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WELT BUTT TACKING MACHINE.

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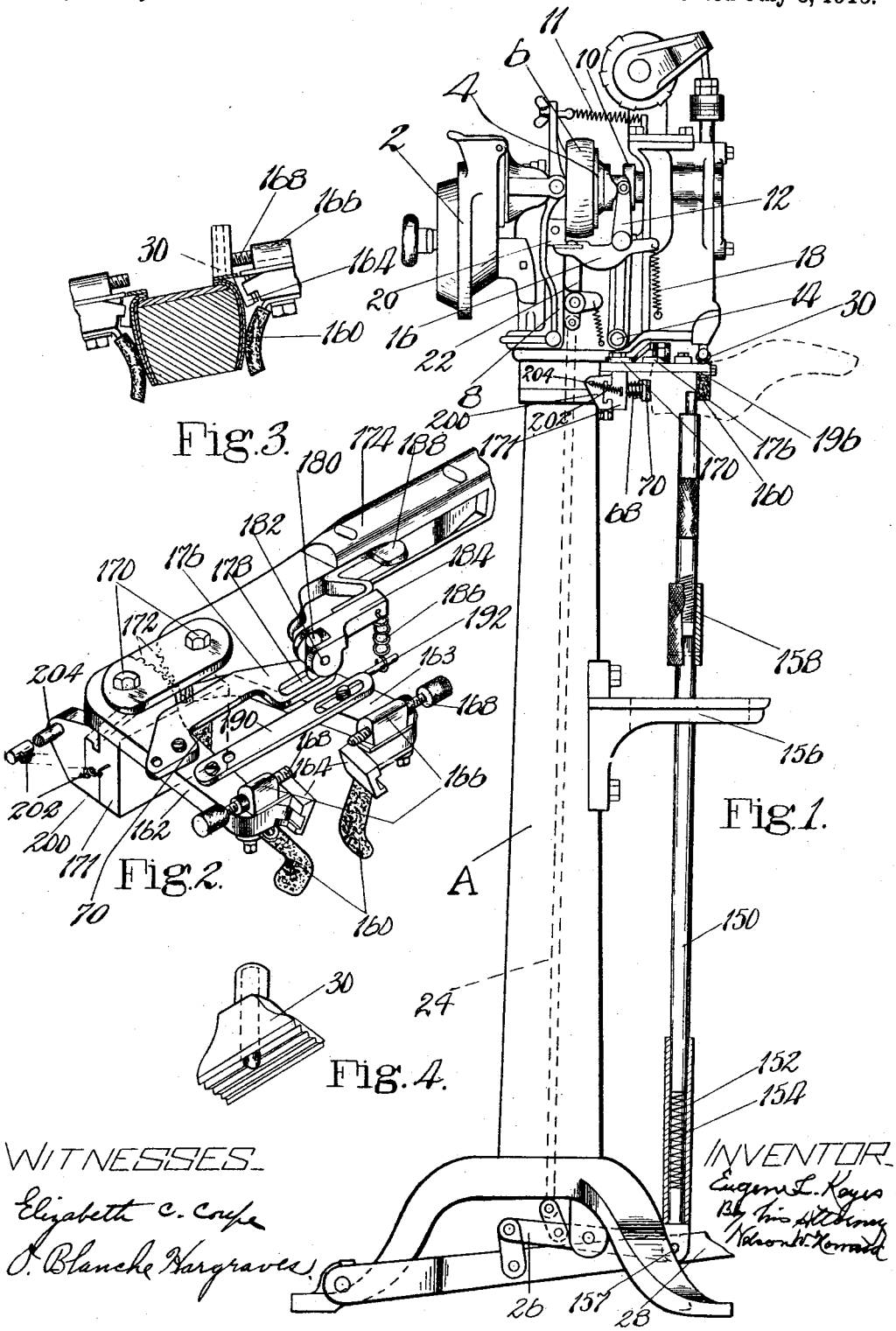


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

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UNITED STATES PATENT OFFICE.

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WELT-BUTT-TACKING MACHINE.

1,066,917. Specification of Letters Patent. Patented July 8, 1913.

Original application filed October 3, 1910, Serial No. 585,099. Divided and this application filed June 16, 1911. Serial No. 633,469.

To all whom it may concern:

Be it known that I, EUGENE L. KEYES, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Welt-Butt-Tacking 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 as, for example, to lasting and tacking machines, and is embodied in a machine for tightening a welted shoe to the last adjacent to the end of the heel-seat and fastening it.

Objects of this invention are to increase the speed and efficiency and reduce the labor required to operate some machines heretofore proposed for this work, including the machine of my prior application Serial No. 399,529, filed Oct. 28, 1907.

The present application is a division of my application Serial No. 585,099, filed Oct. 3, 1910.

An important feature of this invention consists in the provision of novel means for tightening and holding the shoe stock in position to be fastened. This is shown as including oppositely disposed clamps, each of which has members arranged to engage the shoe at the lower edge of the heel stiffener and then to act progressively upward to force the side of this portion of the shoe snugly to the last. Above these members are other members formed to engage at the crease under the end portions of the welt to take up the slack produced by the action of the lower members and tighten the stock over the last edge by pressure against the welt and the upper and, it may be, against the stitches of the inseam which said member may be shaped to engage in the crease. The clamps which are preferably in opposed relation to each other are connected for operation together by means which is shown as manually actuated. A locking means is preferably provided for holding the clamps in clamping position and is conveniently arranged with relation to the actuator for the said clamps.

Another very important feature of this invention is found in the means provided for presentation of the work to the tacking mechanism. As shown, the work holder, formed as above indicated or otherwise, is mounted and preferably guided relatively to a tacker for movement to present one tightened side of the shoe in position to be fastened and then to present the opposite portion or side of the shoe while the stock continues to be held. In the illustrated construction, the work holder is guided for transverse movement in the tacking machine. The shoe is yieldingly upheld upon a spindle which is raised in time relation to the tacking operation. After the work holder has been actuated by a single pull on its operating lever to tighten the shoe to the last, the shoe is positioned with one side of its bottom, including the overworked edge of the upper or the welt, or both, under the nozzle of the tacker and the treadle is then depressed to raise the shoe firmly against the nozzle and then to start the tacker. A plurality of tacks can be driven if desired and then the work is shifted laterally to present the other side of the shoe bottom in position to be tacked.

A further feature of the invention consists in provision for laterally positioning the movably supported shoe relatively to the tacker for the tacking operation. Preferably stops are employed which are positioned relatively to the shoe with or by the side clamps and are arranged to engage the machine as the shoe is moved transversely to determine the distance from the side edge of the shoe at which the tacks shall be driven. The shoe support is mounted to oscillate about a pivot and the clamping device is guided for movement in a curved path about this pivot as a center, so that the shoe when clamped and presented to the tacker is in a somewhat inclined position and the tacks are driven at an inwardly inclined angle. The machine is so constructed and arranged that its use requires very light manual labor and a small degree of skill so that it can be operated by a boy or other cheap labor.

These and other features of this invention will be more fully explained in connection with the detailed description of the machine in which the invention is illustrated as em-

bodied and will then be pointed out in the claims.

In the drawings,—Figure 1 represents a machine embodying this invention; Fig. 2 represents the oscillating clamping device in perspective; Fig. 3 is a section through the shoe and last in front of the clamping device showing the relative position of the clamps and the tacker when in operative position; and Fig. 4 represents the presser foot of the tacking machine.

Referring to Fig. 1, A represents the standard of a tacking machine of common type, a description of which machine is found in United States Patent No. 389,275, September 11, 1888, and need not be given herein except in general. 2 is the tack hopper and tack arranging and feeding device, 4 one clutch member, 6 the driving pulley which forms the second clutch member, 8 the clutch operating lever, and 10 is a cam which acts on the lever 12, fulcrumed at 14. On the lever 12 is pivoted the lever 16, the left hand arm of which is forced upward by a spring 18 and rests against the block 20 on the clutch lever 8. The block 20 is engaged by a shoulder on the lever 16 and when this lever is displaced lengthwise to the left by the cam 10 and lever 12, the clutch is thrown out. The cam 10 is timed to throw out the clutch just before the tack is driven so that, when the clutch is thrown in by depressing the left hand end of the lever 16 so as to disengage the shoulder thereon from the block 20, the tack will be immediately driven. The lever is depressed by means of a spring-pressed dog 22 attached to a rod 24 leading to lever 26 and treadle lever 28. When the treadle is depressed the dog engages a projection on the lever 16 and depresses it, thus permitting the spring 11 to throw the clutch in.

Referring to the work support more in detail, 150 is the jack rod which is slidingly mounted in a socket block 152 which is loosely pivoted at 157 to the lever 26. Within the block 152 a spring 154 is provided for yieldingly pressing the rod upward. Excess movement of the jack about the loose joint 157 is prevented by the bracket 156 embracing the jack rod and bolted to the standard of the machine. The jack rod is in two parts connected by the collar 158 which is pinned to the lower part of the rod and threaded to the upper part so that the length of the rod may be adjusted by rotating either portion relatively to the other. As will be readily seen from Fig. 1, depression of the clutch controlling treadle 28 will operate through its link connection with one end of the lever 26 to elevate the opposite or forward end thereof to which the jack is pivoted at 157 as described, and will consequently elevate the jack. The lever arms are so proportioned that a quick elevation of the jack is effected and the connections with the clutch provide that the shoe shall be pressed yieldingly (by spring 154) against the tracker nozzle before the power mechanism inserts the tack.

The clamping means comprises the spring fingers 160, covered with non-abrasive material, bolted to levers 162, 163, and the rigid blocks 164 which are mounted for free sliding movement in curved guideways upon the inner edges of the front ends of the levers 162, 163 and may be disposed at the proper angle to the longitudinal axis of the last to clamp the upper firmly to the last. Lugs 166 on the levers have threaded therein the screws 168 which act as adjustable stops to engage alternately the opposite lateral sides of the tacker nozzle 30 of the tacking machine (see Fig. 3). The levers 162, 163 are pivoted at 170 to a block 171 and are provided with intermeshing toothed segments 172 whereby the clamping fingers are made to move simultaneously in opposite directions; the lever 163 has a handle 174 for operating the clamping fingers and means is provided for locking the fingers in clamping position. This consists of a plate 176 pivoted to the lever 162 at one end and at the other provided with a slot 178 through which passes a pin 180 on the lever 163. On the pin is pivoted eccentrically at 182 the bifurcated end of a catch lever 184 which is held in engaging position with the slotted plate 176 by a spring 186, the other end of which is attached to a pin 192 extending from the lever 163. The lever 184 carries offset therefrom the thumb piece 188 disposed in convenient position to be engaged by the thumb of a hand of the operator while holding the handle 174. By this means the clamp may be readily unlocked and will be automatically locked by the spring 186 when the thumb piece 188 is released. A height gage 190 for the shoe is attached to the levers 162 and 163 by a screw and hole and by a screw and slot respectively.

The clamping mechanism is attached to the machine standard for lateral sliding adjustment by the engagement of a T-shaped curved tongue on the block 171 with a corresponding groove in a block 200 pivoted at 204 to a collar on the standard, the curve of the tongue and groove being struck from the pivot of the jack rod 157 as a center. The springs 202 are attached to the pins 204 and to the block 171 on each side of the machine and tend to hold the block in normal position.

In Fig. 4 is shown the tacker nozzle of the tacker detached. As shown the engaging surface is ribbed or corrugated but it may be made smooth, if desired.

In operating the machine, the shoe is spindled on the jack rod and swung in be-

tween the jaws of the clamp or holder which is closed thereon by operation of the handle 174. The padded lower ends of the resilient fingers 160 engage the upper first at a point considerably below the insole and the area of engagement spreads upwardly as they yield under pressure until finally the rigid blocks 164 engage the upper in the welt crease, take up the fullness developed by the resilient fingers, and force the upper firmly in over the insole. The upper is thus drawn tightly to the last at the shank portions and the welt ends brought into place to be tacked to hold them and the upper in place as indicated in Fig. 3. The clamp is there locked automatically in work holding position by the eccentric lever 184 through the spring 186 which normally holds the lever in locking position. The shoe is now swung to one side until one of the stops 168 engages the tacker nozzle 30 or other convenient stationary stop. During this movement the curved tongue on the block 171 which carries the shoe clamping device slides in the block 200. The pedal lever 28 is now depressed to raise the shoe firmly against the tacker and to trip the clutch which operates the tacker, whereupon a tack is automatically driven in a vertical direction which, as the shoe support 150 by being thrown to one side is inclined to the vertical, will be in a direction inclined inward from the edge of the insole. The treadle pressure is then relaxed and the shoe and clamping means are now swung, with the jack post, in the other direction until the opposite stop 168 comes in contact with the other side of the tacker nozzle which positions the work for tacking the other end of the welt butt in place, the tack being positioned at the same distance from the edge of the shoe as the tack first driven, or at a different distance, as desired, according to the adjustments of the stop screws 168. If desired, more than one tack may be driven upon each side of the shoe. To release from the clamping device, the operator presses the thumb piece 188 upwardly, moving the lever 184 in opposition to the spring 168 and releasing it from engagement with the connecting plate 176 which frees the clamping members so that they may be moved apart by operation of the lever 174.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. A machine of the class described having, in combination, a tacker, and a shoe clamp supported for movement relatively thereto to present opposite sides of the shoe to be tacked and comprising opposed clamping members connected together, one of said members having an actuator through which and said connection they may be closed upon the shoe.

2. A machine of the class described, having, in combination, a tacker, a shoe clamp comprising opposed clamping members arranged to apply local pressure in the region of the ends of the heel stiffener, means for operating said members, and a connection between the clamp and the tacker arranged to direct movement of the shoe in a curvilinear path transversely of the machine in the presentation of the opposite sides of the shoe to the tacker.

3. A machine of the class described having, in combination, a tacker, a pivoted last spindle, and a shoe clamp separately supported and being guided for lateral movement relatively to the tacker in a path of vertical curvature about the pivot for the spindle to present opposite sides of the shoe bottom adjacent to the welt ends alternately to the tacker.

4. A machine of the class described having, in combination, a tacker, a shoe clamp arranged to tighten the shoe stock at opposite sides of the shoe adjacent to the ends of the welt, and means for guiding the clamp in a curved path to present the two sides of the shoe bottom alternately to the tacker for the insertion of tacks in a direction inclined inwardly from the edge of the shoe.

5. A machine of the class described, having in combination, a tacker, a shoe clamp movable laterally to present opposite sides of the shoe to the tacker, and coöperating adjustable stops on the clamp and tacker for determining the relative movement of the shoe and tacker for positioning the tacks at predetermined equal or unequal distances from the edge of the shoe.

6. A machine of the class described having, in combination, a tacker, a shoe clamp movable laterally in a predetermined path of prescribed vertical curvature to present opposite sides of the shoe to the tacker, and coöperating stops on the clamp and the tacker to arrest movement of the clamp in position for the tacks to be driven through one butt and then the other butt of the welt.

7. A machine of the class described, having in combination, fastening inserting means, a shoe clamp movable laterally to present opposite sides of the shoe beneath the fastening means, and coöperating means on the fastening means and the clamp for arresting the shoe with the fastening means in predetermined relations to the sides of the shoe alternatively.

8. A welt butting machine having, in combination, a single tacker, welt butt edge locators movable with the shoe in presentation of opposite sides of the shoe bottom to the tacker, and stops associated with said locators to determine the lateral relation of the adjacent edges of the shoe to the tacker.

9. A machine of the class described hav-

ing, in combination, a shoe clamp comprising opposed members to apply local pressure to a lasted and welted shoe near the ends of the heel stiffener and in and below the welt crease to tighten the upper and position the welt butts, and means to maintain said members in holding position.

10. A machine of the class described having, in combination, a tacker having an exposed nozzle, and a shoe clamp having for each side of the shoe an adjustable stop to engage the nozzle for locating the tacks relatively to the edge of the shoe.

11. In a welt butt tacking machine, the combination of work clamping means comprising members for engaging the shoe in the welt crease, resilient members for engaging the sides of the shoe below said first mentioned members, arms upon which said members are mounted for movement toward and from each other, a connecting plate overlying said arms pivoted to one of them and arranged to have sliding engagement with the other, and means for clamping the plate to the arm with which it has sliding engagement.

12. In a machine of the class described, the combination of a work support, tacking mechanism, a block mounted for movement transversely of the tacker, arms pivoted on the block for movement in a horizontal plane, means for moving the arms simultaneously, rigid members carried by said arms and resilient members carried by said arms and located below said rigid members.

13. In a welt butt tacking machine, the combination of clamping means adapted to engage the sides of the shoe locally for a short distance adjacent to the front ends of the heel stiffener and the ends of the welt, arms turning on vertical axes and upon the front ends of which said clamping means are carried, means for moving the arms simultaneously to swing the clamping means toward and from each other, and means for locking the arms against relative movement with the clamping members in clamping position.

14. In a welt butt tacking machine, the combination of a tacker, a sliding block 171, an elbow lever 163 mounted thereon, a lever 162 also mounted thereon, means connecting said levers for simultaneous movement, resilient members 160 carried by said levers, rigid welt crease engaging members 164 mounted for free sliding movement upon said levers and located above said resilient members, and stop screws 168 carried by said levers and adapted to contact with the nozzle of the tacker.

15. In a welt butt tacking machine, the combination of a tacker, a block mounted for lateral sliding movement, levers pivoted thereto, shoe clamping means carried by said levers at their ends, means for forcing said levers simultaneously toward each other to bring said clamping means into clamping position, and means preventing reverse movement of said levers until manually released.

16. A machine of the class described having, in combination, oppositely disposed clamps each of which has a yielding member 160 arranged to engage the shoe first locally at a point on the side of the shoe remote from the sole and directly below the ends of the welt and then to act progressively upward to force the side of this portion of the shoe snugly to the last along the shank portion and connected means for operating said clamps.

17. A machine of the class described having, in combination, oppositely disposed clamps each of which has a yielding member 160 arranged to engage the shoe at the lower edge of the heel stiffener and then to act progressively upward to force the side of this portion of the shoe snugly to the side face of the last and a substantially rigid member 164 arranged for later engagement forcefully with the shoe stock at the edge of the last and adapted to bend it over the last bottom and hold it in position to be fastened.

18. A machine of the class described having, in combination, oppositely disposed clamps each of which has a relatively yielding member arranged to engage first with the side of the shoe near the lower edge of the heel stiffener and then to act progressively upward and a separate relatively rigid member arranged for later engagement with the upper at the edge of the last, and a carrier upon which the latter member is mounted for self adjustment to the longitudinal curvature or inclination of the last edge without disturbing the yielding member.

19. A machine of the class described having, in combination, oppositely disposed clamps each of which comprises a spring finger 160 covered with non-abrasive material, a lever to which the finger is bolted and a rigid block 164 pivotally connected to the lever at the upper end of the spring finger and operating means for the clamps all arranged substantially as and for the purpose specified.

20. A welt butt tacking machine having, in combination, a tacker and a holder adapted to receive a shoe with the heel end extending under the tacker, guiding connections on the tacker and on the shoe holder directing movement of the holder transversely of the shoe for presentation of one and then the other welt butt to the tacker and limiting the holder to such transverse movement, and means for operating the holder to grip a shoe.

21. A welt butt tacking machine having,

in combination, a tacker and a holder adapted to receive a shoe with the heel and extending under the tacker, guiding connections on the tacker and on the shoe holder directing movement of the holder transversely of the shoe for presentation of one and then the other welt butt to the tacker and limiting the holder to such transverse movement, said holder having devices to engage a welted shoe in the welt crease under the welt butts and tighten the stock into position to be fastened, and means for operating said devices to seize and hold a shoe.

22. A welt butt tacking machine having, in combination, a tacker and a holder adapted to receive a shoe with the heel end extending under the tacker, guiding connections on the tacker and on the shoe holder directing movement of the holder transversely of the shoe for presentation of one and then the other welt butt to the tacker and limiting the holder to such transverse movement, and relatively adjustable stops to limit such movement in either direction at the points where the welt butt is under the inserting point of the tacker.

23. A welt butt tacking machine having, in combination, a tacker and a holder adapted to receive a shoe with the heel end extending under the tacker, guiding connections on the tacker and on the shoe holder directing movement of the holder transversely of the shoe for presentation of one and then the other welt butt to the tacker and limiting the holder to such transverse movement, and stops on each side of the holder and positioned according to the width of the shoe in the holder to contact with the tacker on one or the other side to limit movement of the holder at the points where the tack should be inserted.

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

EUGENE L. KEYES.

Witnesses:

EVERETT W. VARNEY,

ARTHUR L. RUSSELL.

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

Corrections in Letters Patent No. 1,066,917.

It is hereby certified that in Letters Patent No. 1,066,917, granted July 8, 1913, upon the application of Eugene L. Keyes, of Boston, Massachusetts, for an improvement in "Welt-Butt-Tacking Machines," errors appear in the printed specification requiring correction as follows: Page 2, line 69, for the word "tracker" read *tacker;* same page, line 82, for the word "alternately" read *alternatively;* page 5, line 2, for the word "and" read *end;* 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 25th day of November, A. D., 1913.

[SEAL.]

J. T. NEWTON,

Acting Commissioner of Patents.