

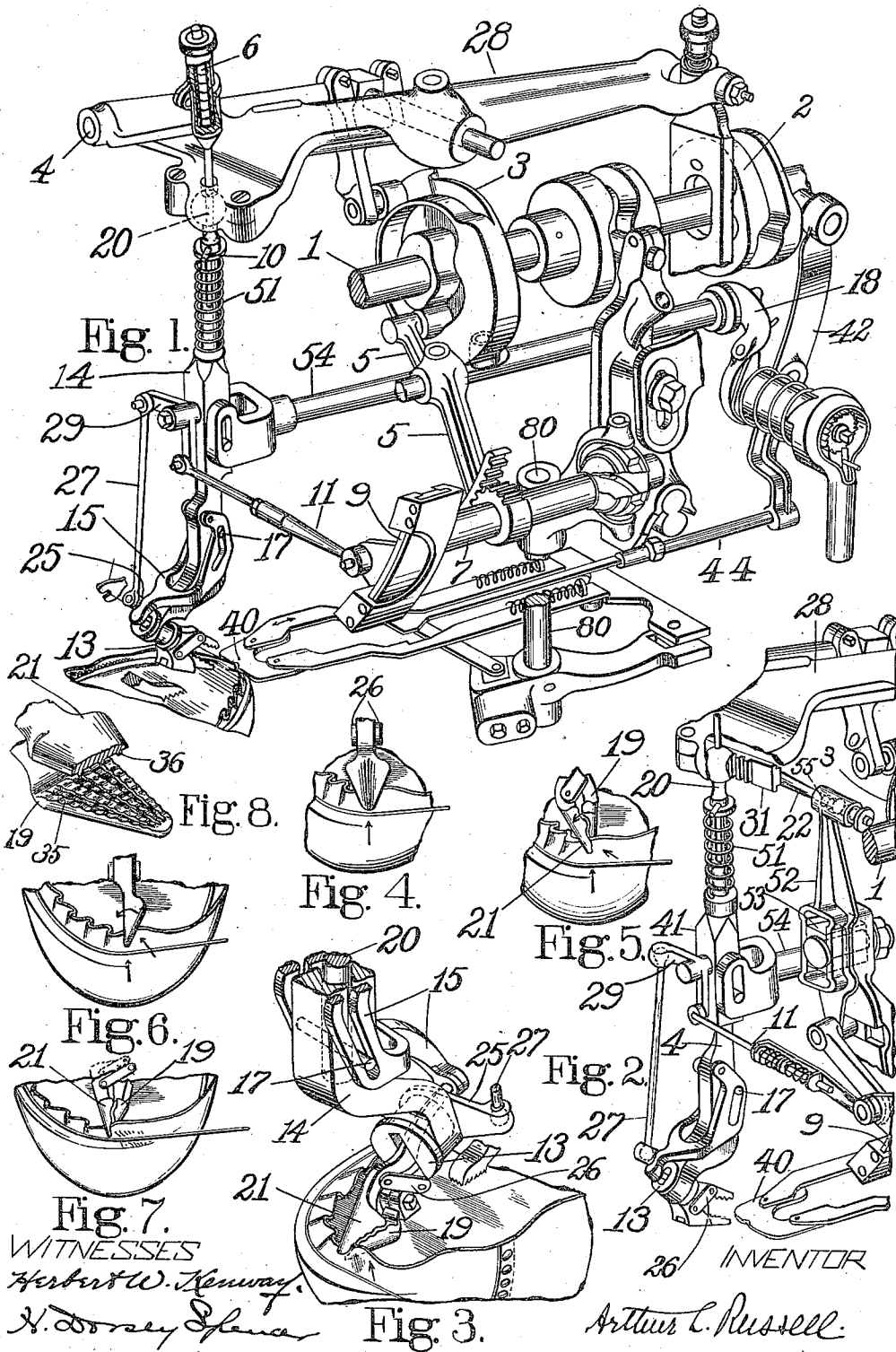
A. L. RUSSELL.
LASTING MACHINE.

APPLICATION FILED APR. 22, 1909.

Patented Apr. 29, 1913.

2 SHEETS—SHEET 1.

1,060,130.



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2 SHEETS—SHEET 2.

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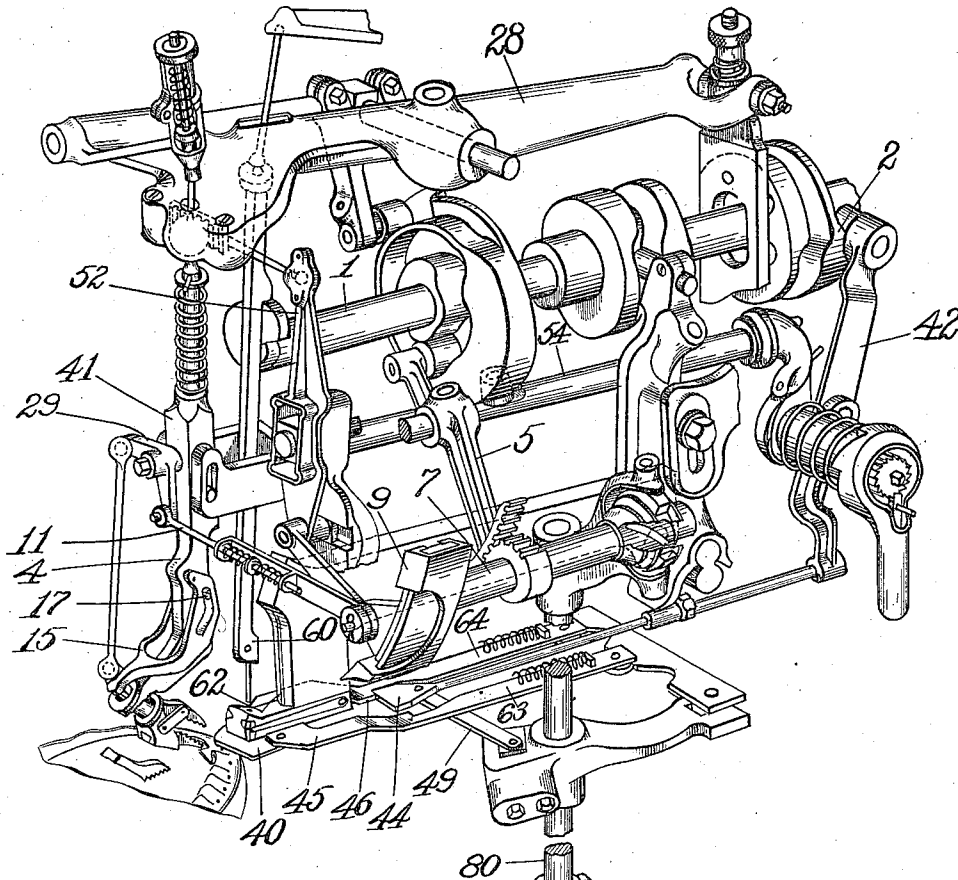


Fig. 9.

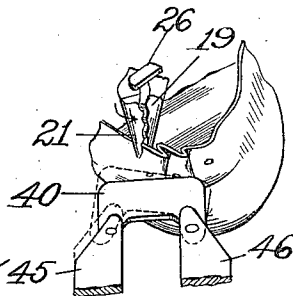
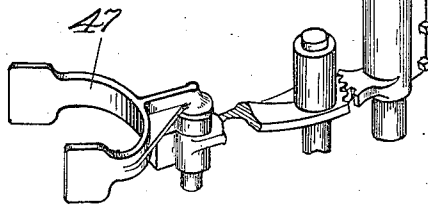


Fig. 11.

WITNESSES.

Herbert W. Newmyer

H. Dorsey Spencer

Fig. 10.

INVENTOR.

Arthur L. Russell

UNITED STATES PATENT OFFICE.

ARTHUR L. RUSSELL, OF HYDE PARK, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

LASTING-MACHINE.

1,060,130.

Specification of Letters Patent.

Patented Apr. 29, 1913.

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To all whom it may concern:

Be it known that I, ARTHUR L. RUSSELL, a citizen of the United States, residing at Hyde Park, in the county of Norfolk 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 lasting machines of the class employing grippers for pulling the upper and laying it over a last and, for some classes of work, employing wipers to press the upper into position to be secured by a binder of wire.

The invention is illustrated as applied to a machine of the type shown in United States Letters Patent No. 584,744, and has for one object to improve the mechanism for actuating the overworking devices. At the toe and sometimes at other parts of the shoe the grippers are required to plait or fold the marginal portion of the upper upon the shoe bottom to take care of the fullness which is incident to bending the upper inwardly over the convex edge of the last bottom. The machine is equipped for this purpose with grippers and operating mechanism therefor which may advantageously be of the special construction shown in my co-pending application Ser. No. 468,541 in which they are claimed, although any other construction may also be employed. The machine according to a feature of this invention is further equipped with a new wiper movement to cooperate with the other lasting or lasting and fastening devices for progressively overworking the upper more expeditiously and effectively than heretofore. The wiper shown extends across the line of pull of the grippers and there is provided therefor operating means which is capable of adjustment to move the wiper angularly, as for example about one or the other end of the illustrated construction, in the direction in which the grippers are turned to form the plait or fold. By this means an angularly movable wiper is caused always to force the point of the fold backwardly from the edge of the shoe bottom in the oblique direction in which the fold extends.

This invention also contemplates operating a wiper of any suitable construction au-

tomatically in two successive steps in the same direction with a dwell between the steps. Herein this occurs during the retraction of the wiper and a special purpose is to cause the wiper, after having advanced over the point or line where the fastening is to be applied and having thereby prepared the work for the reception of the fastening, to uncover the fastening location in the first step of its backward stroke and then to stop in holding engagement with the upper while the fastening is applied after which, in the second step of its actuation and preferably before the shoe recovers from the impact of the driver, the retraction of the wiper is completed.

These and other features of the invention, including the novel details of construction shown and certain combinations of parts disclosed, will be fully explained in connection with the following description of an apparatus embodying the invention and will then be pointed out in the claims.

Figure 1 is a perspective view of the grippers and of those related parts of a lasting machine of the type shown in said patent which are concerned with the present invention. Fig. 2 is a similar view showing modifications. Fig. 3 is a perspective view of the grippers on a larger scale than Figs. 1 and 2 and from the reverse side. Figs. 4, 5, 6 and 7 are detail views illustrating the plaiting operations as effected by the grippers, Figs. 6 and 7 showing modifications in the form of the jaws. Fig. 8 shows the formation of the gripping faces of the gripper jaws. Fig. 9 shows more completely the construction illustrated in Fig. 2. Fig. 10 shows the grippers and the wiper working from right to left on one side of the toe of a McKay shoe, and Fig. 11 shows these parts working from left to right on the other side of such a shoe.

The driving shaft 1 supports cam blocks 2 and 3. The block 2 has a groove in its front face from which the updraw lever 28 is actuated unyieldingly to lower the grippers to their gripping position and yieldingly to uplift them to pull the stock. The block 3 has an edge cam face from which is actuated a rockshaft 4 carrying a yielding plunger 6 to close the grippers which are opened by a spring 51 pressing upwardly upon a stud 10 which projects from the closing rod 20 within the gripper carrying

bar 14 which has a ball head by which it is suspended from the updraw lever. The block 3 has also a cam face on its rear side for engaging a stud on a rod 54 which has at its forward end a yoke connected with the grippers by which they are moved inwardly toward their gripping position in time relation with their descending movement from the cam block 2. The rod 54 is extended to the rear where it is engaged by a spring actuated arm 18 to force the grippers outwardly to draw the upper over the last bottom in time relation with the up-drawing movement and to withdraw the gripper jaws from the plait while lasting the toe.

The gripper carrying bar 14 is outwardly deflected at its lower end and has a bearing extending obliquely downwardly and inwardly within which the grippers are rotatably mounted. The grippers comprise a shank or cylindrical block 13 held in the bearing by a flange at one end and an arm 25 at the other. The block has a split clamp in which is fixed the lower gripper jaw 19 while the other jaw 21 is guided through the block to which it is connected by links 26 while the end of its shank is located in the longitudinal axis of the block and has a ball and socket engagement with a lever 15. This lever is forked and is fulcrumed at its upper end to the bar 14 which has slots in its sides for guiding the cross head 17 of the closing rod 20. The ends of the cross head extend into cam slots as shown in the forks of the closing lever for actuating the lever to close jaw 21 upon jaw 19 or upon the stock between the jaws when the rod 20 is forced downwardly. The gripping faces of the jaws are preferably tapering from a broad head to a blunt point to facilitate the formation of plaits or folds in the upper as will be described and these faces may have the surface formation shown in Fig. 8 to enable them to hold the stock securely. This formation comprises in one jaw grooves 35 the side walls of which extend oblique to the direction of the pull to be exerted on the stock and converge toward the point of the jaw. The grooves may increase in depth from the point toward the head and preferably will be arranged at an angle to one another. The side grooves in the jaw 19 incline in opposite directions toward the point of the jaw and the raised faces between the grooves and at either side of the jaw are of substantially the same width throughout their length. The upper clamped against jaw 19 is compressed into the grooves and cannot slip toward the point of the jaw without being compressed laterally between the converging side walls of the grooves and, as the grooves diminish in depth toward the point the compression in the direction of the thickness of the stock

is also increased if the stock slips outwardly in the grippers. The jaw 21 has ribs 36 which force the stock into the grooves. These ribs resemble in shape the grooves 35 in that they decrease in width and in height toward the point of the jaw, although preferably to a less extent so that they wedge or pinch the upper against the walls of the grooves if it begins to slip. The raised faces of the several ribs 36 on the one jaw and between the grooves 35 in the other impress themselves into the upper as the jaws close and thus direct the course of the stock if it slips, compelling it to gather in or full up between the lower portions of the jaws whereby the pressure upon the stock is increased and the slipping automatically checked. Teeth are formed on the raised faces between the grooves 35 and on the ribs 36 to assist in holding the stock.

The bearing in the carrier 14 for the gripper block 13 extends obliquely to the plane of the shoe bottom, which is determined by the shoe bottom and edge rests, and in substantially the direction in which the upper extends from the edge of the last to the grippers in the overdrawing movement of the grippers. The arm 25 serves to rotate the grippers about this axis when plaiting of the upper is desired and to this end the arm is connected by the rod 27, elbow lever 29 and extensible rod 11 with a segment block 9 adapted to be adjusted off the center at either side of the rocker which is fast on the front end of sleeve 7 and is oscillated by a lever 5 receiving motion from a groove in the front face of the cam block 3. The segment block is set by a connection explained in United States Letters Patent No. 500,141, with a vertical, manually shiftable, rockshaft 80, having a knee yoke as shown in that patent. The rod 11 may include a yielding element, as shown in Fig. 2, through which the rotating movement of the grippers for the formation of plaits is yieldingly effected. The movement for forming plaits is illustrated in Figs. 4, 5, 6 and 7. In Fig. 2 there is shown means for also turning the grippers about an axis which is substantially perpendicular to the plane of the shoe bottom. This may be employed to swing the grippers laterally in laying the plait and cause them, while forming the plait, to take up stock mainly or wholly from that side which is in advance of the grippers. This has the advantage of extending the scope or range of action of the grippers, causing them to gather in the upper farther along the edge of the shoe, as shown in Figs. 5 and 7, so that the pulling points may be farther apart and fewer pulls required for lasting a shoe. Another advantage is that the previously formed plait is not pulled out or disturbed. The turning movement about the perpendicular axis may

be effected by known mechanism including a connection from the segment block 9 to a lever 52 for reciprocating a rack bar 22, 31, which engages teeth on the ball head of the gripper carrying bar 20, as shown in Fig. 2. This connection may be made yielding by the spring 55 and the extent of the movement imparted may be varied by adjusting the fulcrum block 53 which is movable in the frame of the machine. Preferably the described turning of the grippers will take place in such time relation with the rotation of the jaws that the rear edge of the jaws will remain in substantially the same vertical plane during the formation of the fold and thus the last plait formed will remain undisturbed while the one being made is formed from stock pulled as indicated by the arrow in Fig. 5. Substantially the same result can be obtained, where plaiting in one direction only is required as in welt and turn shoes, by forming the gripper jaws as shown in Figs. 6 and 7 with the rear edges in the same vertical plane as that in which the oblique axis of rotation is located. By so doing the parts 52, 53, 22 and 31 may be omitted as shown in Fig. 1 and the machine thus simplified. It will be understood that the jaws of Fig. 4 or Fig. 6 may be used in the machine as shown in Fig. 1 or Fig. 2. If the gripper carrying bar 20 is to be turned by the parts as shown in Fig. 2 that bar is formed to turn in a sleeve or block 41 which supports the elbow lever 29 and with which the overdraw rod 54 is connected. A swinging wiper 40 is actuated from the cam block 2 by a lever 42 and plunger 44. The wiper is actuated in time relation to the rotation of the grippers and serves by its shearing action to wipe in the upper toward lasted position, as against the shoulder of a welt shoe innersole. The wiper serves also to crowd the point or wrinkle of the plait inwardly from the edge of the shoe having the margin smooth as shown to receive the welt which is to be sewn on to the lasted shoe. It is to be noted that the spring actuating the arm 18 is put under tension when the upper is overdrawn and as soon as the jaws 19, 21 open to release the upper this spring expands and forces the grippers outwardly from the machine, as far as the stud on rod 54 will permit, causing the jaws to withdraw from the plait they have formed. The wiper herein shown is formed and arranged to be swung by the engagement of the plunger 44 with either slide bar 45 or 46, according to the position of the knee lever 47 which can act through vertical rock-shaft 80 and link 49 to position the plunger in engagement with bar 45 or bar 46, or if desired, intermediate said bars when the wiper is not to be actuated. The wiper in this respect is controlled in harmony with the control of the grippers, and when the

grippers are plaiting from right toward left, as in Fig. 10, the plunger will actuate bar 45 and the wiper and grippers are caused to cooperate as shown in that figure in full and dotted lines. This may be the procedure in lasting one side of a McKay shoe which it is customary to last in opposite directions from the middle of the toe backwardly. Fig. 11 shows the operation in lasting the second side of a McKay toe. The upper is fastened in McKay work by tacks inserted by driver 60 from a forwardly and backwardly sliding tack carrier 62 which advances to a position to drive the tack directly in front of the wiper 40. Preferably the wiper controlling rear surface of the cam 2 is formed to advance the wiper ahead of the tack carrier and then to back up the wiper slightly to permit the tack to be inserted into a portion of the overlaid upper stock that has been smoothed and compacted for the reception of the tack by the rubbing action of the wiper 40. This action of the wiper is secured by forming a slight depression in the wiper advancing or holding face, said depression being so located that the wiper will be permitted a partial retraction by its springs 63 or 64, acting on the slide 45 or 46, just before the descent of the driver. The cam may advantageously hold the wiper stationary in its partially retracted position during the insertion of the tack and complete the retraction immediately after the insertion of the tack and before the shoe recovers fully from the impact of the drivers and before the feed takes place, whereby a minimum of backward drag of the wiper over the shoe will occur. It will be understood that the comparatively stationary end of the wiper, that is the right-hand end in Fig. 10 or the left-hand end in Fig. 11, remains constantly over the shoe edge and assists in guiding and positioning the shoe. The other or swinging end of the wiper sweeps obliquely inwardly with a shearing action in time relation with the plaiting movement of the grippers, and in the same oblique direction as the plaiting strain on the upper—see the arrows in Figs. 5 and 6—to assist the grippers in straining and forming the upper over the edge of the last in laying it in position to be secured. It will be observed that the wiper having the described movement presses the point or end of the fold or crease back from the edge of the last so as to leave a smooth margin on the shoe bottom from the edge inwardly beyond the points which will be visible in the crease between the upper and sole or welt of the completed shoe.

The operation of the lasting machine as a whole may be substantially the same as that of the machine of said prior Patent 584,744, being modified slightly in detail by

this invention as appears from the foregoing description. The purpose of the new mechanisms has been sufficiently explained in connection with the description of the construction and arrangement of the illustrated embodiment thereof.

This case is a continuation, as to common subject-matter, of application Serial No. 468,541, filed Dec. 21, 1908, and moreover the construction of the gripper itself is not claimed in this application, the same having been made the subject-matter of a divisional application Serial No. 565,225 filed June 6, 1910, but

I do herein claim as new and desire to secure by Letters Patent of the United States:

1. A lasting machine having in combination grippers, actuating mechanism therefor arranged to turn the grippers in opposite directions at different times for forming plaits in opposite directions, a wiper arranged to extend across the line of pull of the grippers, and means adapted for adjustment to turn the wiper in either direction alternatively to enable it to cooperate with the grippers in forming a plait in the direction for which the grippers are adjusted.

2. A lasting machine having in combination grippers, actuating mechanism therefor arranged for adjustment to turn the grippers in one or the opposite direction, a swinging wiper and connected means for causing the wiper to swing in the direction in which the grippers are turned.

3. A lasting machine having in combination grippers, actuating mechanism therefor arranged to cause the grippers to fold the upper obliquely at one time in one direction and at a different time in the opposite direction, and a wiper and means arranged to cause the wiper to wipe the upper always in the same oblique direction as it is being folded.

4. A lasting machine having in combination grippers, actuating mechanism therefor arranged to cause the grippers to fold the upper obliquely at one time in one direction and at a different time in the opposite direction, and a wiper and means arranged for adjustment with the grippers to swing the wiper about one or the other end thereof in the direction to force the point of the fold backwardly from the edge of the shoe in the oblique direction in which the fold extends.

5. A lasting machine having in combination grippers and means to actuate the grippers to work an upper over a last, a wiper to cooperate with the grippers and actuating means for the wiper having provision for automatically retracting the wiper in two steps.

6. A lasting machine having in combination grippers, actuating mechanism therefor, a wiper to hold the overworked upper while it is fastened, and automatic actuating

means for advancing the wiper, partially retracting it, maintaining it in holding engagement with the upper to permit the upper to be fastened and then completing the retraction of the wiper.

7. A lasting machine having in combination grippers to pull an upper over a last, a swinging wiper to compact the upper upon the last bottom and hold it while it is being fastened, means for swinging the wiper inwardly over the position to be occupied by the fastening means, then partially retracting the wiper to permit the placing of the fastening means while the wiper continues to hold the upper and then completing the backward swing of the wiper.

8. An automatically operating lasting and tacking machine having in combination grippers, a wiper and actuating mechanism for the grippers and wiper having provision for advancing the wiper to compact the stock at the tacking line, retracting the wiper to uncover the tacking line during the tacking operation and then completing the retraction of the wiper.

9. An automatically operating lasting and tacking machine having in combination grippers, a wiper, a tacker, and actuating mechanism for said parts arranged to advance the wiper over the tacking line, partially retract the wiper to uncover the tacking line, insert the tacks while the wiper holds the upper, and then complete the retraction of the wiper before the shoe recovers from the impact of the driver against it.

10. A lasting machine having, in combination, devices for working an upper over a last into position to be fastened including a wiper and operating mechanism therefor arranged to actuate the wiper automatically in two successive steps in the same direction with a dwell between the steps.

11. A lasting machine having, in combination, devices for working an upper over a last into position to be fastened including a wiper and operating mechanism therefor arranged to actuate the wiper automatically in two successive steps, the first step terminating with the wiper holding the upper to facilitate the operation of another device on the upper during the dwell in the wiper movement and the subsequent step completing the stroke of the wiper in the same direction as the first step.

12. A machine of the class described having, in combination, a wiper and means which can be adjusted for causing the wiper to move over the shoe edge in a direction inclined toward either side of the median plane of the machine.

13. A step-by-step lasting machine having, in combination, a wiper, means adapted for advancing and retracting the wiper during each cycle of the machine, and means

which can be adjusted for causing the wiper to swing laterally with reference to either side of the median plane of the machine.

14. A lasting machine having, in combination, grippers, means for imparting lateral movements to the grippers to plait the upper in either direction, a wiper, means for actuating the wiper to cause a portion of its acting edge to advance over the shoe bottom in a direction inclined to the shoe edge in the same direction as the plaits being formed, and means for initiating, directing and suspending the plaiting movements of the grippers and the wiper simultaneously.

15. A machine for working successive portions of an upper over a last by repeated operations having, in combination, a wiper, and actuating mechanism adapted for adjustment to impart to the wiper different operative movements for different portions of the shoe.

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

ARTHUR L. RUSSELL.

Witnesses:

FREDERICK L. EDMANDS,
JAMES R. HODDER.

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