

R. F. McFEELY.  
PULLING-OVER MACHINE.  
APPLICATION FILED JUNE 27, 1910.

1,008,350.

Patented Nov. 14, 1911.

3 SHEETS—SHEET 1.

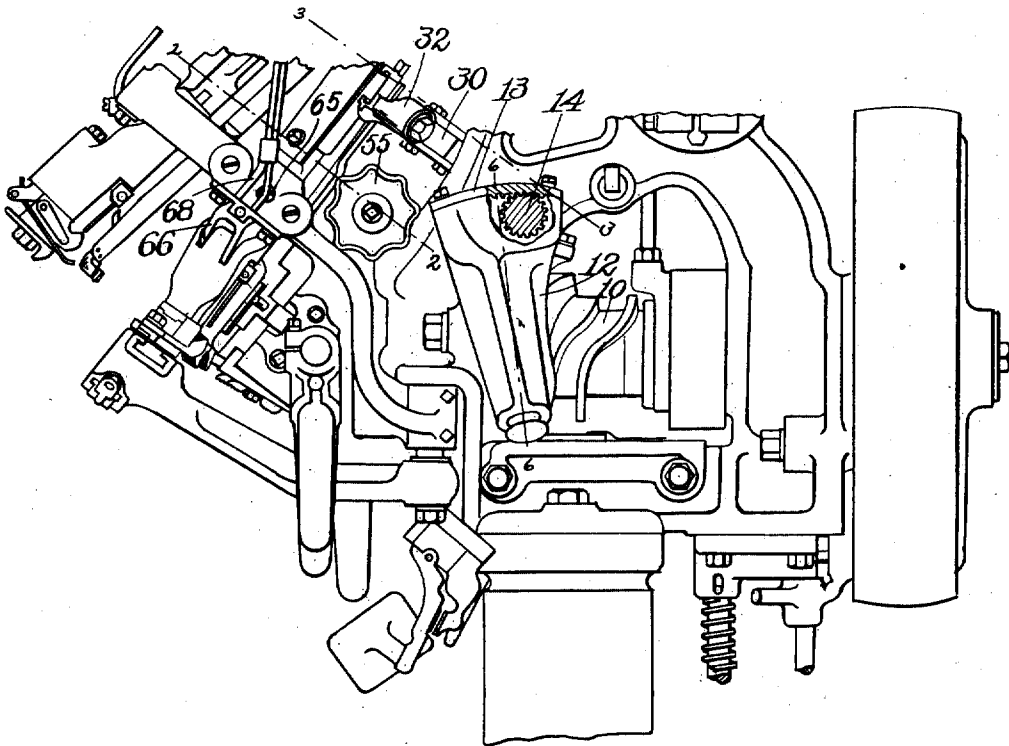


Fig. 1.

WITNESSES.

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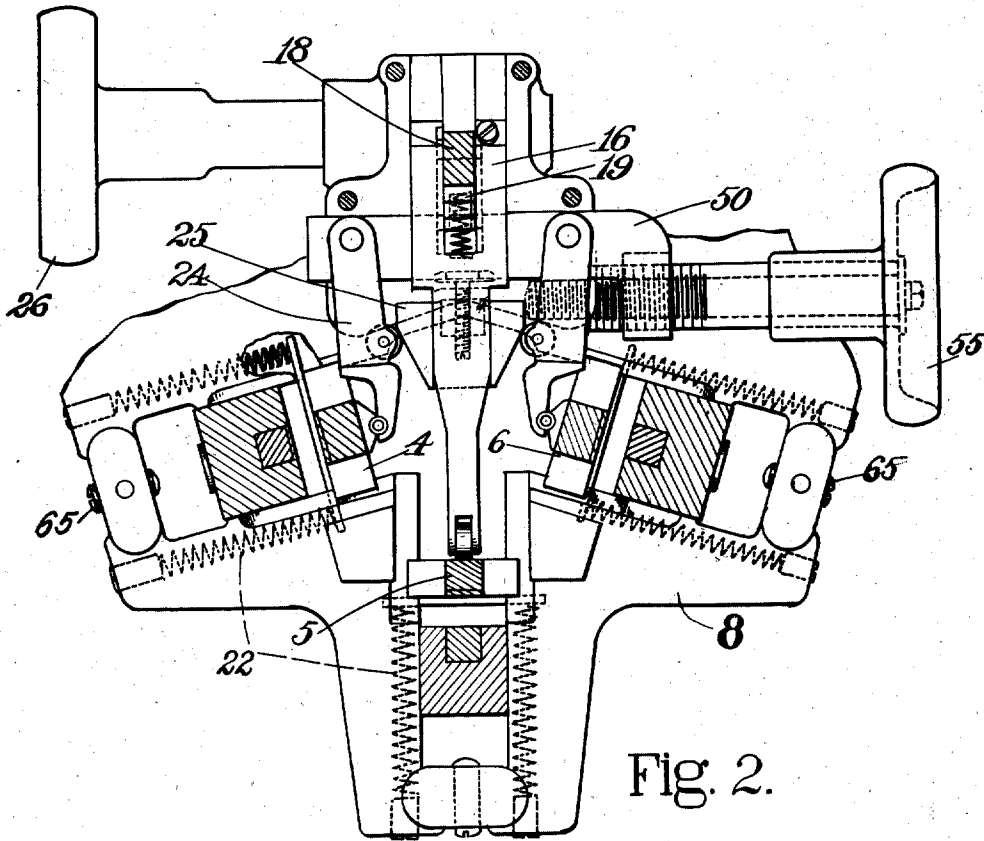


Fig. 2.

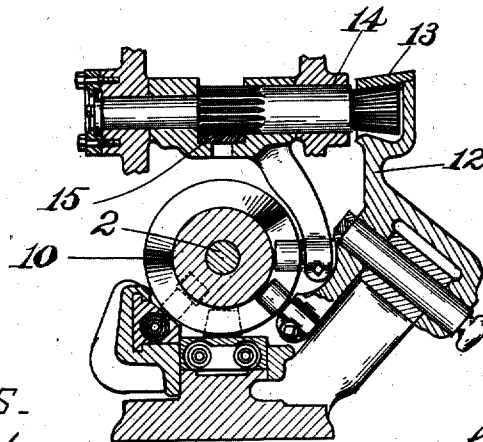


Fig. 6.

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3 SHEETS-SHEET 3.

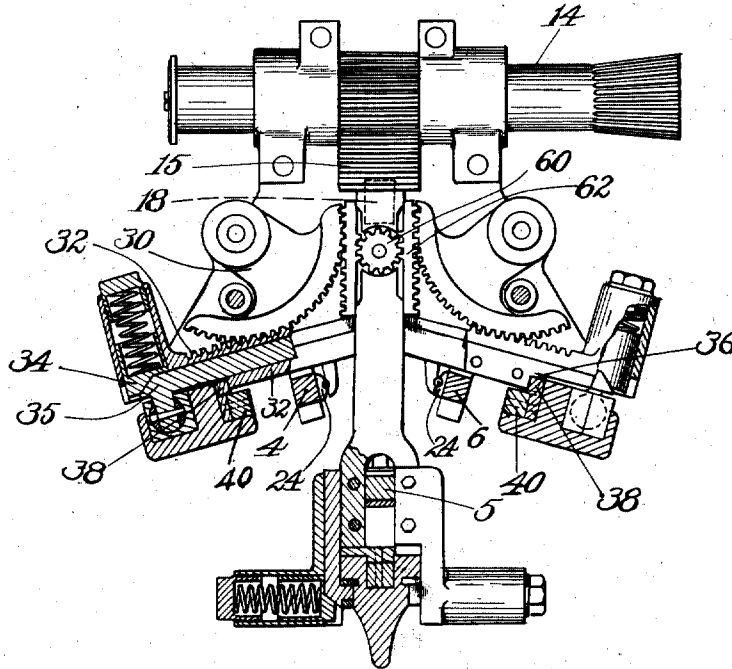


Fig. 3.

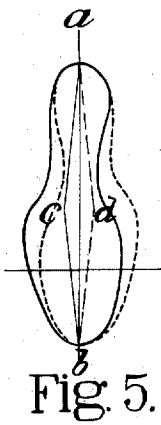


Fig. 5.

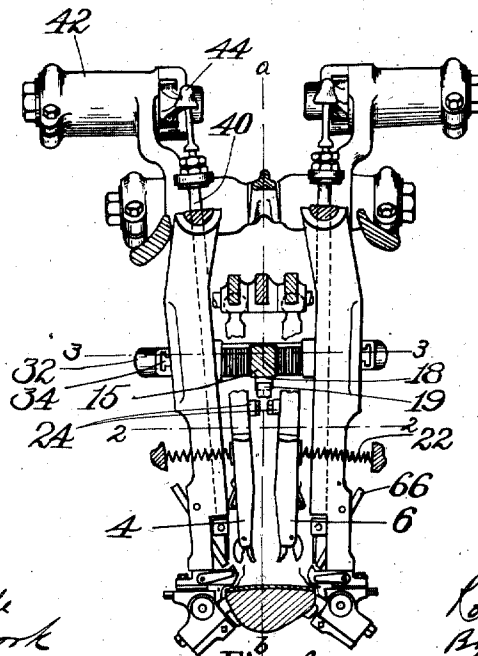


Fig. 4.

WITNESSES.

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# UNITED STATES PATENT OFFICE.

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## PULLING-OVER MACHINE.

1,008,350.

Specification of Letters Patent. Patented Nov. 14, 1911.

Application filed June 27, 1910. Serial No. 569,155.

*To all whom it may concern:*

Be it known that I, RONALD F. McFEELY, a citizen of the United States, residing at Beverly, in the county of Essex and State 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 pulling-over machines.

An object of the invention is to provide novel means for adapting pulling-over machines of the type shown for example in my prior United States Letters Patent No. 663,777 to operate uniformly upon right and left shoes being made on crooked lasts.

In the commercial machine which has been developed from the early construction and which is described in British specification No. 12,304/03 and known to the trade as the "Rex" pulling-over machine, adaptation for pulling-over shoes on right and left crooked lasts is made by shifting the heel rest laterally with relation to the pulling-over instrumentalities. The shoe is presented with its forepart, which is the part operated upon directly in the pulling-over operation, symmetrical with relation to the median line of the machine. The heel rest shifts automatically to one side or the other as is required to find and adapt its supporting position to the heel of the particular shoe. When a shoe on a crooked last is thus presented with the median line of its forepart in the median line of the machine there is occasion to adjust only the heel rest and that is done to locate the rear support for the shoe in the median line of the heel part of the last. If, however, it becomes for any reason undesirable to make the relative adjustment of the heel rest and pulling-over devices by a shifting of the heel rest, or wholly by the heel rest movement, then the side grippers should be shifted laterally together to present them symmetrically distanced relatively to the median line of the shoe forepart.

An important feature of this invention consists in providing means for adjusting

the side grippers of a pulling-over machine transversely of the machine. In the embodiment of the invention herein shown it is contemplated that the toe gripper shall remain in constant lateral position in the median line of the machine and that all shoes shall be presented uniformly thereto. With this invention may be employed the novel curved sectional toe gripper described in my prior application Serial No. 445,929 the sections of which can, when the upper is pulled, adjust themselves to any differences which may exist in the edge contour of the last at the two sides of the median line at the toe.

In accordance with a further feature of this invention comprised in the preferred embodiment thereof, provision is made for relatively adjusting the side grippers longitudinally of the shoe for rights and lefts. As shown the gripper acting on the outer side of the shoe is set slightly forward and the gripper which is to act on the inner side of the shoe is set slightly backward at the same time. In the illustrated construction the adjustments laterally and longitudinally are made in predetermined proportion and are effected by a single adjusting device. This device is arranged in position convenient for manipulation by the operator standing in working relation to the machine and preferably the adjusting mechanism is so arranged that the shifting of the side grippers can, if desired, be effected while the upper is held under tension by the grippers.

In the arrangement shown by way of exemplification the side grippers are guided in the frame of the machine and their lateral positions are determined by levers against which they are held by springs. The levers are actuated by opposed wedge faces by which they are moved laterally in the machine's operation, these wedges being adjustable to shift the grippers for sizes. In accordance with this invention, the fulcrums of the levers are on a member which is adjustable laterally across the machine and a screw and hand wheel is provided for adjusting the fulcrum supporting member. This arrangement gives adequate power for making adjustment with the upper under tension. By moving the fulcrum support one lever is caused to move its gripper inwardly and the other lever moves its gripper

outwardly. The guides in which the grippers move laterally are inclined rearwardly so that with the adjustment of the two side grippers together laterally of the machine they are proportionally adjusted longitudinally but in opposite directions. In this embodiment of the invention also lies a feature of the invention.

A further feature of this invention relates to the positioning of the tacking mechanisms which fasten the upper pulled over by the side grippers and consists in provision for adjustment of the side trackers transversely of the machine for rights and lefts. In accordance with the preferred embodiment of this feature of the invention the side trackers adjust themselves automatically to the lateral position of the shoe. Also provision is made for insuring the adjustment before the tack driving operation begins so that both tackers are in proper relation to the shoe before the drivers are tripped. Preferably the arrangement also provides substantial insurance that the drivers at the two sides of the shoe shall be tripped simultaneously and the danger is thus avoided that the early driving of the tacks on one side of the shoe will displace or disarrange in any degree the shoe for the later fastening of the upper at the opposite side. In the illustrated embodiment of this invention in which a further feature of the invention is to be recognized there is provided, between the common actuator and segments for pulling the side tackers inwardly to tack inserting position which are fully explained in my said prior patent an equalizing mechanism operating automatically to cause a dwell in the inward movement of the tacker which first reaches the shoe and to accelerate the approach of the other tacker. The tackers in this machine move outwardly from tack driving position to position to connect with the tack supplying mechanism. Means is provided to predetermine this latter position and insure a uniform starting position from which the opposed tackers move inwardly toward a shoe whether it be a right or a left shoe. These and other features of the invention, including certain details of construction and combinations of parts will appear in connection with the following description of the preferred embodiment of the invention and will then be pointed out in the claims.

Figure 1 is a side elevation of a machine equipped with this invention; Fig. 2 is a horizontal plan and section on substantially line 2—2 of Figs. 1 and 4; Fig. 3 is a horizontal, plan and section on substantially line 3—3 of Figs. 1 and 4; Fig. 4 is a front elevation of the side gripper mechanisms; Fig. 5 is a diagrammatic view showing the dissimilarity in the positions of the fore- parts of right and left shoes when the toe

and heel ends are presented symmetrically with relation to the median line of the machine which is indicated by the line  $a-b$ . The median line of the forepart of an inverted left shoe is indicated by  $c-b$  and that of a right shoe by  $d-b$ ; Fig. 6 is a section of the machine operating mechanism on substantially line 6—6 of Fig. 1.

The machine, as described in my prior patent, comprises a driving shaft 2 from which the toe and side grippers 4, 5, 6 are actuated to seize and pull the upper and the toe and side tackers, properly supplied with tacks, are actuated to insert the tacks for fastening the pulled upper. The grippers and tackers are guided in their movements inwardly and outwardly by guideways in the frame bracket 8 as shown in Fig. 2. The shaft has a cam 10, Fig. 6, which actuates a lever 12 and a rack bar 13 on the lever end to oscillate a pinion shaft 14 and reciprocate a rack slide 15 which in turn drives a slide 16 through a depending lug 18 that picks up a lug 19 on slide 16 during the forward reciprocation of slide 15. The slide 16 has a roll on its front end against which the toe gripper is held by springs 22 and similar springs hold the side grippers against swivel blocks on the front ends of levers 24 which are engaged by the oppositely inclined faces of a wedge block 25 which is carried upon slide 16. This mechanism may be designated the gripper spreading mechanism, it being understood that the slide 16 is advanced to spread the grippers for the reception of a shoe at the end of each operation and during the next operation it is retracted to permit the over-drawing of the upper to position for fastening it upon the shoe bottom. Means is provided to be actuated by the hand wheel 26 for adjusting the wedge 25 to adjust the spread of the grippers for different sizes of shoes. The tacker arms are caused by the slide 15 closely to follow the grippers inwardly and finally to engage the grippers and cause them to release the upper when the tackers are in position to fasten it. To this end the slide 15 acts through toothed segments 30, rack bars 32 having yielding plungers 34, the beveled ends of which engage slide blocks 35 that have ball and socket connections with the side tacker arms as shown in Fig. 3. When the inward movement of the side tackers is arrested, as occurs by their engagement with the sides of the shoe or with devices which are controlled as to position by the sides of the shoe, the continued movement of the rack bars 32 compels the plungers 34 to yield and allow relative displacement of rack bars 32 and slide blocks 35 during which shoulders 36 are withdrawn inwardly from under lugs 38 on tack driver 40. This frees the drivers to be impelled downwardly by their

springs contained in the barrels 42, Fig. 4, and acting through levers 44. Similar controlling means is provided for the front tacker. Further details of these parts may be learned from said prior Patent No. 12,304/03.

In accordance with a preferred embodiment of the present invention the side gripper positioning levers 24, 24 are fulcrumed on a slide 50 which is mounted for adjustment transversely of the machine to act through the levers for positioning the side grippers for pulling-over shoes on right and left crooked lasts such as represented in full and dotted lines in Fig. 5. For moving the adjusting slide 50 a screw which is held against endwise movement in the frame engages a threaded lug on the slide and has a hand wheel 55. By turning the hand wheel the fulcrums of both the levers 24, 24 will be moved transversely of the machine and thereby the two side grippers shifted toward the right or the left side of the median line of the machine represented by the mid line in Fig. 4 to pull over a shoe on a left or a right crooked last. The last in the machine in Fig. 4 may be assumed to be the one represented by dotted lines in Fig. 5.

In order to enable the side tackers to adjust for right and left shoes an equalizing connection is provided between the two toothed segments 30 which are actuated by the slide 15. This is shown as comprising a pinion 60 which is freely pivoted in the slide 15 and engages double faced rack bars 62 arranged on either side of the pinion between it and the segments 30. This equalizing connection allows a dwell to occur in the closing movement of either side tacker which first engages the full side of the last (or, as here shown, the side clamp that stands between the shoe and the tacker) and effects an acceleration of the advance of the other side tacker. When both side tackers have arrived in the same relation to their respective sides of the shoe, both segments will be further moved together to withdraw the driver supporting shoulders and cause simultaneous insertion of tacks on the two sides of the machine. The side tackers are reversely moved outwardly to tack receiving positions which are constant or uniform for all shoes and are determined by the stops 65, Fig. 2, to place the tack conductors 66 carried by the tackers in receiving relation to the tack tubes 68 of the tack supplying mechanism of the machine.

The heel rest of the machine stands normally in the median line of the machine and the toe gripper which hangs slightly below the plane of the last bottom at the toe and serves by its inner jaw to position the shoe lengthwise in the machine may center the toe laterally. When the shoe has been pre-

sented in the desired position the operator can adjust, or correct the adjustment of the side grippers laterally of the machine for the crookedness of the particular shoe by manipulating the hand wheel 55. This adjustment may be made before, if desired, and it also can be made after the upper has been seized and pulled by the side grippers. It is to be noted that this adjustment is a bodily movement of the side grippers and takes place relatively to and preferably independently of the toe gripper, the normal location of which will remain in the median line of the machine, although the toe gripper might have the upper adjusting movements proposed in my prior applications and which form no part of the present invention.

The operation of the machine as affected by the present invention will be understood without further explanation and having set forth the nature of the invention and described a preferred construction embodying the same I claim as new and desire to secure by Letters Patent of the United States:—

1. A pulling-over machine having, in combination, pulling-over means arranged to operate at the toe and at opposite sides of the shoe, and means for adjusting the side pulling-over means together in the same direction transversely of the machine.

2. A pulling-over machine having, in combination, pulling-over means arranged to operate at the toe and at opposite sides of the shoe, and means connected with both side pulling-over means for adjusting them together and relatively to the toe pulling-over means in the same direction transversely of the machine to position said pulling-over means relatively for right and left shoes.

3. A pulling-over machine having, in combination, side grippers, means to determine symmetrical spread of the grippers for the width of the shoe being operated upon, and additional means comprising the hand wheel 55, the slide bar 50 actuated by said wheel, and the levers 24 arranged to be moved respectively in opposite directions simultaneously by said slide bar for effecting unsymmetrical lateral positioning of side grippers for the shape of the shoe.

4. A pulling-over machine having, in combination, side grippers supported for movement laterally of the machine, separate levers to determine the lateral position of said grippers, a laterally movable member to which said levers are connected and by which the said member may be actuated for adjusting the side grippers simultaneously in opposite directions transversely of the machine for right and left shoes.

5. A pulling-over machine having, in combination, side grippers supported for movement laterally of the machine, separate levers to determine the lateral position of

said grippers, and means connected with said levers for adjusting laterally in the same direction transverse of the machine the side grippers which are controlled by said levers.

6. A pulling-over machine having, in combination, side grippers, means to determine symmetrical spread of the grippers and movable to change the spread of the grippers to effect overdraw, and additional means for effecting unsymmetrical bodily adjustment of the side grippers laterally for right and left shoes.

7. A pulling-over machine having, in combination, the side grippers 5, 6, the spreader 25, the spreader levers 24 through which the spreader acts on the grippers, and the lever shifter 55 operatively connected with the levers to adjust the grippers transversely of the machine in the same direction for right and left shoes.

8. A pulling-over machine having, in combination, the side grippers 5, 6, the spreader 25, the spreader levers 24 through which the spreader acts on the grippers, and means to adjust said levers simultaneously in the same direction transversely of the machine to position the grippers for right and left shoes.

9. A pulling-over machine having, in combination, side pulling-over devices, side tacking devices cooperating therewith and, separately movable transversely of the machine, means for adjusting the pulling-over devices transversely of the machine for right and left shoes, and additional means for adjusting the tacking devices.

10. A pulling-over machine having, in combination, side pulling-over devices, side tacking devices cooperating therewith, and means permitting differential movement of the opposed side tacking devices for right and left shoes and manually operated devices for effecting adjustment of said means to occasion such differential movement.

11. A pulling-over machine having, in combination, side pulling-over devices, side tacking devices cooperating therewith, means for moving the side tacking devices transversely of the machine into and out of tacking relation to the shoe, and equalizing means to provide for differential movement of the opposed side tackers for right and left shoes.

12. A pulling-over machine having, in combination, side pulling-over devices, side tacking devices cooperating therewith, means to permit a dwell in the approaching movement of one side tacker and to cause an acceleration in the movement of the other side tacker until it comes into similar relation to the shoe whereby said tackers are adapted for right and left shoes.

13. A pulling-over machine having, in combination, side pulling-over devices, side

tacking devices cooperating therewith, means for closing the tacking devices into upper fastening position, means to cause the tacking devices to drive automatically when they reach such position, and means to cause said tacking devices to close differentially to insure simultaneous driving in right and left shoes.

14. A pulling-over machine having, in combination, side pulling-over devices, side tacking devices cooperating therewith, means for closing the tacking devices into upper fastening position, including the actuator 15, and segments 30, and means intermediate said actuator and segments to insure simultaneous final closing movement.

15. A pulling-over machine having, in combination, side pulling-over devices, side tacking devices cooperating therewith, means for closing the tacking devices into upper fastening position, including the actuator 15 and segments 30, and the pinion and rack bars 62 between the actuator and the segments to insure simultaneous final closing of the side tacking devices over the shoe.

16. A pulling-over machine having, in combination, side pulling-over devices, side tacking devices cooperating therewith, means for manually adjusting the side pulling devices bodily in the same direction transversely of the last for right and left shoes, and means for automatically effecting lateral adjustment of the side tackers.

17. A pulling-over machine having, in combination, side pulling-over devices, side tacking devices cooperating therewith, means constructed and arranged for manual adjustment to cause it to effect differential closing of the side tackers into upper fastening position and for returning the tackers to the same tack receiving position after each tacking operation.

18. A pulling-over machine having, in combination, toe and side grippers which occupy predetermined positions in the machine, means for operating said grippers in time relation to pull-over a shoe, and means for adjusting the side grippers together laterally of the machine to position them for shoes on right and left crooked lasts.

19. A pulling-over machine having, in combination, toe and side grippers, automatic operating mechanism to cause the grippers to seize and pull the upper, and means for adjusting the side grippers together in the same direction transversely of the machine.

20. A pulling-over machine having, in combination, toe and side grippers, connected means for operating said grippers in time relation, and means for bodily adjusting the side grippers together transversely of the machine in the same direction for pulling-over shoes on right and left crooked lasts.

21. A pulling-over machine having, in combination, toe and side grippers, and means connected with both side grippers for moving them bodily in the same direction laterally of the machine for pulling-over shoes on right and left crooked lasts.

In testimony whereof I have signed my

name to this specification in the presence of two subscribing witnesses.

ROLAND F. McFEELY.

Witnesses:

CHARLES E. GRUSH,  
CHARLES H. HOYT.

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

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