and immediately before the completion of the cycle of operations of the machine. In the illustrated embodiment, the means for lasting in the portion of the upper held by the upper tensioning means comprises a combined wiping and beating element which is so constructed and arranged that the portion of the upper engaged by it receives a combined wiping and beating action to work the upper into lasted position on to the innersole and also a blow of sufficient force to pound the upper down compactly and to set it firmly in lasted position on the innersole. During the progressive stages of lasting the shoe, this beating element operates on successive portions of the shoe bottom, forcing the cemented marginal portion of the upper into firm adhesion on the innersole whereby the separate "rolling down" operation heretofore necessary with hand lasting is entirely eliminated.

In accordance with a further feature of this invention, this wiping and beating tool is also constructed and arranged to engage the side face of the last so as to conform the upper materials thereto and enable a square shoulder to be obtained along the edge of the shoe corresponding to the edge of the last.

Other features and objects of the invention will appear from the following description and claims when considered in connection with the accompanying drawings, and the novel features are set forth in the appended claims.

In the drawings,—

Figure 1 is a side elevation of a preferred embodiment of the lasting machine of the present invention.

Fig. 2 is a perspective view of the wiper mechanism employed with the present machine.

Fig. 3 is an enlarged side elevation of the upper wiping and pounding member.

Fig. 4 is a view showing the relative posi-

tions of the various lasting parts which operate on the shoe immediately before the movement of the gripper to tension the upper.

Fig. 5 is a view showing the position of the wipers at the completion of their wiping movement.

Fig. 6 is a view showing the position of the upper wiping and beating member upon its engagement with the shoe.

Fig. 7 is a view showing the relative position of the upper wiping and beating member at the completion of its wiping movement.

Fig. 8 is a view showing the positions of the various lasting members at the completion of their operations on the shoe.

The machine in which the present invention is herein shown as embodied for the purposes of illustration is similar in its organization to that shown and described in United States Letters Patent No. 584,744, granted June 15, 1897 on application of L. W. Ladd, to which patent reference should be had for a more complete description of the construction and operation of the mechanism than is detailed herein. The machine comprises a column 2 which supports a head 4 on which are mounted the various operating parts of the machine and in which is journaled the main shaft 6 carrying the cams and gears for imparting the proper motions to operate the various lasting devices.

The gripper for tensioning the upper about the last comprises jaws 8 and 10 which are power operated through suitable connections to a cam 12 on the main shaft 6 first to descend and seize the marginal edge of the shoe upper and then to rise and apply tension to the upper to draft it about the last. Advantageously the gripper jaws may be caused, after tensioning the upper, to retain a light grip on it until the upper is pulled out from them by the upper wiping means that I shall describe. A gripper operating mechanism particularly adapted for this purpose is disclosed in Letters Patent No. 1,305,218, granted May 27, 1919, upon an application of T. H. Seely. The gripper is also operated to move in a direction to draw the tensioned upper over the edge of the sole toward position to be secured in overworked position by a torsion spring 14 acting through a lever 16 on the rear end of a rod 18 the other end of which is attached to the gripper. The tension of the spring 14 to vary the tension applied to the upper during the overdraw may be regulated by an adjusting device 20 and rearward motion of rod 18 is imparted by a cam 21. It is necessary at times, particularly when lasting around the toe of the shoe and sometimes at other points, to effect an axial turning or lateral swinging movement of the

gripper to fold or plait the upper in order to dispose of the fullness of upper materials at those points. This movement of the gripper is effected by suitable mechanism operated from a cam 22 on the main shaft, this mechanism including adjustable means for rendering the plaiting means operative or inoperative as desired through movement of a knee lever 24 which turns a rockshaft 26 which, in turn, through suitable connections, operates a sliding block 28 for starting, stopping and controlling the lateral swinging and turning movements of the gripper, all of said mechanism being fully shown and described in the Letters Patent above referred to.

In order properly to last the cemented marginal portion of the upper over on to the rubber compound innersole with accuracy and facility and to insure a satisfactory adhesion between these two parts, the overlaying and fastening instrumentalities of the prior machine have been replaced by novel instrumentalities peculiarly adapted for the work here under consideration. These include, among other devices, lasting wipers or fingers constructed and arranged to wipe the tensioned upper over on to the bottom of the innersole while the upper is under the tension applied to it by the gripper and while it is held out of engagement with the innersole. As herein shown, the lasting wipers comprise two fingers 30 located on either side of the gripper 8, 10 and pivoted on studs 32 to the forward ends of arms 33 of a forked slide 34 which is mounted for horizontal reciprocation toward and from the gripper 8, 10 in guideways in the machine frame. The rear end of the slide 34 is connected at 36 to the lower end of a lever 38 fulcrumed at 40 on the frame and carrying at its upper end a cam roll which travels in a cam groove 42 in a cam 44 on the main shaft 6 for reciprocating the wipers. The under surface of the forward ends of each of the wiping fingers is preferably provided with teeth or corrugations 45 to increase the frictional wiping action of the wipers on the upper. As illustrated in Fig. 4, the wiping fingers 30 are normally in retracted or inoperative position with the forward ends of the fingers resting on the upper surface of a stationary shoe engaging ledge or edge gage 46 adjustably secured at 47 to the machine frame and underlying the reciprocating slide 34. During the forward movement of the fork slide 34, the forward ends of the wiping fingers 30 ride off the ledge 46 and are forced yieldingly downwardly so as to enable them to accommodate themselves to the plane of the shoe bottom, as shown in Fig. 5, by leaf springs 48 each of which is received at its forward end in a recess 50 in the rearwardly extending part of the wiping fingers 60 and at its rear end is secured to the slide 34

by the pins 52, the leaves being located for vertical movement in slots 53 in the slide 34 and held in place in the slide by a cover plate 54. The wiping fingers 30 preferably start to advance immediately before the upper is released by the gripper so as to engage and wipe in the marginal portion of the upper on either side of the gripper before reaction of the tensioned upper can occur. By this arrangement it will be seen that the portion of upper acted upon by the wipers 30 is also held out of contact with the innersole of the shoe until the gripper releases the upper and the spring-pressed fingers 30 draw the upper from between the jaws as they advance so that the upper is wiped into lasted position progressively from near the extreme edge of the last, thus eliminating any tendency of the marginal portion of the upper to adhere to the innersole before it is wiped over into final lasted position.

Means are also provided for lasting over on to the innersole the portion of upper which was held by the gripper during the tensioning of the upper and the operation of the wiping fingers 30, this means also operating to deliver a blow upon the marginal portion of the shoe bottom to force the lasted upper into contact with the innersole at successive points during progressive stages of lasting the shoe to insure proper adhesion between the upper and the innersole. As herein illustrated this cooperating wiper and beating tool is adapted to operate between the wiping fingers 30 and comprises a combined wiping and beating element 56 pivotally secured on the stud 58 to the lower end of a vertically-disposed arc-shaped arm 60 which is pivotally secured intermediate its ends on a stud 62 in a rearwardly projecting lug 64 formed on the lower end of a vertically reciprocable carrier bar 66. The upper end of this carrier bar is acted upon by the outer end of a driving arm 70 carried on the machine frame, the arm 70 being provided with a torsion spring arranged to cause the arm 70 to impel the carrier bar downwardly. The carrier bar is raised into operative position against the action of this torsion spring by connections with a cam 80 on the main shaft. The wiping and beating element 56 is maintained in normal or depressed position relatively to the lower end of the carrier bar 66 by a spring-pressed plunger 82 located in a longitudinally extending recess 84 in the carrier bar 66 and having its outer end in engagement with a flat surface 85 on the member 56 at a point forward of its pivotal connection at 58 with the arm 60. The upper end of the arc-shaped arm 60 engages the back of the carrier bar 66 to limit the position of the wiper plate 56 under the action of the plunger 82. It will be noted that by pivoting the wiper

plate 56 to the carrier arm 66 at a point considerably offset rearwardly from the axis of the carrier bar and also by permitting the wiper to yield upwardly against the action of the spring-pressed plunger 82, a combined inward wiping movement is imparted to the carrier when it engages the shoe to wipe the tensioned upper over on to the shoe bottom, and also a yielding blow is transmitted to the upper materials on the shoe bottom. The wiping element 56 is preferably provided with a flat wiping face 88 and at its inner or rear edge is provided with a flange 90 which depends at substantially right angles to the wiping face 88 and presents an inner face 91 to engage the side of the last. This wiping member is preferably so arranged as to engage the upper simultaneously with the completion of the overwiping or lasting movement of the wiping fingers 30 so that substantially no reaction of the upper is allowed to take place before it is forced into contact with the innersole. As the wiping and beating member 25 descends to operate upon the portion of upper held by the gripper 8, 10, one portion only of the wiping face 88 of the plate engages the shoe bottom as shown in Fig. 6, and then further downward movement of the wiper and 30 beater member effects an inward wiping movement of the wiping element 56, see Fig. 8, owing to its offset pivotal connection with its carrier and the vertical yield allowed by the spring-pressed plunger 82. The wiping 35 movement of the wiper 56 over the shoe bottom is arrested by the depending flange 90 the face 91 of which engages the side face of the last so that the upper materials along the edge of the last are blocked between the 40 metallic wiping face 88 and the face 91 of the wiper block. A sole rest 92 adjustably secured to a bracket 94 projecting from the machine frame provides a support for the shoe during the tensioning of the upper materials about the last by the gripper 8, 10.

In the operation of the machine above described, the shoe is presented to the machine with the side of the shoe in engagement with the adjustable ledge 46 and the bottom of the shoe resting against the shoe rest 92. 50 When the machine is started the gripper 8, 10, through connections with the cam 12 on the main shaft 6, is first caused to descend and grip the upper and then to rise to draft the upper about the last. The machine is preferably so timed that at the completion 55 of the updraw movement of the gripper and prior to the release of the upper material by the gripper the wiping fingers 30 are, through connections with the cam 42, caused to move forwardly and engage the upper. It will be seen that as the gripper 8, 10 is still holding the upper away from the last, there is no opportunity for the cement coated marginal portion of the upper 65 to become stuck to the innersole before being worked over into lasted position. As the lasting fingers 30 are moved forwardly the forward ends of the fingers ride off of the ledge 46 and on to the upper which is 70 held by the gripper 8, 10 as illustrated in Fig. 4. The tension of the leaf spring 48 is sufficient to cause the fingers 30 to wipe the upper firmly into lasted position on the innersole. Concurrently with the completion 75 of the wiping movement of the wiping fingers 30 the wiping and beating member 56 is impelled downwardly, through mechanism above described, to engage that portion of upper just released by the gripper 80 8, 10 and located between the lasting fingers 30 and force it into contact with the innersole. The wiping block 56 first engages the upper at a point on its wiping face 88 substantially forward of its pivotal connection, 85 and further downward movement of the said block results in an inward wiping movement being imparted to it through its pivotal mounting on the carrier to wipe into lasted position the portion of the upper located between the fingers 30. After the wiping 90 block has wiped a sufficient distance over the shoe bottom the depending flange 90 engages the side face of the last so as to conform the upper materials to the shape of the edge faces of the last. Successive portions of the projecting marginal edge of the upper material are then operated upon, being selected in such proximity as the judgment of the operator dictates. In operating 100 upon the toe of the shoe the plaiting mechanism for the gripper is utilized. It will be seen that during the progressive stages the wiping block 56 may be made to operate on substantially the entire marginal edge of the 105 upper on the bottom of the last to hammer down the upper material on to the innersole whereby proper adhesion between the lasted over portion of the upper and the innersole is effected. In lasting the end portions 110 of the shoe when the plaiting mechanism is being used, the wiping and beating block 56 causes the wrinkles and folds caused by the plaiting to be broken down and laid flat on the innersole which, of course, provides a 115 more level and smoother surface to receive the outer sole than is otherwise obtained with hand processes of lasting.

It will thus be seen that with a machine such as above described, a shoe having a 120 vulcanizable rubber sole can be lasted with substantial advantages over the hand process of lasting in that the upper can be tensioned about the last with uniform tension at all times and that the upper can be forced into 125 better contact with the innersole than with the fingers, which not only saves the additional rolling down operation heretofore necessary with hand lasting but insures a better fitting and neater shoe. Furthermore, 130

the manner of tensioning the upper and working it on to the innersole follows closely the hand method of lasting so that many of the advantages characteristic of hand lasting are also retained in the lasting machine herein described.

Having 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, the combination of actuating means, means for tensioning an upper about a last, means for wiping the upper into final lasted position on a shoe bottom at a plurality of points, and means operating to last in over the insole that portion of the upper which is acted upon by the tensioning means after the operation of said wiping means.

2. In a machine of the class described, the combination of actuating means, means for tensioning an upper about a last, means for wiping the upper into final lasted position on a shoe bottom at a plurality of points, and means coöperating with the tensioning means to last in over the insole that portion of the upper which is acted upon by the tensioning means during a complete cycle of operations of the machine.

3. In a machine of the class described, the combination of wiping means constructed and arranged to engage separate portions of the upper and to wipe said portions into final lasted position on a shoe bottom, means for actuating said wiping means, additional means for lasting in the portion of upper located between the wiping means, and means independent of the shoe or its last for actuating said last-mentioned means.

4. In a machine of the class described, the combination with means for tensioning an upper about a last, of two associated wiping fingers constructed and arranged to engage separate portions of a shoe upper, means for actuating said fingers to wipe the upper into lasted position on the shoe bottom, an independent lasting element constructed and arranged to last in over the insole that portion of the upper which is acted upon by the tensioning means, and means to actuate said lasting element.

5. In a machine of the class described, the combination of a plurality of wiping fingers constructed and arranged to wipe the upper into lasted position upon a shoe bottom at a plurality of points, means for lasting in the portion of upper adjacent to said wiping fingers, and means for actuating said wiping fingers and said lasting means in directions perpendicular to one another.

6. A shoe lasting machine having, in combination, means for tensioning an upper about a last, means for wiping in the upper material at either side of said upper tensioning means, and a lasting tool arranged to

work into final lasted position on the shoe bottom the portion of upper located between said wipers.

7. A shoe lasting machine having, in combination, means adapted to tension an upper about a last, a reciprocable lasting member, and means for imparting to said lasting member an inward and downward movement relatively to the plane of the last bottom to cause it to engage that portion of the upper acted upon by said tensioning means to lay said portion in final lasted position on the shoe bottom during a complete cycle of operation of the machine.

8. A shoe lasting machine having, in combination, means for tensioning an upper about a last, a plurality of wipers adapted to wipe in the marginal portion of upper at either side of said upper tensioning means, and a lasting member constructed and arranged to work into lasted position the portion of upper released by said upper tensioning means.

9. A shoe lasting machine, having, in combination, a horizontally reciprocable wiper adapted to wipe the margin of a shoe upper into final lasted position on the shoe bottom, actuating means for the said wiper, and a vertically reciprocable lasting member constructed and arranged to work into lasted position on the shoe bottom the portion of the upper adjacent to that acted upon by the said wiper.

10. In a shoe lasting machine, means for tensioning an upper about a last, horizontally reciprocable wipers located on either side of said upper tensioning means constructed and arranged to wipe in the marginal portion of upper under the shoe bottom, and a vertically reciprocable lasting member constructed and arranged to work into lasted position the portion of upper released by said upper tensioning means.

11. In a shoe lasting machine, means for tensioning an upper about a last, a plurality of horizontally reciprocable wipers located adjacent to said upper tensioning means constructed and arranged to wipe in the marginal portion of upper on to the shoe bottom, and a vertically reciprocable lasting member constructed and arranged to work into lasted position the portion of upper adjacent to said wipers.

12. A shoe lasting machine having, in combination, a gripper, means to actuate the gripper to tension the upper about the last, upper wiping means constructed and arranged to work the portion of upper adjacent to the gripper into lasted position on the shoe bottom, and a lasting member for working that portion of upper tensioned by said gripper into lasted position on the innersole during a complete cycle of operation of the machine.

13. A shoe lasting machine having, in

- combination, means for tensioning an upper about a last, a plurality of wipers adapted to work the upper into lasted position on the shoe bottom at either side of said upper
- 5 tensioning means, and an upper beating element constructed and arranged to force into contact with the innersole the portion of upper released by the upper tensioning means.
- 10 14. In a machine of the class described, the combination of a plurality of upper wiping members adapted to wipe the margin of a shoe upper into final lasted position on the shoe bottom at a plurality of points,
- 15 and means constructed and arranged to engage the portion of upper material located between the said wiping members and wipe that portion of the upper into final lasted position with a wiping movement directed
- 20 inwardly and downwardly against the shoe bottom.
15. In a machine for working successive portions of an upper over a last by repeated operations, the combination with upper
- 25 stretching means, of upper wiping means constructed and arranged for reciprocation in the plane of the shoe bottom to wipe the marginal portion of upper over on to the innersole on either side of the upper stretching means, and additional means for wiping
- 30 the portion of the upper acted upon by the stretching means into final lasted position on the shoe bottom
16. In a machine for working successive portions of an upper over a last by repeated operations, the combination with upper
- 35 stretching means, of upper wiping means constructed and arranged for reciprocation in the plane of the shoe bottom to wipe the marginal portion of upper over on to the sole on either side of the upper stretching means, and a vertically reciprocable pounder adapted to last the portion of upper between
- 40 the wiping means.
- 45 17. In a machine for working successive portions of an upper over a last by repeated operations, means for disposing the margin of the shoe upper toward lasted position over the innersole, and a lasting device constructed and arranged to impart a combined
- 50 wiping and beating action on the said marginal portion to work it into final lasting position on the innersole.
18. A machine for working successive
- 55 portions of an upper over a last by repeated operations having, in combination, means for tensioning the upper about the last, and a lasting device constructed and arranged to produce a combined wiping and beating
- 60 action upon the tensioned portion of upper to work it into lasted position on the innersole.
19. A machine for working successive portions of an upper over a last by repeated operations having, in combination, means
- 65 for tensioning the upper about the last, and a lasting device constructed and arranged to produce a combined wiping and beating action on the portion of upper operated upon by the upper tensioning means while the upper is under tension.
- 70 20. A machine for working successive portions of an upper over a last having, in combination, means for holding the marginal portion of the upper away from the innersole, and wiping means constructed and arranged to wipe the portions of upper on
- 75 either side of said first-mentioned means into lasted position on to the innersole.
21. In a machine for progressively lasting shoes, means for maintaining the cemented marginal portion of the upper away from the innersole, and wipers for working the marginal portion of upper over on to the innersole at either side of said first-mentioned means.
- 80 85.
22. In a machine for progressively lasting shoes, a lasting member comprising a carrier bar and a wiping and beating member pivoted to said carrier at a point removed rearwardly from the side of the shoe
- 90 and movable vertically whereby a combined beating and wiping action is effected to last in the marginal portion of the upper on to the innersole.
23. In a machine for progressively last-
- 95 ing shoes, means for tensioning an upper about a last, a vertically disposed carrier bar constructed and arranged to be impelled downwardly, and a combined wiper and beating tool arranged at the lower end of
- 100 said carrier so as to cause said tool to impart a yielding blow to the outer marginal portion of the upper and to wipe the upper inwardly over the shoe while the upper is under tension.
- 105 24. In a machine for progressively lasting shoes, an approximately vertically disposed carrier bar constructed and arranged to be impelled downwardly, and a combined wiper and beating tool arranged at the
- 110 lower end of said carrier so as to impart a yielding blow to the outer marginal portion of the upper and to move inwardly over the margin of the shoe upper and wipe it into final lasted position on the shoe bottom.
- 115 25. In a machine for progressively lasting shoes, a lasting device for working the marginal portion of the upper on to the innersole having an operative movement toward the edge of the shoe in an oblique
- 120 plane, said tool having a surface to engage the bottom of the last and a complementary surface to engage the side face of the last.
26. In a machine for progressively last-
- 125 ing shoes, a lasting tool provided with a wiping surface to engage the surface of an innersole and a complementary surface to engage the side face of the last, said device being constructed and arranged to impart a yielding blow to the outer marginal
- 130

portion of the upper and simultaneously therewith move inwardly into position to cause the complementary wiping face to engage the side face of the last.

5 27. In a lasting machine, the combination with operating mechanism and a gripper operating to draw a portion of upper upwardly and inwardly over the margin of an innersole, of means to rub the upper in the
10 direction of the overdraw at each side of the gripper while the gripper continues the overdraw.

28. In a lasting machine, the combination with operating mechanism and a gripper operating to draw a portion of upper upwardly and inwardly over the margin of an innersole, of means to rub the upper in the
15 direction of the overdraw at each side of the gripper while the gripper continues the overdraw, and means for rubbing inwardly the upper behind the gripper.

29. In a lasting machine, the combination with operating mechanism and a gripper operating to draw a portion of upper upwardly and inwardly over the margin of an innersole, of means to rub the upper in the
20 direction of the overdraw at each side of the gripper while the gripper continues the overdraw, and means for beating down the upper behind the gripper.

30. In a lasting machine, the combination with operating mechanism and a gripper operating to draw a portion of upper upwardly and inwardly over the margin of an innersole, of means to rub inwardly the
35 upper at both lateral sides of the gripper, and means to beat down the upper behind the gripper.

31. In a machine for progressively lasting shoes, the combination with operating
40 mechanism, of means movable substantially parallel with the plane of the shoe bottom to wipe a portion of upper inwardly over an innersole into final lasted position and
45 means arranged closely adjacent to the first-mentioned means and movable substantially perpendicularly to the shoe bottom to simultaneously beat down that portion of the upper which is acted upon by the wiping
50 means.

32. In a machine for progressively lasting shoes, the combination with operating mechanism, of means to pull a portion of upper upwardly and inwardly over an in-

nersole, means to wipe an adjacent portion
55 inwardly while held up by the action of the pulling means, and means for simultaneously beating down that portion which is drawn upwardly and inwardly by the pulling means.

33. A machine for working an upper over a last and securing it to an insole by adhesion having, in combination, means for bending the margin of the upper inwardly over and into contact with the insole, and
60 means constructed and arranged for movement in a path transverse to the plane of the insole while the margin of the upper is held in said inwardly bent condition to engage said margin directly and press it into
65 position to adhere to the insole.

34. A machine for working an upper over a last and securing it to an insole by adhesion having, in combination, a member mounted for movement to bend the margin
75 of the upper inwardly over the insole, a presser device for engaging the inwardly bent margin of the upper and pressing it into adhering relation to the insole, a guide along which said device is movable bodily
80 toward the plane of the insole, and power operated mechanism for imparting operative movements to said bending member and presser device.

35. A machine for working an upper over a last and securing it to an insole by adhesion having, in combination, means for laying the margin of the upper over the insole, and means for engaging the margin of the upper and pressing it into position to adhere to the insole, said margin engaging means being mounted for movement in a path oblique to the plane of the shoe bottom to cause it to subject the margin of the upper to an inwardly directed pull.
95

36. In a machine of the class described, the combination of means for bending the margin of the upper over upon the bottom of a sole, and means for beating the overlaid margin against the bottom face of the sole, said means being constructed and arranged to have a component of movement inwardly of the shoe sole in contact with the upper.

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

LOUIS A. CASGRAIN.