

O. ASHTON.
PULLING-OVER MACHINE.
APPLICATION FILED AUG. 2, 1907.

1,007,766.

Patented Nov. 7, 1911.
2 SHEETS—SHEET 1.

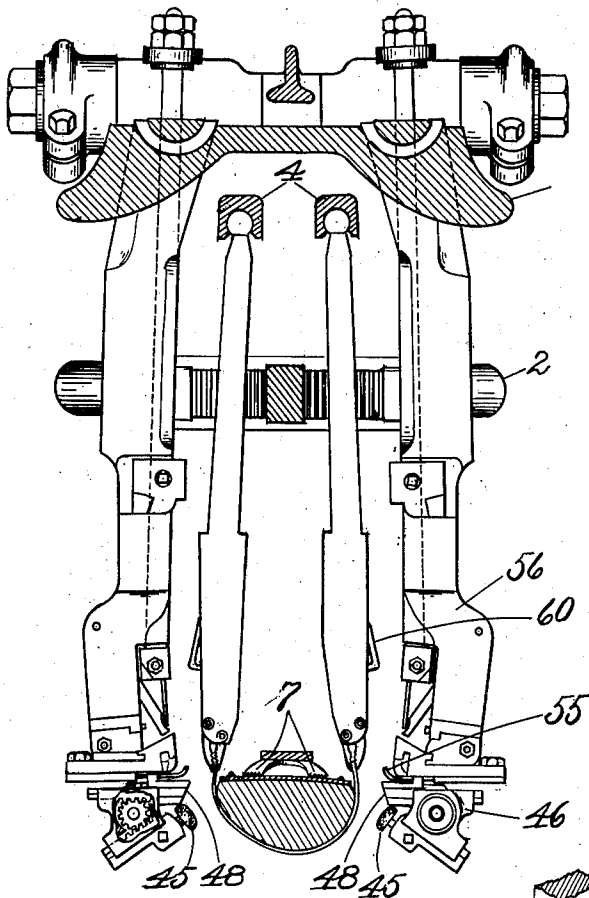


Fig. 1.

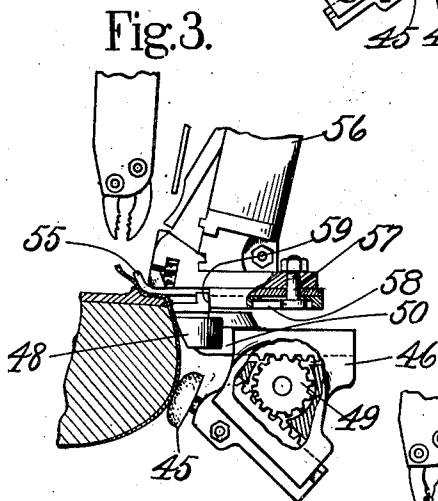


Fig. 3.

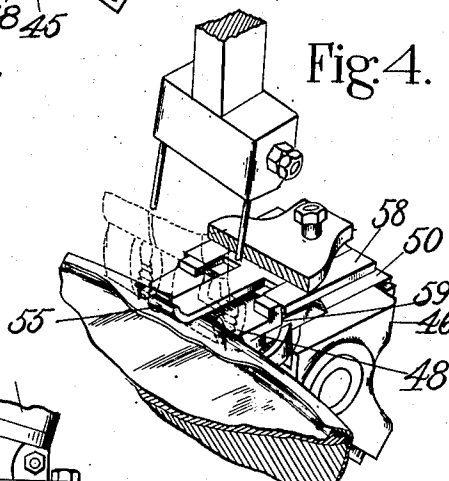


Fig. 4.

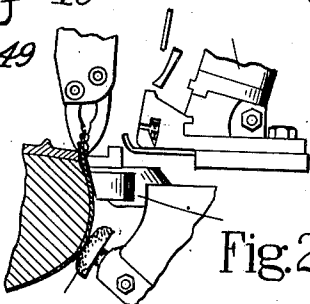


Fig. 2.

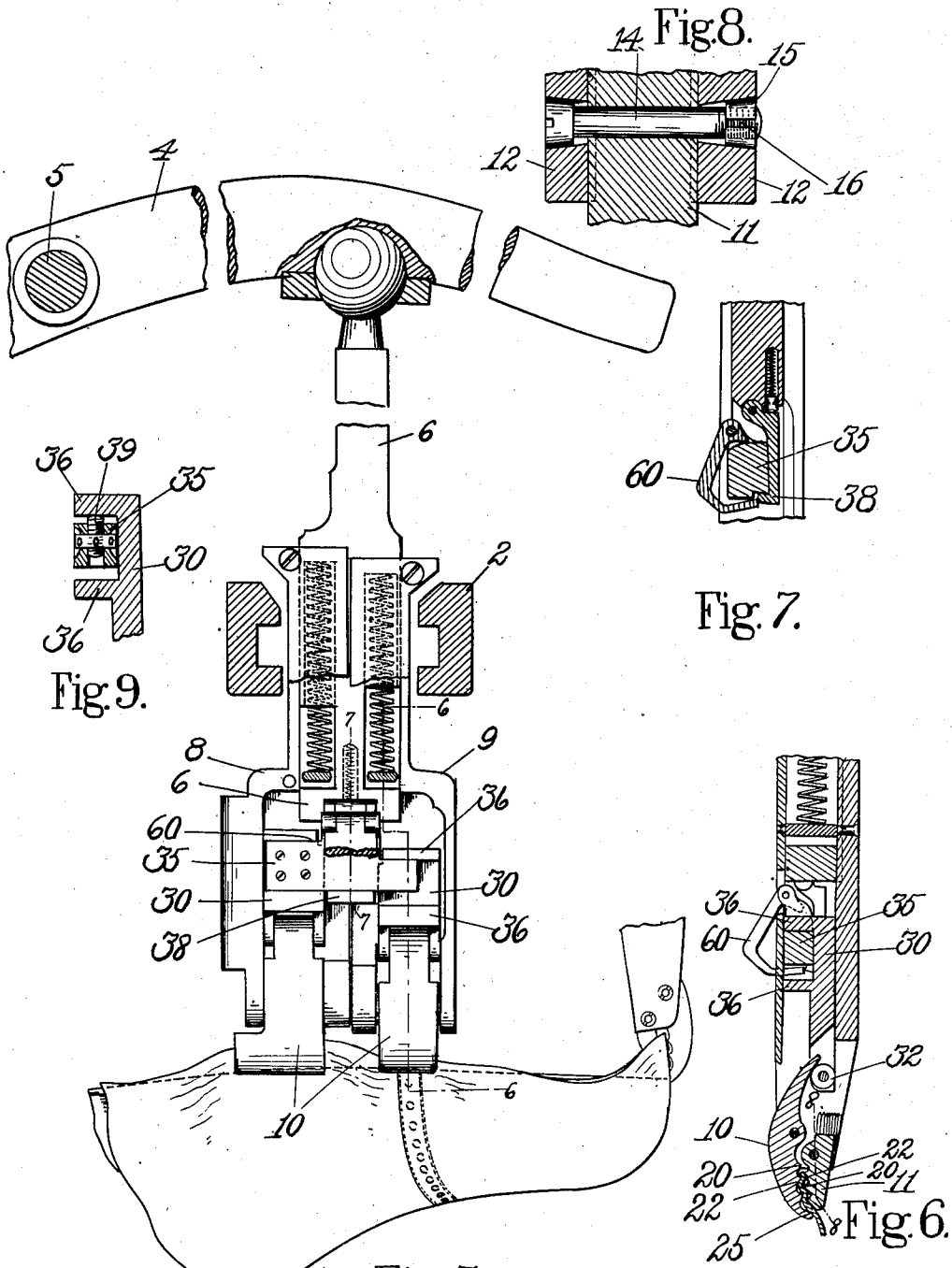
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PULLING-OVER MACHINE.

1,007,766.

Specification of Letters Patent.

Patented Nov. 7, 1911.

Application filed August 2, 1907. Serial No. 386,799.

To all whom it may concern:

Be it known that I, ORRELL ASHTON, a citizen of the United States, residing at Lawrence, in the county of Essex and Commonwealth of Massachusetts, have invented certain Improvements in Pulling-Over 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 for use in the manufacture of boots and shoes and particularly to mechanism for working an upper over a last.

The invention is herein shown as embodied in the upper pulling and holding mechanism of a pulling-over machine of the type shown in United States Letters Patent No. 663,777, granted on the application of Ronald F. McFeely, but the invention is applicable also to other machines.

In working an upper over a last, particularly if the upper is not large enough to overlap the bottom of the last for a considerable distance, it is desirable that the grippers release the upper and withdraw to give place to the tacking mechanism before the tacks are driven for securing the upper in overworked position. To permit this procedure means is usually employed for holding the upper to prevent it from slipping back during the interval between its release by the grippers and the insertion of the tacks.

Another object of this invention is to provide improved means for holding the upper and for pressing it into position to be secured. It frequently happens in pulling shoes having small uppers that the grippers, especially the forward grippers engaging the tip seam, are little if any above the plane of the shoe bottom when the upper has been pulled. It is therefore advantageous to hold the upper by means which does not necessarily extend above the plane of the shoe bottom or extend over the bottom of the shoe and can clamp the upper against the side of the last even though the grippers occupy the position described. It is important, however, that the upper be eventually pressed down upon the last bottom or upon the innersole to force it into position to be fastened by the securing tacks.

I have provided according to one feature

of this invention upper holding means arranged entirely below the plane of the last bottom and adapted to clamp the upper against the side of the last at and adjacent to the edge of the last. Preferably there is provided in combination with this upper holding means a presser arranged to occupy a position back of the upper engaging face of the clamp when the latter is moved into holding position and adapted to be actuated over the last bottom after the grippers have released the upper. With this device arranged as described the upper is secured by the clamp before the grippers need to be withdrawn to permit the presser to come into operative position. The front and rear pairs of gripper jaws are usually spaced apart a short distance, thus permitting freedom of relative movement of the pairs of jaws. The presser is preferably arranged relatively to said jaws to act upon and wipe as well as press into overworked position the portion of upper between the front and rear pairs of jaws. The presser is shown to be of less width than the space between the securing tacks and as located between the tacks and extending over the shoe bottom beyond said tacks. With this arrangement a narrow presser satisfactorily forces the upper into position to be secured.

These and other features of the invention will be more fully explained in the following description and then pointed out in the claims.

Certain features of invention which relate to the gripper mechanism are herein described and shown but the claims, therefore are made in a divisional application Serial No. 613,325 filed March 9, 1911.

The drawings represent a preferred embodiment of the invention, applied to a pulling-over machine of substantially the general construction shown in said United States Letters Patent No. 663,777, Figure 1 being a front elevation of a portion of a pulling-over machine which is equipped with the present invention and showing the relative positions of the grippers, the clamps, and the pressers while the grippers are pulling the upper, the clamps being in a retracted position out of contact with the shoe to leave the upper free to be stretched about the last. Fig. 2 is a view on a larger scale of the parts concerned with this invention, and shows the clamps in engage-

ment with the upper while the grippers still retain their hold upon it. Fig. 3 is a similar view after the grippers have released the upper and the presser has been advanced into operative position. Fig. 4 is a perspective view showing the relative positions of the parts immediately after the securing tacks have been driven and before the presser and clamp are retracted. Fig. 5 is a side elevation of the grippers partly in section; Fig. 6 is a section on line 6—6 of Fig. 5; Fig. 7 is a section on line 7—7 of Fig. 5; Fig. 8 is a section on line 8—8 of Fig. 6; Fig. 9 is a detail view of a modification taken in the same plane as Fig. 6.

The frame 2, which may be the frame of the pulling-over machine shown in said Letters Patent No. 663,777, supports levers 4 that are fulcrumed at 5 and from which are suspended bars 6 as shown in Figs. 1 and 5. There are in the machine sets of grippers for engaging the upper at opposite sides of the last which is held from displacement by a sole rest 7 while the upper is being pulled. A set of grippers is illustrated in Fig. 5 and comprises a plurality of pairs of jaws connected through casings 8 and 9 with the one operating bar 6. One jaw 10 of each pair of jaws is pivotally connected to its casing while the other jaw 11 of each pair is rigidly attached to the casing which is shaped to receive it between two edge plates 12, the adjacent faces of which may be corrugated to fit similar corrugations on the edges of the jaw. The jaw is clamped between the edge plates by a connecting member 14, shown best in Fig. 8, which has a conical head fitting a similarly shaped recess in one edge plate. It also has screw threaded engagement with a tapering locking member 15 that is split at 16 so that it will be contracted and locked upon the holding member as it is drawn into its conical recess in the casing. The construction thus far described is not a part of the present invention.

The gripping faces of each of the jaws 10 and 11 are formed by alternate teeth or ribs 20 and plane faces 22 which are so arranged in the assembled grippers that the teeth or ribs on the jaw 10 will be opposed to the plane faces on the jaw 11 and the teeth or ribs on the jaw 11 will bite or indent the stock against the plane faces on the jaw 10. The lower tooth or rib 25 of the jaw 10, which engages the outer side of the upper leather, is rounded or blunt so that it will not scrape or scar the upper as the stock pulls out when the jaws release their grip upon the upper.

Each casing contains a gripper controller 30 through which the jaw 10 is first rocked to grip the stock and then, when it can rock no farther, the two jaws are uplifted to pull the stock. For this purpose the controller

has a roller 32 which engages the inclined rear face of the upper arm of jaw 10 as shown in Fig. 6, which is a section through the casing 8 and the forward pair of jaws. The other controller is the same. A cross bar 35 is secured to the controller for the rear pair of jaws and extends across to the other controller where it is received between ledges 36 on the outer side of the controller. The cross bar is notched to provide a narrow portion forming a lost motion connection with the controller for the forward jaw. The operating bar has a depending hook 38 which engages the middle portion of the cross bar and through which the controlling devices are lifted for closing and then raising the jaws. By reason of the lost motion connection the rear jaws are closed and raised to pull the upper about the ball of the last to a predetermined extent before the forward jaws are closed and raised to pull the upper in the region of the toe tip seam. If desired, the extent of the relative movement of the pairs of jaws may be adjustably varied, as, for example, by providing the reduced portion of the cross bar 35 with an adjustable contact member 39, as shown in Fig. 9.

After the upper has been pulled it is to be secured to the innersole by tacks, and last supporters 45 are provided which are actuated from the positions shown in Fig. 1 into the position shown in Fig. 3 to sustain the last against the impact of the tacking devices. It is desirable that the grippers be moved out of the way of the tacking devices, particularly when the uppers are small so that the marginal edge of the upper does not extend far over the edge of the last and allow of the jaws being carried inwardly far enough while holding to the upper to give room for the tacking devices to work. Before the jaws can release the upper it is of course necessary to clamp it to prevent it from slipping back by reason of the tension under which it has been placed during the pulling operation. For this purpose clamping devices 48 are mounted on the same carriers 46 which move the last supporters 45. As shown, a pinion 49 connects the shank of the last supporter with a slide 50 upon which the clamp is mounted. The clamp is a block swiveled in its slide and long enough to engage a considerable portion of upper. The block preferably has an acting face formed to have continuous or substantially continuous contact with the upper throughout its length from front to rear and arranged to pinch or grip the upper against the side of the last below the gripper jaws. The clamp is mounted in a plane with relation to the sole rest 7 and the last supporters 45 so that it is located below the last bottom. By reason of this fact the clamp can come into position to pinch the upper

against the last even though, as shown in Fig. 2, the grippers may not be wholly above the plane of the last bottom when a small upper has been pulled. Another characteristic of the clamp is that it does not include any portion or member which projects in advance of it to extend over the last bottom and which would interfere with the clamp coming into holding position if the grippers did not carry the upper over the last bottom, as for example, under the conditions illustrated in Fig. 2.

A presser 55 is employed for forming the upper over the last bottom and pressing it down upon the innersole into position to receive the securing tacks. This presser is secured to the lower face of the tack carrying arm 56 by the bolt 57, which also passes through a slotted plate 58 which rides over the clamp slide 50 and engages a stop face 59 on the back of the clamp to determine the position with relation to the edge of the last at which the tacks shall be driven by the tacking devices. The tack arm is arranged to engage a tripping device 60 carried by one of the controlling devices of the grippers to disengage the hook 38 from the cross bar 35 and permit the jaws to open for allowing the upper to pull out of them as the grippers swing inwardly in advance of the tack arms. The presser is arranged intermediate the two pairs of gripper jaws so that it may engage and wipe inwardly the portion of stock between the pairs of jaws which has not been subjected to the same straining as the portions of stock directly engaged by the jaws. To this end the presser is formed as a relatively narrow finger and the fastening tacks are driven at opposite sides of it as shown in Fig. 4.

In the use of the invention in the form in which it is shown as embodied, a shoe is presented with the bottom against the sole rest 7 and the upper between the jaws of the open grippers. The operating bars are then raised. The first effect is to close the rear jaws which engage the belt of upper extending about the last at the base of the instep and back of the position of the toe tip seam. As soon as these jaws are closed they are uplifted and pull the upper about this portion of the last. When these jaws have moved through a predetermined distance governed by the extent of lost motion between the cross bar 35 and the ledges 36, and have initially pulled the upper back of the toe tip seam, then the forward pair of jaws is closed and thereafter uplifted to pull the upper in the region of the tip seam. The last supporters then move inwardly and set the side clamps against the sides of the last below the plane of the last bottom to grip the upper and prevent it from slipping back. The tack arms next swing inwardly,

releasing the grippers which retire as the arms advance. The pressers reach the edge of the last after the grippers are released and move over the edge and bottom of the last as the arms swing inwardly wiping over the upper that was between the pairs of jaws and pressing the upper against the innersole into position to receive the fastening tacks, which are then driven, after which the parts may return to starting position. It will of course be understood that while for the purpose of explanation this invention is here shown as applied to the machine of said Letters Patent No. 663,777 for which it was especially devised, it may also be used in other machines.

Having disclosed the nature of the invention and described a construction embodying the same in the best form now known to me, I claim as new and desire to secure by Letters Patent of the United States:

1. In a machine of the class described having duplicate devices for operating upon opposite sides of the shoe at the same time, the combination with grippers for pulling an upper over a last, and tacking mechanism for fastening the upper, of means for releasing the grippers from the upper before the tacks are driven, and means suitably actuated to clamp the upper against the side edge of the last before the grippers are released and arranged for holding the upper while the tacks are being driven, said latter means being located entirely below the plane of the last bottom and formed to engage an extended area of the upper along the edge of the last.

2. In a machine of the class described having duplicate faces for operating upon opposite sides of the shoe at the same time, the combination with grippers for pulling an upper over a last, and tacking mechanism for fastening the upper, of means for releasing the grippers from the upper before the tacks are driven, and means for holding the upper while the tacks are being driven, said latter means being located wholly below the level of the last bottom and comprising a block having an uninterrupted acting face for engaging an extended area of the upper on the side of the shoe, and means movable over the last bottom between the clamping and the gripper releasing movements to wipe the upper into position to be tacked.

3. In a machine of the class described, the combination with two pairs of gripper jaws for engaging adjacent portions of an upper and pulling it over a last, tacking mechanism for securing said portions of upper, means to release the jaws before the tacks are driven, means for clamping the upper to hold it until the tacks are driven, and means operatively connected with the tacking mechanism to be actuated thereby and constructed and arranged to wipe over the

last bottom the portion of upper between the portions directly engaged by the grippers.

4. In a machine of the class described, the combination with two pairs of gripper jaws for engaging adjacent portions of an upper and pulling it over a last, tacking mechanism for securing said portions of upper, means to release the jaws before the tacks are driven, means for clamping the upper to hold it until the tacks are driven, a presser independent of the clamping means, and means for actuating the presser over the last bottom after the clamp has come into holding engagement with the upper, said parts being constructed and arranged to cause the presser to advance and the jaws to be then released during the movement of the tacking mechanism into driving position.

5. In a machine of the class described, the combination with two pairs of gripper jaws for engaging adjacent portions of an upper and pulling it over a last, tacking mechanism for securing each of said portions of upper, and a wiper constructed and arranged to advance over the shoe bottom between the tacking points in advance of the tack driving operation for working the portion of upper located between the pairs of jaws over the innersole into position for the upper to be secured.

6. In a machine of the class described the combination with two pairs of gripper jaws having their adjacent edges spaced apart, of the tacker having a driver opposite to each pair of jaws and a wiper 55 arranged to advance between the pairs of jaws for the purpose described.

7. In a machine of the class described, the combination with the grippers of the tacker having the wiper 55 to slide over the shoe bottom in rubbing contact with the upper, and the side clamp comprising the last supporter 45 and the upper clamping member 48 connected by an equalizer and both located below the plane of the wiper for the purpose described.

8. In a machine of the class described, the combination with the grippers of the tacker having the wiper 55 to slide over the shoe bottom in rubbing contact with the upper 50 and the side clamp comprising the slide 50 and the block 48 swiveled on the slide to turn about an axis perpendicular to the shoe bottom and having a long upper clamping face extending along the edge of the last to hold the upper. 55

9. In a machine of the class described, the combination with the grippers of the tacker having the wiper 55 to slide over the shoe bottom in rubbing contact with the upper 60 and the side clamp comprising the block 48 having a long acting face extending longitudinally of the shoe edge to pinch or grip the upper against the side of the last below the wiper, and the slide 50 in which the block 48 is swiveled to allow it to have substantially continuous bearing on the shoe throughout the length of its acting face, substantially as described. 65

10. In a machine of the class described, the combination with the grippers of the double tacker, the wiper secured to the lower face of the tacker and presenting a narrow tongue 55 arranged between the two tack inserting points, a slotted plate 58 underlying the wiper and adjustably attached to the tacker by the same fastening, and the side clamp block 48 engaging the side face only of the shoe and having the abutment 59 for engagement by the end of said plate 58 to limit the advance of the wiper and the tacker over the shoe bottom and cause the side clamp block to pinch the upper against the side of the last with the force overcome in stopping the tacker. 70 75 80 85

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

ORRELL ASHTON.

Witnesses:

ARTHUR L. RUSSELL,
ELIZABETH C. COUPE.

It is hereby certified that in Letters Patent No. 1,007,766, granted November 7, 1911, upon the application of Orrell Ashton, of Lawrence, Massachusetts, for an improvement in "Pulling-Over Machines," errors appear in the printed specification requiring correction as follows: Page 3, line 13, for the word "forming" read *forcing*; same page, line 104, for the word "faces" read *devices*; 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 5th day of December, A. D., 1911.

[SEAL.]

C. C. BILLINGS,

Acting Commissioner of Patents.