R. F. McFEELY.

MACHINE FOR WORKING UPPERS OVER LASTS.

APPLICATION FILED FEB. 25, 1907.

**988,582.** Patented Apr. 4, 1911.

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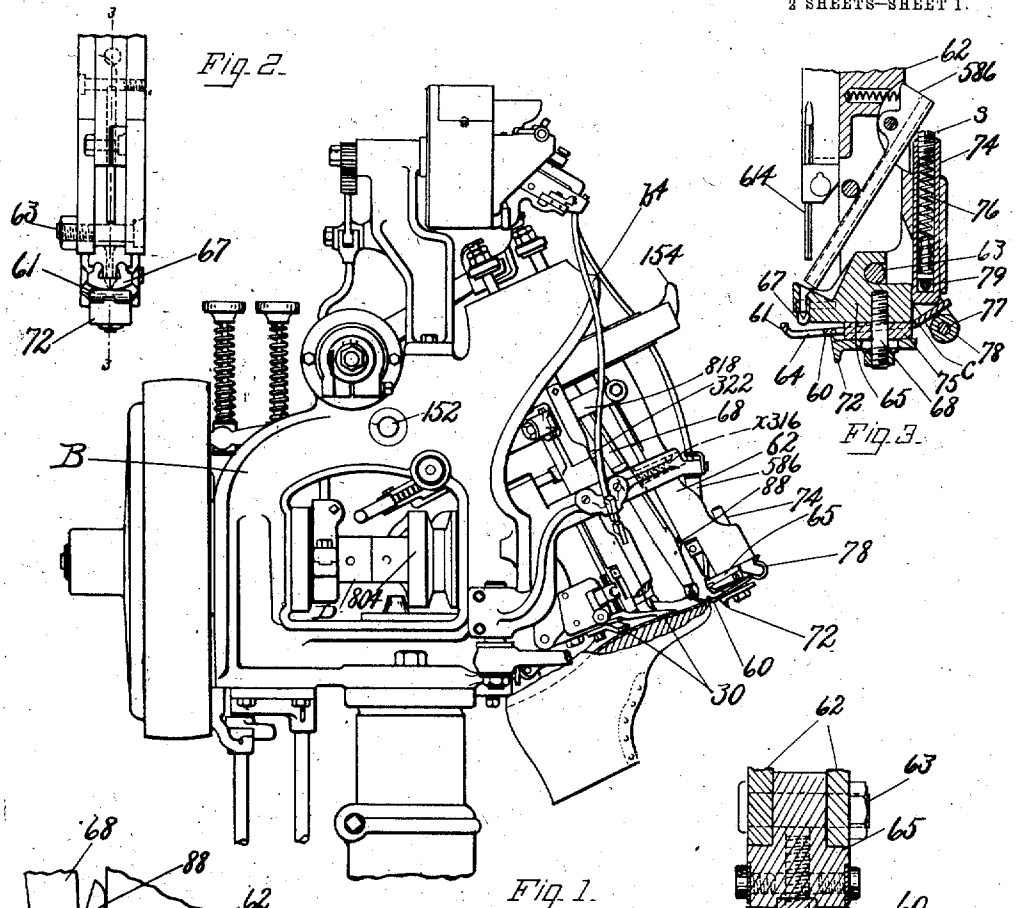


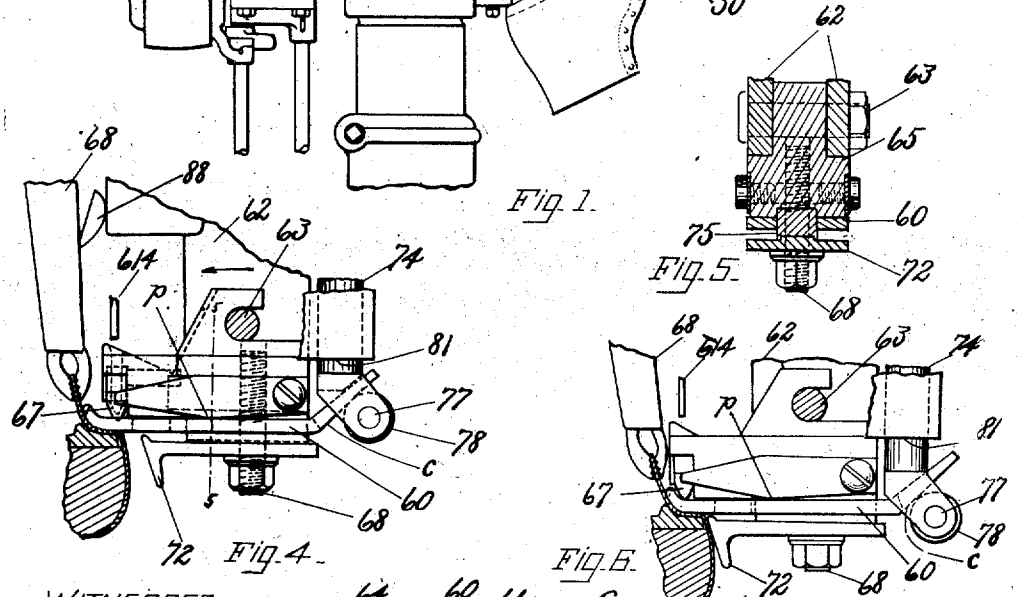


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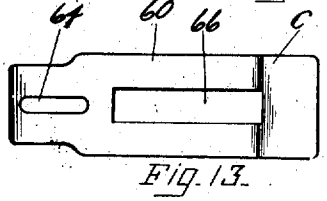


Fig. 13.

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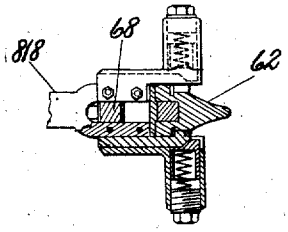


Fig. 8.




Fig. 7.

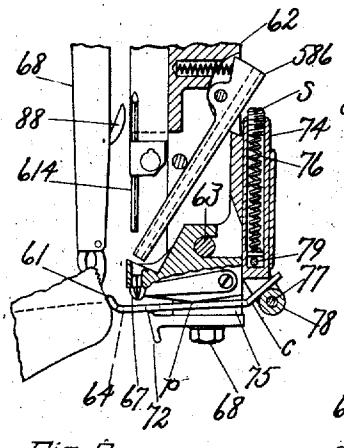


Fig. 9.

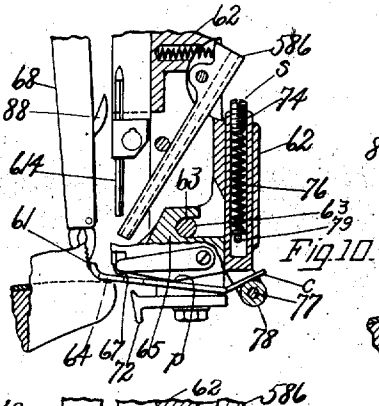


Fig. 10.

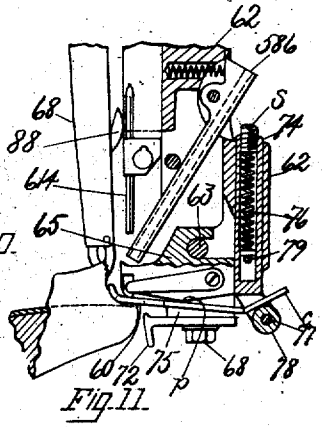


Fig. 11.

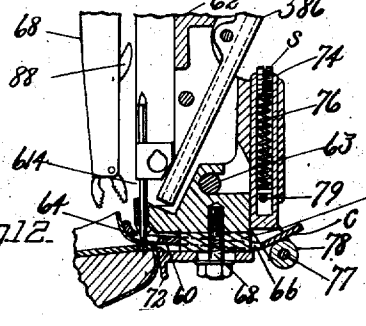


Fig. 12.

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# UNITED STATES PATENT OFFICE.

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## MACHINE FOR WORKING UPPERS OVER LASTS.

988,582. Specification of Letters Patent. Patented Apr. 4, 1911.

Original application filed October 31, 1901, Serial No. 80,704. Divided and this application filed February 25, 1907. Serial No. 359,158.

*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 Commonwealth of Massachusetts, have invented certain Improvements in Machines for Working Uppers Over Lasts, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to machines for working uppers over lasts and is herein illustrated as applied to the pulling-over machine shown in my prior application for United States Letters Patent Serial No. 80,704, filed October 31, 1901, from which this present application is a division.

The present invention comprises novel means for wiping the marginal portion of an upper over the edge of a last. Said means preferably serves also to hold the upper in overworked position while it is being secured to the innersole by the fastening means, which are usually tacks, employed for this purpose.

An important feature of the invention consists in means herein termed a "wiper" arranged to adapt itself automatically to the variations in the altitude of the work whereby the upper materials may be properly wiped over last bottoms located in different planes or having different surface configurations. As is well known, lasts differ in thickness and in the longitudinal curvature or "spring" of their bottom faces, and therefore lasts similarly supported sometimes will present their bottom faces in different altitudes or planes to the action of the wiper. In order to meet this condition the wiper of the present invention is arranged for vertical movement and in the embodiment of the invention herein shown the wiper is mounted for tilting movement and is normally held with its forward end in its lowermost position that it may act properly upon a shoe having its bottom in a relatively low plane, but may be tilted upwardly by engagement with a shoe the bottom of which occupies a higher position. Preferably the wiper is formed at its forward end to engage the side of the shoe near its edge and to be tilted as it rides upwardly over the edge of the bottom of the shoe being operated upon for wiping the marginal portion of the upper over the edge of the last and pressing it down upon the innersole. Preferably the wiper is yieldingly held tilted downwardly and therefore acts with spring pressure for wiping and pressing the upper into position. The means for yieldingly holding the wiper tilted as described also returns the wiper always to position for acting upon a shoe bottom presented at a low altitude.

Another feature of the invention consists in the wiper arranged for longitudinal yielding movement with relation to its carrier, whereby as it is advanced over the shoe it acts yieldingly to force the upper into overworked position. One of the advantages of thus arranging the wiper on its carrier for relative movement in the direction of the advance of the wiper over the work is that by this means the carrier may be moved always to a predetermined position without regard to the extent of movement of the wiper. In the machine herein shown to which the invention is applied the carrier for the wiper is also the tack carrier for presenting the upper-securing tacks in position to be driven, and it is desirable that these tacks be inserted at a uniform distance from the edge of the shoe, notwithstanding variations in the position to which the wiper is advanced. Also in said machine the grippers which are therein shown as employed for gripping the upper and pulling it over the last preparatory to the operation of the wiper are designed to be opened for releasing the upper after the wiper has been advanced into holding engagement with the upper and to be then withdrawn to make room for the tack carrier to advance into position for the securing tacks to be inserted. The opening of the grippers of said machine is effected by a latch which is arranged to be operated by the tack carrier, or a part moving with the tack carrier, as said carrier advances for actuating the wiper and positioning a tack. The grippers are yieldingly actuated over the last bottom and therefore their position with relation to the edge of the shoe varies according to the size and elasticity

of the upper. The wiper is, therefore, mounted to occupy normally a position in advance of or projecting in front of the carrier that it may meet the side of the shoe and ride up over the edge into holding engagement with the marginal portion of the upper before the tack carrier strikes the latch for opening the grippers. The provision for the wiper to yield longitudinally with relation to the tack carrier is of especial importance when the machine is used for operating on welt or other shoes in which the innersole is provided with a shoulder or rib against the side of which the upper is pressed by the wiper and temporarily secured. In working the upper over the last in this class of shoes it is important that the advance of the wiper be arrested when the rib or shoulder is reached, for if the wiper were forced over the rib or shoulder it not only would fail to position the upper properly against said rib or shoulder, but it also would tend to crush down the rib, thus causing difficulty in the subsequent operation of permanently sewing the upper to the rib.

A further feature of the invention consists in a novel arrangement of means for yieldingly holding the wiper in its normal position and resisting longitudinal and tilting movements of the wiper with relation to its carrier. As herein shown, a yielding element is arranged to coöperate with a suitably formed portion of the wiper for pressing the wiper forwardly and also tilting its forward end downwardly. For this purpose an upwardly pressed plunger is arranged to engage an inclined face on the wiper, the construction being such that the wiper is both pressed forwardly and tilted by said plunger. An important advantage of this construction is that when the wiper is forced by the work backwardly against the plunger said plunger acts with increasing force for tilting the wiper in the direction for pressing and holding the upper against the innersole, and preferably the mounting of the wiper will be so constructed and arranged that the wiper may become substantially rigid during the last part of its inward movement over the innersole.

Other features of the invention, including certain details of construction and combinations of parts, will be hereinafter described and pointed out in the claims.

Figure 1 is a side elevation of a pulling-over machine to which this invention is applied. Fig. 2 is an elevation of the wiper, tack carrier, and carrier arm as seen from the left-hand side in Fig. 1. Fig. 3 is a sectional view on the line 3—3 of Fig. 2. Fig. 4 is a side elevation on a larger scale, showing the position of the wiper and the associated parts in wiping over and securing the upper of a welt shoe. Fig. 5 is a sectional view on the line 5—5 of Fig. 4. Fig. 6 is a view similar to Fig. 4 and shows the relative positions of the parts when the tack is being driven. Fig. 7 is a central vertical section of the machine. Fig. 8 is a detail view of parts shown in Fig. 7. Figs. 9, 10, 11, and 12 are views illustrating progressively the positions assumed by the wiper in the operation of the machine. Fig. 13 is a plan view of the wiper.

The shoe is prepared for the operation of the pulling-over machine to which the invention is herein shown as applied by assembling the upper materials, including the lining and toe stiffeners, upon a last and placing the innersole upon the last bottom between the marginal edges of the upper. The shoe is then presented bottom uppermost against the sole-rest 30 with the upstanding edges of the upper within the grippers, of which there are a plurality of pairs. Only one pair of grippers and one wiper, together with the parts coöperating therewith, are herein shown for the purpose of explaining this invention. The other pairs of grippers and associated parts may be of any suitable construction. When the machine is started the grippers are closed and uplifted to stretch the upper about the last, which is held by the sole-rest from rising. When the upper has been properly fitted to the last the grippers are moved yieldingly over the last bottom, drawing the upper inwardly over the innersole that it may be secured to the innersole for holding it in position. Immediately after the grippers move inwardly, or it may be simultaneously with the inward movement of the grippers, the wiper advances into engagement with the upper thus drawn over by the grippers for wiping it in the direction of the grippers' strain thereon, pressing it and the innersole firmly down upon the last bottom and finally holding the upper against backward movement. As herein shown, the wiper carrier is the carrier for the tack block also and the tack block is, therefore, moved inwardly simultaneously with the wiper, and after the wiper has come into holding engagement with the upper the grippers are opened by the engagement of the advancing carrier with the latch 88 of the grippers. The carrier continues to advance after the grippers have released the upper and until it reaches a position for inserting a tack through the marginal portion of the upper materials into the innersole. Having thus indicated the general operation of the machine to which the present invention is shown as applied, the portions of the mechanism which it is desirable to consider for the purpose of explaining the invention will now be briefly described. A complete description of the machine may be obtained by reference to

said prior application and to United States Letters Patent No. 663,777, of December 11, 1900.

In the frame B of the machine is a fulcrum rod 152 upon which is pivoted a lever 154 connected with suitable actuating mechanism for rocking it. A grippers bar 68 is pivotally connected to the front arm of the lever and supports a pair of grippers and means for closing and opening the grippers. The grippers bar is pressed inwardly toward the head of the machine by springs $X^{316}$ mounted in the frame, as shown in Fig. 7, and said grippers are moved in the opposite direction by a bar 322 having connection, through a slide 818 and pinion 812 and toothed lever 802, see dotted lines in Fig. 7, with a cam 804 on the main shaft D of the machine. Through these connections with said cam the bar 322 is retracted at the proper times in the operation of the machine to permit the springs $X^{316}$ to move the grippers inwardly over the last bottom. An arm 62 is pivotally sustained from a bracket $b^4$ on the frame and constitutes in this embodiment of the invention the carrier for the tack block 65 and the wiper 60. The arm 62 is connected, as shown in Figs. 7 and 8, with the slide 818, whereby it is actuated inwardly over the shoe bottom as the grippers are moved inwardly. The tack block is secured to the arm 62 by the cross bolt 63, as shown in Figs. 3 and 5, and supports the tack holder 67, to which tacks are delivered by the raceway section 586 and from which they are driven by the driver 614 guided in the carrier arm 62. An edge gage 72 for limiting the inward movement of the carrier arm is secured to the tack block by a bolt 68, a narrow space block 75 being interposed between the gage and the tack block. The wiper 60 is mounted intermediate the edge gage and the tack block to extend under the tack block and tack holder, from which latter the tacks are driven through an opening 64 in the wiper. The wiper has a rectangular opening 66 to enable it to fit over the space block 75, by which it is guided in its movements. The wiper is arranged in accordance with this invention to move vertically for adapting it to variations in the altitude of the work engaged by it, and as herein shown is arranged to tilt or rock for moving its forward or acting end up and down. For this purpose the space between the edge gage and the lower face of the tack block, in which the wiper is located, is of greater thickness than is the wiper, so that the wiper may move vertically therein. The upper wall of this space is formed with a fulcrum point $p$, see particularly Figs. 4 and 6, about which the wiper rocks, and the wiper is yieldingly held tilted with its forward end normally in its lowest position, as shown in Figs. 1, 3, and 9, by a yielding element, which is herein shown as an upwardly spring-pressed plunger 74 acting on the lower face of the wiper near its rear end. The plunger is shown as provided on its lower end with a cross bar 77, on which is mounted an anti-friction roll 78. The plunger 74 is mounted in a guideway in the rear side of the carrier arm 62 and is yieldingly upheld by an inclosed spring 76, which rests at its lower end against a fixed stop 79. The tension of the spring may be regulated by an adjusting screw $s$. The upward movement of the plunger is limited by engagement of a shoulder on the plunger (see Fig. 4) with the lower face 81 of the guideway in which the plunger is contained. The forward or acting end of the wiper is preferably rounded or upturned, as shown at 61, to enable it to ride up the side and over the bottom of the shoe as it wipes the upper over the edge of the last. The spring-pressed plunger acting on the rear end of the wiper holds the forward end normally tilted downwardly to its lowest limit of movement, as shown in Figs. 1, 3 and 9. This construction and arrangement of the wiper allows for considerable variation in the altitude of the portion of the shoe bottom engaged by it, thus adapting the wiper to act in substantially uniform manner upon shoes made on lasts of different formation—as, for example, lasts which vary materially in the longitudinal curvature or spring of their bottom faces so that the toe portions, herein shown as engaged by the wiper, occupy different altitudes with relation to the sole-rest 30. This means for mounting the wiper also provides that the wiper shall act with yielding downward pressure upon the upper as it forces it into overworked position. It is to be observed however that this pressure may become substantially positive during the last part of the advance of the wiper over the insersole if the forward end of the wiper is rocked far enough for the piper to engage the lower face of the tack block in front of the fulcrum point $p$, as in Fig. 3. It is also to be noted that the carrier arm 62 upon which the wiper is mounted swings about a center located at its upper end, thereby carrying the wiper slightly downwardly with relation to the plane of the shoe bottom as the wiper moves inwardly over the upper. This causes the wiper to bear with increasing pressure upon the upper as it advances into final position for holding the upper after the grippers are opened.

The opening 66 in the wiper is longer, as herein shown, than the spacing block 75, whereby the wiper is permitted to have longitudinal sliding movement with relation to said block and the carrier. The side walls of the opening 66 and the adjacent faces of the block 75 guide the wiper in its move-

ments and the end walls of the opening limit the longitudinal movements of the wiper by their engagement with the end faces of the block. The wiper is yieldingly held in its most advanced position so that it acts with spring pressure for forcing the upper over the last into overworked position. In the machine to which the invention is herein shown as applied this arrangement has another purpose for the grippers are designed to be released before the fastening tack is inserted and the opening of the grippers is automatically effected by the engagement of the tack carrier arm, or a part movable with said arm, with the latch 88 on the gripper bar, which is thereby tripped for unlocking the grippers to permit them to open. Any suitable construction of grippers may be employed having provision for being thus unlocked—such, for example, as the grippers shown in said prior Letters Patent. By reason of the fact that the grippers are opened automatically by the movement of the arm 62 it is important that the wiper be brought into holding engagement with the upper before the arm reaches position to trip the latch 88. As the grippers often move inwardly but a short distance from the edge of the last because the uppers are sometimes small for the last upon which they are used or are especially inelastic, I have provided that the wiper shall precede the tack block into holding engagement with the upper on the edge and bottom of the last. Then if the resistance to further movement of the wiper is greater than the tension of the yielding element which holds the wiper in advanced position, the wiper may yield backwardly with relation to the tack block as the latter advances for tripping the grippers and positioning the tack at the desired distance from the edge of the shoe. The distance which the tack block is moved over the shoe bottom is determined by the adjustable edge gage 72, and if desired the distance which the wiper may yield backwardly with relation to the tack block may be so related to the distance which the tack block moves over the upper as to insure a final positive advance of the wiper after the grippers have been opened. The conformation of the innersole may cause the advance of the wiper to be arrested, as in Goodyear or other shoes in which the inner sole is provided with a rib or shoulder against which the marginal portion of the upper is positioned in the operation of fitting the upper to the last and to which the upper is finally sewed for permanently fastening it to the innersole. In Figs. 4 and 6 I have shown the use of a wiper with such a shoe, Fig. 4 illustrating the relative positions of the several parts at the time when the advancing wiper has forced the upper material against the rib or shoulder of the innersole and just before the grippers are opened. Fig. 6 shows the relative positions of the parts when the carrier has completed its advance for presenting the tack in position to be driven through the upper at the angle of union between the rib and feather edge of the innersole. By comparing these figures it will be noted that the wiper has remained longitudinally stationary, because of its abutment against the rib of the innersole, while the carrier and tack holder have advanced. This is an important characteristic of the present construction because, for the best results in fitting uppers to this class of shoes, the wiper should be allowed to stop when it has forced the upper against the rib or shoulder into position to be secured. If the wiper were advanced farther the upper would not be so well positioned and the rib or shoulder would be liable to be crushed or otherwise injured so as to interfere with the subsequent operation of sewing the upper to it. Of course when the wiper is used for operating upon such shoes the amount of movement which the wiper is arranged to have with relation to the tack block must be ample to avoid danger of the wiper being forced over the rib or shoulder. The extent of this relative movement of the wiper and tack block may be varied by using spacing blocks 75 of different lengths.

In accordance with one of the features of this invention the upward tilting of the wiper and the backward sliding movement of the wiper with relation to its carrier are both resisted by the same yielding means. To this end the rear portion of the wiper is formed with an incline *c* for engagement with the roll 78 on the lower end of the spring-pressed plunger 74. By this arrangement the wiper may move rearwardly with relation to its carrier only by pulling down the plunger. In addition to its simplicity and compactness this construction has the advantage that as the wiper yields backwardly with relation to its carrier its acting end is automatically pressed downwardly upon the upper with increasing force for holding the upper against slipping back. This is important in that it imparts to the wiper its maximum holding power at the time when the wiper is depended upon for holding the upper after the grippers have released it. A comparison of Figs. 4 and 6 will show the effect of this final downward pressure of the wiper upon the work.

In the use of the machine above described the shoe is properly presented against the sole-rest 30, as shown in Fig. 7, and when the machine is started the grippers close upon the upper and are lifted by the lever 154 for pulling the upper about the last. During this movement the grippers and also

the arm 62, carrying the tack block and wiper are held outward by the slide 818 and the bar 322 controlled by the cam 804: but in the continued operation of the machine the cam and intermediate connections actuate the slide 818 to the left in Figs. 1 and 7, thus withdrawing the bar 322 to permit the springs $X^{316}$ to move the grippers inwardly toward the position shown in Fig. 1 for overlaying the upper upon the innersole. The arm 62 follows the grippers, and when the inward movement of the grippers is arrested by the resistance of the upper the arm approaches the grippers for tripping the latch 88 to cause the upper to be released. In the inward movement of the arm 62 the end 61 of the wiper first meets the side of the shoe at or near its edge, as shown in Fig. 9, and because of its rounded formation rides up over the edge of the shoe and upon the shoe bottom, as shown in Fig. 10, thus adapting itself automatically to the altitude of the shoe bottom. This rocking movement of the wiper takes place against the resistance of the spring-pressed plunger 74, which holds the wiper yieldingly down on the shoe as it advances inwardly over the marginal portion of the upper. When the advance movement of the wiper is checked the tack block moves with relation to the wiper, as shown in Fig. 11, and in this relative movement the roll 78 on the plunger is drawn downwardly and wedged under the inclined face *c* of the wiper, thus pressing the wiper with greater force upon the stock and causing it to hold the stock securely. If the movement of the carrier arm 62 after the wiper has been arrested is greater than the lost motion provided for by the slot 66 in the wiper then the wiper will be given a final positive inward movement for tightening the upper before the driver is actuated to insert the fastening tack. In operating upon Goodyear or other shoes the innersoles of which have ribs or shoulders the wiper will, however, not be advanced over the rib or shoulder, but will force the upper firmly into position against said rib or shoulder, as shown in Fig. 6.

It is to be understood that while I have herein explained my invention as applied to and coöperating with certain parts of a particular machine for working uppers over a last, the invention is applicable to any machine for working an upper over a last, and I claim as new and desire to secure by Letters Patent of the United States:—

1. In a machine for working an upper over a last, the combination with a wiper, automatically operating means to actuate the wiper inwardly and downwardly for wiping the upper over the last, and means for supporting the last unyielding to the action of the wiper, of yielding means arranged to permit the wiper to yield in the direction of its actuation and also operating to hold the wiper upon the work during the overwiping operation.

2. In a machine for working an upper over a last, the combination with a wiper, automatically operating means to actuate the wiper inwardly and downwardly for wiping the upper over the bottom of the last, and means for supporting the last unyieldingly to the action of the wiper, of means for allowing variation of the altitude of the wiper in relation to the bottom of the last during the overwiping operation.

3. In a machine for working an upper over a last, the combination with a wiper, automatically operating means to actuate the wiper inwardly and downwardly for wiping the upper over the bottom of the last, and means for supporting the last unyieldingly to the action of the wiper, of yielding means for allowing variation of the altitude of the wiper in relation to the bottom of the last during the overwiping operation.

4. In a machine for working an upper over a last, the combination with upper and lower rests between which the shoe is clamped to determine its vertical position, a carrier, automatically operating means mounted on the carrier for wiping the upper over the bottom of the last, and means for supporting the last unyieldingly to the action of the wiper, said wiping means being arranged for movement in the direction of the thickness of the last to enable it to adapt itself to the position of the last bottom.

5. In a machine for working an upper over a last, the combination with a carrier, automatically operating means mounted on the carrier for wiping the upper over the bottom of the last, and means for supporting the last unyieldingly to the action of the wiper, said wiping means being arranged for movement in the direction of the thickness of the last to enable it to adapt itself to the position of the last bottom, and means for holding the wiper normally at the lower limit of said movement.

6. In a machine for working an upper over a last, the combination with a carrier and means for actuating it from and toward the last, of automatically operating wiping means mounted on the carrier for movement toward and from the plane of the last bottom, means for supporting the last unyieldingly to the action of the wipers, and yielding means for holding the wiping means normally at one limit of its movement with relation to the carrier.

7. In a machine for working an upper over a last, the combination with a carrier, of automatically operating wiping means movably mounted on the carrier and formed with an acting face adapted to engage the upper on the side of the last and ride over

the edge of the last, means for supporting the last unyieldingly to the action of the wipers, and yielding means for holding the wiper normally in its lowest position to adapt it to engage first with the upper on the side of the last and then to move relatively to the carrier as it rides over the edge of the last.

8. In a machine for working an upper over a last, the combination with a gripper, a wiper coöperating with the gripper in the overworking operation, and a carrier for the wiper, of yielding means for pressing the wiper toward the last bottom, means for supporting the last unyieldingly against the action of the wiper and automatically operating means for actuating the wiper inwardly over the last bottom.

9. In a machine for working an upper over a last, the combination with a carrier, of a wiper mounted thereon for tilting movement about a fulcrum located between its end portions to allow variation of the altitude of the wiper with relation to the bottom of the last, means for automatically operating the wiper, means for unyieldingly supporting the last against the action of the wiper, and means for holding the forward end of the wiper normally in its lowest position.

10. In a machine for working an upper over a last, the combination with a tilting wiper, and automatically operating means for actuating the wiper over the shoe bottom, of a carrier on which the wiper has a sliding fulcrum, and yielding means for normally tilting the forward end of the wiper downwardly.

11. In a machine for working an upper over a last, the combination with a carrier, of means movably mounted on the carrier for tilting and endwise movement therein for wiping the upper over the bottom of the last, automatic means for actuating the wiper, and other means for yieldingly holding said wiper in normal position with relation to the carrier.

12. In a machine for working an upper over a last, the combination with a carrier and a wiper mounted thereon, of coöperating faces on said carrier and wiper arranged to permit the wiper to tilt, yielding means for holding the wiper normally in angular relation to the plane of the last bottom, and means for actuating the wiper over the last bottom.

13. In a machine for working an upper over a last, the combination with means for positioning the last, of a carrier, and a wiper mounted thereon for forcing the upper over the last bottom, said wiper being arranged for vertical tilting and endwise sliding movement with relation to its carrier to adapt itself to the position of the portion of the last bottom engaged by it.

14. In a machine for working an upper over a last, the combination with a carrier and a wiper arranged thereon to work the upper over the end of the last, of automatically operating means for actuating the carrier and wiper to wipe the upper over the bottom of the last, said machine having provision for permitting the wiper and carrier to move relatively in the direction of their advance movement during the wiping operation.

15. In a machine for working an upper over a last, the combination with a carrier, of a wiper movably mounted thereon and provided with an inclined face, and yielding means for engaging said inclined face to hold the wiper in normal position and with relation to which it is movable to vary the pressure of the wiper upon the work.

16. In a machine for working an upper over a last, the combination with a wiper and means for moving said wiper over the last bottom, of a yielding member whereby movement of the wiper is yieldingly effected, said member also operating for pressing the wiper yieldingly toward the bottom of the last.

17. In a machine for working an upper over a last, the combination with a carrier and a wiper mounted thereon for tilting and longitudinal movement, of a single yielding means for resisting said tilting and also longitudinal movements.

18. In a machine for working an upper over a last, the combination with a carrier and a wiper mounted thereon for longitudinal and tilting movements, of a yielding element adapted to coöperate with a suitably formed face on the wiper for yieldingly resisting both said movements of the wiper.

19. In a machine for working an upper over a last, the combination with a carrier, of a wiper mounted on the carrier for longitudinal and tilting movement, and means for actuating the wiper and carrier over the last bottom, said machine having provision for causing the wiper to be pressed downwardly toward the work with increasing force as it is caused to yield backwardly.

20. In a machine for working an upper over a last, the combination with a wiper, of means for actuating the wiper inwardly over the last bottom and downwardly toward the last bottom, said actuating means having provision for permitting the inward movement to be arrested and thereby increase the downward movement.

21. In a machine for working an upper over a last, the combination with a tack carrier and a wiper movably mounted thereon for forcing the upper downwardly and inwardly into position to be secured, of yielding means for holding the wiper in normal position with relation to the carrier, said

yielding means being adapted to permit the movement of the wiper endwise to be arrested while the movement of the tack carrier is continued and to increase the downward pressure during such endwise yielding.

22. In a machine for working an upper over a last, the combination with a tack carrier movable over the last bottom toward and from position for presenting a tack to secure the upper, of a wiper arranged for endwise movement with the tack carrier to force the upper into position to be secured and for tilting movement toward the carrier to press the upper upon the last bottom, and yielding means for permitting the endwise movement of the wiper to be arrested for causing the tilting movement to increase the downward pressure while the movement of the tack carrier is continued.

23. In a machine for working an upper over a last, the combination with a tack carrier and means for actuating the carrier over the last bottom to position a tack for securing the upper, of a wiper pivotally mounted on the tack carrier for pressing the upper into position to be secured, and means for automatically increasing the downward pressure of the wiper upon the work during the advance of the tack carrier.

24. In a machine for working an upper over a last, the combination with a tack carrier and means for actuating the carrier over the last bottom to position a tack for securing the upper, of a wiper movable with relation to the tack carrier, and yielding means for causing the wiper to be advanced over the work with the tack carrier and causing the pressure of the wiper upon the work to be automatically increased as the tack carrier is advanced.

25. In a machine for working an upper over a last, the combination with a carrier and a wiper mounted thereon, of means for actuating the carrier over the last bottom and yielding means for causing the wiper to move with the carrier, said machine having provision for positively actuating the wiper with the carrier during the last portion of the movement of the carrier.

26. In a machine for working an upper over a last, the combination with grippers provided with a latch adapted to be operated for causing the grippers to release the upper, of a wiper, a carrier upon which the wiper is movably mounted, and means for actuating the carrier and wiper together over the last for forcing the upper into position to be secured and for actuating the carrier with relation to the wiper for engaging and operating the latch to unlock the grippers.

27. In a machine for working an upper over a last, the combination with grippers and a latch adapted to be operated for causing the grippers to release the upper, of a tack carrier movable over the last bottom for operating the latch and positioning a securing tack, of a wiper and a yielding connection between the carrier and wiper whereby the wiper may move with the carrier to press the upper into position to be secured and then the carrier may move farther, relatively to the wiper, for operating the latch and positioning the securing tack.

28. In a machine for working an upper over a last, the combination with grippers and a latch therefor, of a wiper and a carrier on which the wiper is movably mounted, and means to actuate the carrier for moving the wiper over the upper on the last bottom and thereafter actuating the carrier relatively to the wiper for operating the latch to cause the grippers to release the upper.

29. In a machine for working an upper over a last, the combination with a tack carrier, of a wiper mounted upon the under side of the tack carrier for movement substantially in the plane of its wiping surface and provided with an elongated opening through which the tacks may be driven in different positions of the wiper with relation to the tack carrier.

30. In a machine for working an upper over a last, the combination with grippers, means for actuating the grippers for stretching the upper, means for yieldingly actuating the grippers to draw the upper over the last bottom, and a latch to be operated for causing the grippers to release the upper, of a tack carrier movable over the last bottom for operating the latch and positioning a tack, and a wiper mounted on the tack carrier for movement yieldingly endwise therewith and normally extending in advance of the carrier for engagement with the upper before the latch is operated to cause the grippers to release the upper.

31. In a machine for working an upper over a last, the combination with a carrier and a wiper mounted thereon for tilting movement, of means for actuating the wiper over the last, and means for yieldingly pressing the wiper downwardly toward the last during a portion of its movement over the last, said machine having provision for rigidly pressing the wiper toward the last during the latter part of said movement.

32. In a machine adapted to work an upper over a shouldered innersole on a last bottom, the combination with a wiper and means for moving the wiper endwise over the shoe bottom with a downward pressure, said means having provision for permitting the movement of the wiper to be arrested when the upper engages the shoulder of the innersole and causing the downward pressure to be increased.

33. In a machine adapted to work an upper over a shouldered innersole on a last

bottom, the combination with a carrier, means for actuating the carrier in a plane approximately parallel with the shoe bottom, and a wiper mounted on the carrier and movably connected thereto to permit its inward movement to be arrested by the resistance offered by the shoulder of the innersole, and means for automatically actuating the wiper downwardly when its inward movement is arrested.

34. In a machine for working an upper over a last, the combination with a carrier and a wiper mounted thereon for tilting and longitudinal movement, of yielding means for resisting said longitudinal movement constructed and arranged to increase the tilting movement as the longitudinal movement is resisted.

35. In a machine adapted to work an upper over a shouldered innersole on a last bottom, the combination with a wiper and automatic operating means constructed and arranged to actuate the wiper inwardly over the shoe bottom and to increase the downward pressure of the wiper upon the upper after the wiper reaches the shoulder.

36. In a machine adapted to work an upper over a shouldered innersole on a last bottom, the combination with a wiper and automatic operating means constructed and arranged to actuate the wiper inwardly over the shoe bottom and to apply force for depressing the advance edge of the wiper to press the upper into the angle between the shoulder and feather of the innersole when the wiper has wiped the upper against the shoulder.

37. In a machine adapted to work an upper over a shouldered innersole on a last bottom, the combination with a wiper and operating means to advance the wiper over the work and then to tilt the leading edge of the wiper downwardly to press the upper into the angle between the shoulder and the feather of the sole.

38. In a machine adapted to work an upper over a shouldered innersole on a last bottom, the combination with a wiper and operating means to advance the wiper over the work and then automatically to move the wiper and the last relatively in the direction to compress the overwiped upper between the wiper and the last bottom.

39. In a machine of the class described a wiper and means for supporting and actuating the wiper constructed and arranged to advance the wiper over the work and then automatically to increase the pressure of the wiper downwardly upon the work.

40. In a machine of the class described the combination with a wiper having its leading edge face inclined upwardly and inwardly to facilitate wiping movement over the edge of the shoe, and means for advancing the wiper and then applying force in the direction to depress the leading edge of the wiper upon the shoe bottom.

41. In a machine for working an upper over a last the combination with a tack carrier and means for actuating the carrier over the last bottom to position a tack for securing the upper, of a wiper under the carrier, and actuating means acting to apply downward pressure through the portion of the wiper overlying the shoe bottom before the tack is driven.

42. In a machine for working an upper over a last the combination with a tack carrier and means for actuating the carrier over the last bottom to position a tack for securing the upper, of a wiper under the carrier, and connected mechanism to advance the carrier and the wiper over the shoe bottom and then depress the leading portion of the wiper.

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

RONALD F. McFEELY.

Witnesses:

ELIPHALET A. TRIPP,

ARTHUR L. RUSSELL.