

F. G. KING.
MACHINE FOR USE IN THE MANUFACTURE OF BOOTS AND SHOES.
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1,054,003.

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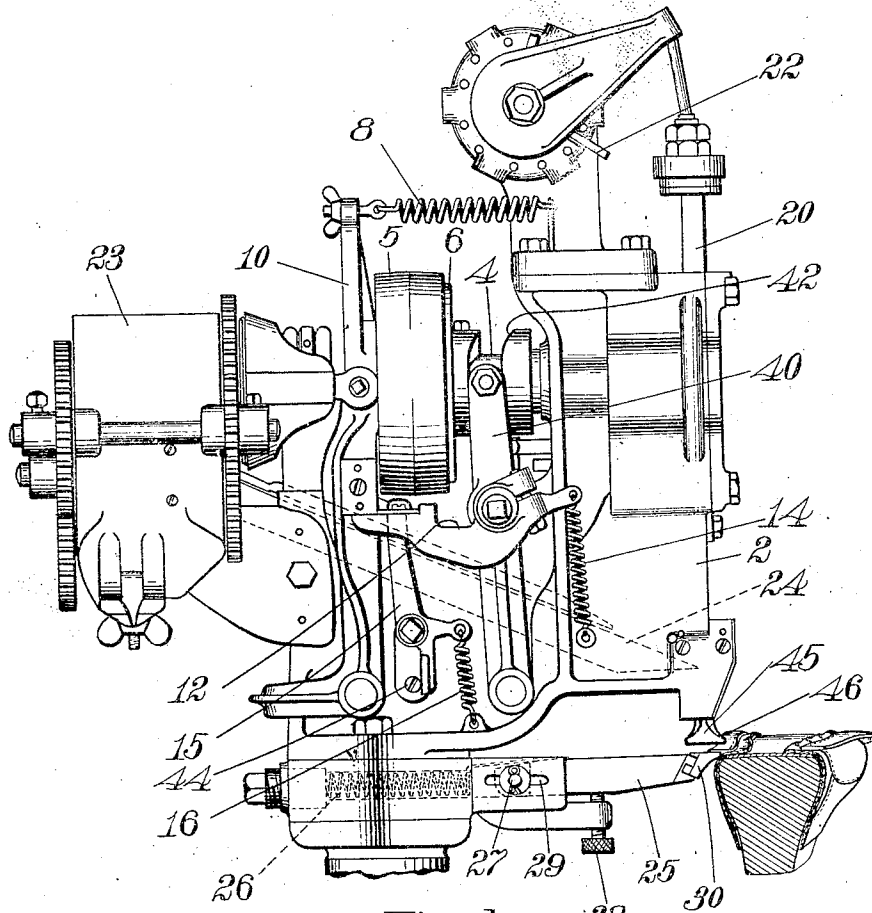


Fig. 1.

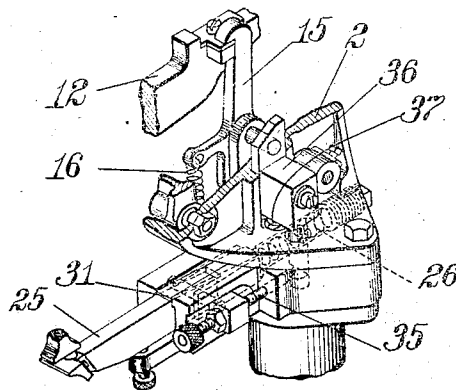


Fig. 2.

WITNESSES:
Richard H. Fraker
Arthur L. Russell

INVENTOR.

Fredrick G. King

UNITED STATES PATENT OFFICE.

FREDERICK G. KING, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

MACHINE FOR USE IN THE MANUFACTURE OF BOOTS AND SHOES.

1,054,003.

Specification of Letters Patent.

Patented Feb. 25, 1913.

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To all whom it may concern:

Be it known that I, FREDERICK G. KING, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Machines for Use in the Manufacture of Boots and Shoes, 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 is herein embodied in a machine for use in applying pressure to a shoe and thereafter operating upon the shoe. In the particular instances illustrated, the machine is arranged to apply pressure against the side of a lasted and welted shoe at or adjacent to the rear end of the welt and the front end of the heel seat for forcing the shoe stock into snug relation to the last and for holding it in such relation while a tack is inserted into the upper and innersole on the shoe bottom for securing the stock. This operation is related to the shoe lasting operation and is required in the manufacture of good welt shoes because there is necessarily a space at each side of the shoe between the permanent upper fastening tacks of the heel seat and the ends of the permanent upper fastening seam or in seam, as it is called. This space is left because the sewing machine cannot extend the seam all the way to the ends of the row of heel seat tacks. If this upper tightening and securing operation is not performed before the sole and heel are attached the shoe stock is liable to spread at these points during the attaching operation or during subsequent wear and give to the shoe a loose and ill fitting appearance at the front ends of the heel stiffener.

The present invention while embodied in a machine particularly adapted for doing the work above outlined is also capable of embodiment in different machines.

An important feature of the present invention consists in means, in a machine of the class described, for insuring a predetermined degree of pressure upon the shoe before the subsequent operation for which the machine is arranged can be performed. In the illus-

trated machine this feature of the invention is embodied in means arranged to require a predetermined amount of pressure to be exerted at the side of the shoe before the fastener can be inserted for securing the stock in the position to which it is pressed. This illustrated arrangement is characterized by two features either of which alone may, in some instances, be employed. In the first place, the parts are so arranged that a predetermined pressure must be applied in order that the shoe may be moved from the upper tightening position into the proper field of action or the correct position for the tacker to insert the fastening where it will hold the shoe stock. Also, as herein shown, this displacement or movement of the shoe, permitted when the pressure has been attained, is arranged to effect the starting of the power driven mechanism, which, in this machine, is employed for inserting the securing tack but which in other machines, comprehended in this invention, might be employed for driving any tool or device for effecting a further operation upon the shoe.

Other features of the invention including certain details of construction and combinations of parts will be explained in connection with the following description of the machine and will then be pointed out in the claims.

Figure 1 is a side elevation of a machine embodying this invention in the best form now known to me; Fig. 2 is a perspective view arranged to illustrate particularly the new features of the machine.

The machine comprises a head or fixed frame-work 2 upon which is journaled a cam shaft 4 driven by a clutch which comprises a loose pulley 5 and a cooperating member 6 which is fast to the shaft and with relation to which the pulley 5 is movable axially into and out of driving engagement. This axial movement of the clutch member 5 is effected by the spring 8 through a lever 10 pivoted at its lower end to the head and operatively connected to the pulley for moving the latter from and toward the clutch member 6. The lever is normally locked in its retracted position with the clutch members disengaged by a controlling lever 12 having on its rear or left hand end, Fig. 1, an abutment arranged to engage a small abutting face on the lever 10. The

controlling lever 12 is pivotally mounted and held by a spring 14 in locking engagement with the lever 10. A tripping device 15 is arranged to overhang the controlling lever 12, as shown particularly in Fig. 2 for pulling down the controlling lever to disengage lever 10 and allow spring 8 to close the clutch. The cam shaft is provided with a driver lifting cam of suitable construction for raising the driver bar 20 against the tension of a driver actuating spring 22. The cam shaft also has means for actuating the tack supplying mechanism to deliver tacks from the hopper 23 through the raceway 24 into position to be inserted by the driver.

The pressure applying arm or upper tightening device 25 is mounted for endwise movement in the head of the machine against the resistance of the forwardly acting spring 26. The arm 25 is shown as formed in two sections pivotally connected by the pin 27 to permit the outer end of the arm to be moved vertically toward and from the tacker, its lower position being determined by an adjustable screw 28 against which it is normally held by a leaf spring 31, in Fig. 2. The nozzle of the tacker is preferably stationary and by reason of the provision for vertical movement of the upper tightening device the shoe stock may be firmly compressed between the nozzle and the last before the tacker is caused to insert the fastening tack, as well as forced inwardly over the edge of the last to tighten it by reason of the displacement of the tightening device laterally with relation to the direction of movement of the driver. The arm 25 has on its front end a suitably shaped work engaging member 30 which may be pivotally mounted and formed as shown to extend into the welt crease and to press against the upper at the side of the shoe near its edge for forcing the shoe stock into snug relation to the last. The pressure arm 25 also has on one side, see Fig. 2, a lug which may be the head of the pin 27 within which is adjustably mounted the threaded pin 35, the inner end of which is tapered, as shown in dotted lines. This pin is arranged to overlie an inclined face on the stem of a vertically movable block 36 upon which is pivotally carried the tripping device 15. This arrangement provides that when the pressure determined by the adjustment of the spring 26 has been applied through the last against the arm 25 for tightening the upper, the arm will move backwardly carrying with it the taper pin 35 and, through the block 36, pull down the tripping device 15 and the rear end of the clutch controlling lever 12, thereby permitting lever 10 to be moved by its spring 8 for closing the continuously driven clutch member 5 against the fast clutch member to cause the tacker to be actuated.

The clutch controlling device 12 is fulcrumed upon a swinging arm 40, the upper end of which has a roll extending into a cam groove 42 by which said arm and the controlling device are moved forwardly during the rotation of the cam shaft to withdraw the controlling lever from under the hook, see Fig. 2, of the tripping device 15. The spring 14 raises the controlling lever as soon as it is freed from the tripping device and in the further rotation of the cam shaft the controlling lever is moved rearwardly to reengage the lever 10 and separate the clutch members at the end of one rotation of the cam shaft during which a tack has been driven and another tack supplied in position to be driven at the next machine operation. The tripping device is, however, held down until the pressure of the shoe on arm 25 is relieved and there is no possibility of the machine making a second revolution and driving a second tack until the shoe has been moved outwardly to let the arm 25 and the tapered screw 35 come forward again. The device or lever 15 has a tail-piece arranged to engage a stop stud 44 and the hooked head of the tripping device 15 is beveled, as shown in Fig. 2, to cause it to tip backwardly as it is raised by the spring 37 toward position for reengaging lever 12 after the pressure of the shoe against the arm 25 has been relieved and the spring 26 permitted to force said arm and the taper pin 35 forwardly.

The nozzle 45, through which the tack is driven, is herein shown as of peculiar form in that it has a rearward extension or lip 46 which extends backwardly far enough to prevent the possibility of the endwise movable pressure arm ever rising above the lower end of the nozzle and becoming caught against it as might otherwise happen when the shoe stock in the rear of the welt end is presented against the arm. It is sometimes desirable to do this for tightening and securing the shoe stock farther back than the welt extends.

Having explained the nature of this 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 machine of the class described having, in combination, means for operating on a shoe after the upper has been tensioned, and an upper tensioning device arranged in the path of presentation of the shoe to said means and adapted to be displaced by the shoe only after force enough has been applied to it through the shoe to cause a predetermined tension on the upper to be effected.

2. A machine of the class described having, in combination, a device to engage a shoe laterally for forcing the upper material

toward position to be secured on the shoe bottom, said device being arranged for displacement laterally only after a predetermined tension has been applied to the upper to allow the shoe to be moved into position to receive a tack for holding the upper, and tacking mechanism for inserting a tack.

3. A machine of the class described having, in combination, a tacker for securing the shoe stock in lasted position to the inner-sole on a last bottom, lasting means which is formed to engage a shoe in the welt crease and stands normally in a position to prevent presentation of the shoe in lateral position to receive the action of the tacker, yielding means which holds the lasting means in the position specified and permits it to be moved therefrom only after a predetermined pressure endwise against it has been applied to it through the shoe whereby the upper near the end of the welt crease shall be tightened by engagement of said lasting means in the crease before the shoe is moved into position for the tacker to fasten the tightened upper.

4. A machine of the class described having, in combination, movable means adapted to engage in the welt crease of a welted shoe and yieldingly held in normal position, a tacker, mechanism between said means and tacker whereby the yielding of the movable means under upper tightening pressure will effect actuation of the tacker.

5. A machine of the class described having, in combination, an upper tightening device and a tacker arranged to operate upon a shoe in different lateral positions of the shoe, and means arranged to insure the application of a predetermined upper tightening force before the shoe can be moved laterally into operative relation to the tacker.

6. A machine for working over a last the portions of shoe stock adjacent to the ends of the inseam, having, in combination, means for engaging the shoe in the welt crease to tighten the upper over the last, means for tacking the upper in tightened position, and means for insuring the application of a predetermined tightening force before the tack is driven.

7. A machine for working over a last the portions of shoe stock adjacent to the ends of the inseam, having, in combination, means for engaging the shoe in the welt crease to tighten the upper over the last, other means for operating upon the shoe, and means for insuring the application of a predetermined tightening force before said other means can be operated.

8. A machine of the class described having, in combination, means for working into lasted position the upper of a welted shoe adjacent to the end of an inseam and the end of the row of heel seat tacks, said means

being constructed and arranged to engage the shoe stock between the upper and the welt and tighten the upper about the last, and means arranged to be started automatically into operation for securing the upper when a predetermined upper tightening force has been applied.

9. A machine of the class described having, in combination, upper tightening means for forcing an upper laterally toward lasted position upon a shoe bottom to place it under tension, and means arranged to be started automatically for fastening the upper only after a predetermined lateral upper tightening tension has been applied.

10. A machine of the class described having, in combination, an upper tightening device arranged for lateral displacement during the upper tightening operation, and an upper securing means arranged to be set into operation automatically by the lateral displacement of said tightening device.

11. A machine of the class described having, in combination, a tacker, an upper tightening device arranged for independent displacement vertically and horizontally by the work, and connections between said tightening device and tacker arranged to cause a tack to be inserted automatically when one of said displacements has been effected.

12. A machine of the class described having, in combination, a tacker comprising a vertically stationary nozzle, actuating mechanism for the tacker, an upper tightening device arranged to be displaced only after a predetermined upper tightening force has been attained, and connections for automatically starting the actuating mechanism by said displacement of the tightening device.

13. A machine of the class described having, in combination, a tacker, an upper tightening device constructed and arranged to engage the shoe in the welt crease and movable transversely of the path of the driver, and means rendered operative by said movement to cause the tacker to insert a tack.

14. In a machine for working into lasted position the upper of a shoe having an out-turned sole-attaching flange, the pressure bar having a work engaging portion shaped to enter the crease between said flange and the side of the shoe and movable upwardly and backwardly, and tack driving mechanism rendered operative by such movement.

15. In a machine for working into lasted position the upper of a shoe, having an out-turned sole-attaching flange, the pressure bar movable backwardly, the adjustable wedge connected therewith, the tacking mechanism and its actuating means, and the connection between said wedge and said means.

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16. A machine for lasting and tacking
welt shoes having, in combination, the welt
crease engaging wiper 25 movable endwise
by the work, and the tacking mechanism ar-
ranged to be started by said endwise move-
ment of the wiper.

17. A machine for lasting and tacking
welted shoes, having in combination, the
welt crease engaging wiper 25 displaceable
endwise and upwardly by movement of the
work into tack receiving position, and tack-
ing mechanism arranged to be started and
caused to insert a single tack by one of said
movements of the wiper.

18. A machine for lasting and tacking

shoes having, in combination, the pressure
bar 25 adapted to engage the side of the
shoe and displaceable endwise and up-
wardly, and the tacker nozzle 45 having the
inward extension arranged to overlies the bar
in all positions thereof for the purpose de-
scribed.

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

FREDERICK G. KING,

Witnesses:

PHILIP H. FRAHER,
ARTHUR L. RUSSELL.