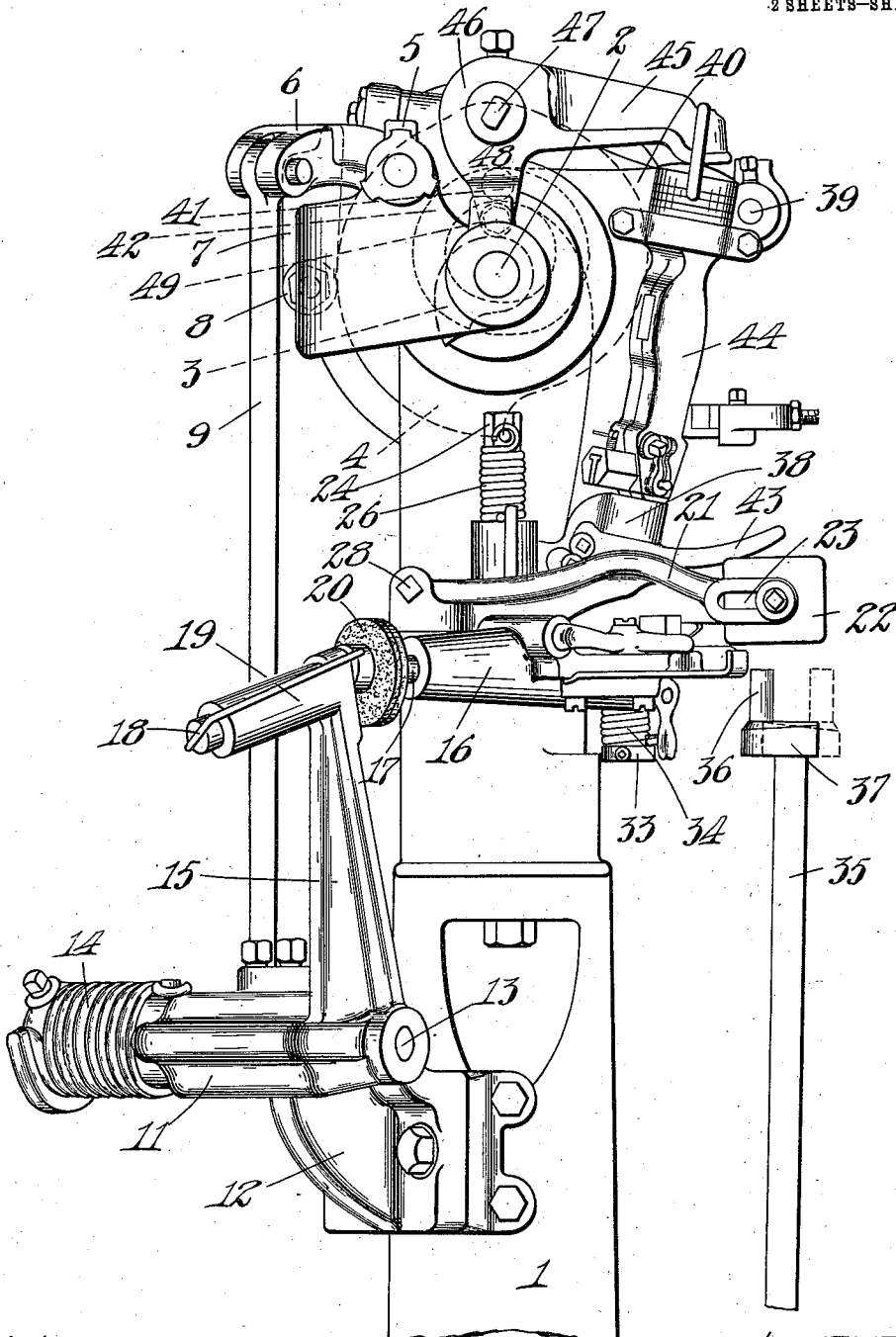


O. ASHTON.
MACHINE FOR ASSEMBLING PARTS OF BOOTS AND SHOES.
APPLICATION FILED MAY 13, 1910.

1,014,631.

Patented Jan. 16, 1912.

2 SHEETS—SHEET 1.



WITNESSES.

Elizabeth C. Conner
Elizabeth C. Holbrook

Fig. 1.

INVENTOR.

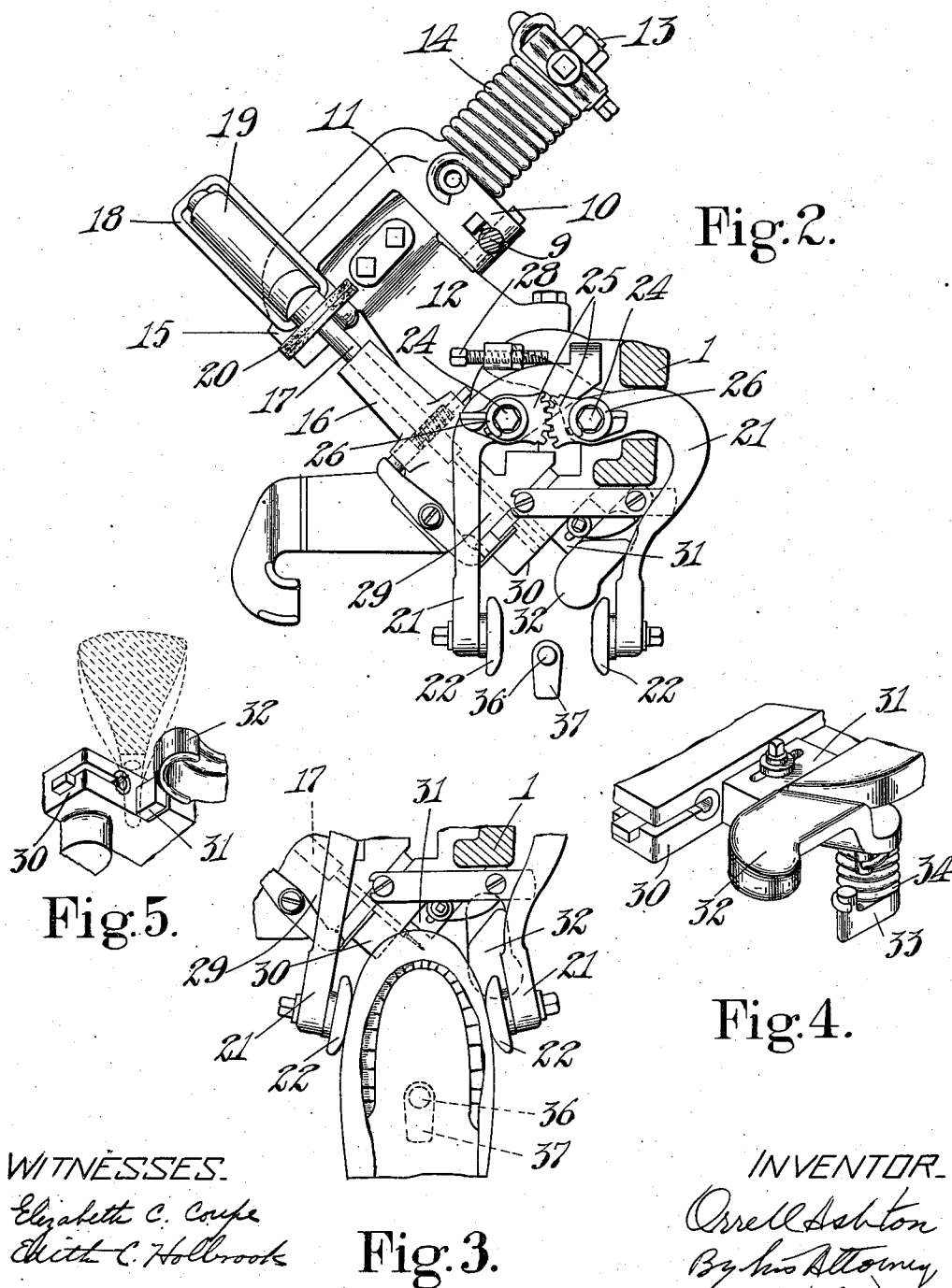
Orville Ashton
By his Attorney,
Nelson W. Howard

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WITNESSES.

Elizabeth C. Coupe
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Fig. 3.

INVENTOR.

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UNITED STATES PATENT OFFICE.

ORRELL ASHTON, OF SWAMPSCOTT, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

MACHINE FOR ASSEMBLING PARTS OF BOOTS AND SHOES.

1,014,631.

Specification of Letters Patent.

Patented Jan. 16, 1912.

Application filed May 13, 1910. Serial No. 561,112.

To all whom it may concern:

Be it known that I, ORRELL ASHTON, a citizen of the United States, residing at Swampscott, in the county of Essex and State of Massachusetts, have invented certain Improvements in Machines for Assembling Parts 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 assembling parts of boots and shoes.

The present embodiment of the invention is herein shown as an improvement upon the machines described in prior applications for Letters Patent filed August 15, 1906, Serial No. 330,705 and December 26, 1907, Serial No. 407,993. It will be understood, however, that the invention is not restricted in all of its features to embodiment in machines of the particular type described in said applications. The machines of said prior applications have provision for inserting a fastening in the rear face of a last for the purpose of securing an upper to the last. Said fastening is inserted at a point removed from the sole and it is desirable at times to insert it at a point adjacent to the cone of the last.

In many lasts, especially those for ladies' shoes, the cone portion of the last at the point where the fastening is to be inserted is quite thin and when the fastening is inserted in the direction of the longitudinal axis of the last considerable care is necessary in accurately positioning the last laterally in order to insure that the fastening shall not fail to enter the last.

An important feature of the present invention accordingly consists in the provision in a machine having mechanism for inserting a fastening in the heel portion of a last out of the plane of the sole thereof of means for inserting the fastening at such a point and in such a direction with reference to the last that it will not fail to enter properly therein and to hold the shoe securely to the last while further operations are being performed. The arrangement is preferably such that the fastening is inserted at a point at one side of a median line of the said heel portion in a direction or line at an angle to

a longitudinal median plane extending in the direction of the height of the last. While the fastening may be of sufficient length and may be inserted at such a point that after insertion the fastening itself will intersect the said median plane, it should be understood that my invention is not limited in this respect; but that any means, whereby a fastening is inserted in the shoe upper at a point out of the plane of the sole and in such a direction that either the fastening itself, or a prolongation of the line in which it lies after insertion or along which it is inserted, intersects said median plane, is within the contemplation thereof. An important advantage gained by inserting a fastening in the rear portion of the last in such a position, laterally displaced with respect to the median line above mentioned, is that the back seam of an upper to be assembled will not be interfered with in the operation of the machine. This feature is of particular advantage where the back seam of the upper is centrally located, since any danger of the seam being cut by the fastening as it is inserted is thereby avoided.

The machine to which the present invention is preferably applied is shown as including devices for wiping the upper over the rear edge of the last and for pressing the upper into close engagement with the last adjacent to the sole and means for securing the wiped over upper to an innersole mounted upon the last. In order that these parts may perform their respective functions with precision and certainty it is necessary that the last be accurately positioned and held, since an irregular action of the devices referred to upon the work may detract materially from the quality of the work performed.

Another important feature of the present invention accordingly consists in a modification of the means for locating and maintaining the last in a predetermined position with relation to the wiping mechanism and the fastening inserting mechanism carried thereby. The machine herein shown is equipped with fastening inserting mechanism which occupies a stationary position and the last, carrying the parts to be secured together, is brought into operative relation to said mechanism by the operator. While

the last is being brought into working position the heel of the shoe mounted thereon is engaged at opposite sides by adjusting members which have contact with sides of the work adjacent to the sole. These members are held yieldingly together and are separated by the last as it is moved between them so that they exert a forward wiping action upon the upper along the sides of the shoe at the heel. The members are arranged for equal movement in opposite directions so that the lateral position of the heel is thus predetermined regardless of the width of the last. For maintaining that part of the said heel which is adjacent to the cone of the last in proper position, I provide means for resisting the thrust of the fastening inserting means. In the preferred form of my invention the thrust of the fastening inserting means is resisted by a yielding device, preferably a gage. This yielding thrust resisting device may be mounted on the opposite side of the median line of the heel of the last from that upon which the fastening inserting means is located and in the present embodiment of my invention is shown as a spring-pressed gage, preferably mounted in approximately the same horizontal plane with the fastening inserting device. Additional cooperating positioning means may be provided and I have illustrated for that purpose a stationary rest through which the fastening inserting mechanism operates and an adjustable rest for engaging the rear face of the heel. By reason of the yielding character of the mounting of the gage it is movable with respect to the last as the last is brought into working position so that the last may be advanced to its proper position regardless of the contour of its heel portion.

Other features of the invention, including details of construction and combinations of parts, will be hereinafter described and defined in the appended claims.

In the drawings which illustrate a machine constituting one embodiment of the invention Figure 1 is a view in side elevation of the machine to which my invention is applied; Fig. 2 is a plan view partly in section showing the construction in detail of means for positioning the shoe with respect to the fastening inserting mechanism; Fig. 3 is a fragmentary view similar to Fig. 2 showing a shoe in operative position in the machine; Fig. 4 is a detail in perspective showing the stationary rest, the adjustable rest and the gage for positioning the shoe; and Fig. 5 is a perspective, from beneath, showing the relation of the rests and gage to the cone of the last.

Referring to the drawings, the reference numeral 1 indicates a stationary frame in and upon which the working parts of the machine are mounted. The driving shaft 2

is mounted to rotate in bearings in the frame 1 and carries the necessary cams 3 and 4 for controlling the operation of the upright and horizontal fastening inserting devices respectively. Upon a bracket 5 mounted upon a fixed portion of the stationary frame 1 is pivoted a lever having a downwardly extending arm 7, the lower end of which is provided with a roller 8 bearing against the periphery of the cam 4. The upper end of a connecting rod 9 is pivotally connected to the lever 6 and its lower end to an arm 10 projecting horizontally from the rocker member 11. The said rocker member 11 is pivotally mounted upon a bracket 12 which is secured in any suitable manner to the stationary frame 1. Surrounding the stud 13 upon which the rocker member 11 is pivoted, is a coiled spring 14 which is wound in such a direction as always to tend to keep the roller 8 pressed into engagement with the periphery of the cam 4. Extending upwardly from the rocker member 11 is an arm 15 which oscillates as the member 11 is rocked back and forth.

A stem 16 is stationarily mounted upon the frame of the machine and extends rearwardly and at an angle to the direction of the main driving shaft 2. The stem 16 contains a driver 17 which is connected by means of a connecting link 18 to a head 19 upon the upper end of the arm 15. The rear end of the driver 17 is engaged by the face of the head 19 and the link connection, above described, allows the driver to be reciprocated in a fixed path by the rocker member 11 and the upwardly extending arm 15 thereon.

It will be seen that the arrangement of parts described is such that when the roller 8 falls off the shoulder of the cam 4, being actuated by the spring 14 to descend into the depressed portion of the cam, the driver 17 will be forced forwardly. A suitable washer 20 of leather or other shock-absorbing material is mounted in front of a shoulder upon the rear end of the driver in order to lessen the shock of impact of the same with the stem 16.

Mounted upon a ledge formed on the fixed portion of the framework of the machine are two adjusting levers 21 which are provided at their forward ends with work engaging members 22, said members being adjustable longitudinally on the levers by means of screw and slot connections, as shown at 23, and being rounded off and beveled upon their edges. The levers 21 are pivoted upon studs 24 and are provided with intermeshing segmental gears 25 which insure their equal movement in opposite directions. Coiled springs 26, encircling studs 24, press the levers 21 yieldingly together. The normal position of the levers 21 can be varied by adjustment of the screw 28 which

is mounted in the rear end of one of the levers and serves as a stop to limit the approaching movement of the work engaging members 22.

5 The forward portion of the stem 16 merges into a stationary rest 29, the front face 30 of which is adapted to be engaged by the heel portion of a shoe presented thereto. A rest 31 is mounted, by means of a screw and slot connection, adjustably with respect to
10 the stationary rest just described. The forward portion of the adjustable rest 31 is also positioned to be engaged by the rear face of the shoe and the two rests thus determine accurately the lateral point of the
15 last at which the fastening will be inserted by the driver 17.

A work adjusting member or gage 32 is pivotally mounted opposite the face 30 upon
20 a stud 33 depending from the stationary portion of the frame. A coiled spring 34 surrounding the said stud normally tends to force the gage 32 toward the face 30. The tension of the spring 34, however, is so
25 adjusted that the operator is able to force the gage 32 to one side by the insertion of the last in the machine. The gage 32 will then press the last firmly against the face 30 and hold the last and shoe from displacement under the thrust of the driver when
30 the tack is inserted thereby.

Numerical 35 indicates a last-supporting spindle which is movable toward and from the shoe-receiving portion of the machine, shown in Figs. 2 and 3. The spindle 35 is provided at its upper end with a heel pin
35 36 arranged upon a lateral extension 37 formed upon the spindle. The heel pin 36 is adapted to receive and support the last upon which the insole, counter and upper of the shoe are to be assembled.

A carrier 38 is pivoted at 39 upon the machine frame, as in the machine of the prior applications referred to. The carrier 38 is provided at its upper end with a
45 rearward extension 40 carrying a cam roll 41 which travels in a cam slot 42 in the face of a disk mounted upon the shaft 2. A wiper 43, having its forward end curved upwardly, is secured to the lower end of the carrier in a position to engage and wipe the
50 rear portion of an upper over the edge of a last when the said carrier and wiper move forward above the last positioned against the rests 30 and 31.

44 indicates a well-known form of tack driving mechanism mounted upon the carrier 38 and actuated by an arm 45 of the bell crank lever 46 which is pivoted upon a
60 stud 47. The downwardly projecting arm 48 of the bell crank lever carries a cam roll 49 which engages the periphery of the cam 3. A coiled spring (not shown) upon the stud 48 always tends to press the driver 44 downwardly and the cam roll 49 into en-

gagement with its cam. The cams 4, 42, and 3 are so timed that the driver 17 is actuated during the first part of the movement of wiper 43, then the wiper moves forward wiping the upper over the edge of the
70 last, and finally the driver 44 moves downwardly to insert a tack in the rear portion of the bottom of the last through the wiped-over upper, counter and insole situated thereon in order to secure the said parts together. As clearly shown in Figs. 3 and 5,
75 the rests 30 and 31 and the gage 32 are so positioned with reference to the work-adjusting levers 21 that when a shoe, mounted upon a last, is forced rearwardly between the work-engaging members 22,
80 carried upon said levers, and the rear portion of the shoe is brought into engagement with the rests and gage the shoe and last will be so positioned with respect to the driver 17 that the latter will insert a tack in the rear face of the last at one side of a median line thereof and at an angle of substantially 45° with respect to the longitudinal axis thereof. It will readily be seen that
85 this feature is very advantageous when the cone portion of the last is thin, inasmuch as in such cases it is quite difficult to insert a tack therein in the direction of the longitudinal axis of the last without the tack glancing off at one side or the other and not properly securing the upper to the last. With the mechanism of my invention, however, this difficulty is entirely overcome, as
90 a large surface is presented to the action of the driver in inserting the fastening and there is no liability of the fastening failing to enter the last properly and to securely fasten the upper thereto.

In the use of the machine shown, the insole, counter, and upper of a boot or shoe, previously having been brought loosely together upon a last in their proper relation to each other, the last is placed upon the heel pin 36 and moved rearwardly into working
105 position. In this movement the heel portion of the last first engages and moves apart the members 22 which contact with the sides of the upper adjacent to the sole. These members wipe the sides of the upper forwardly as the work is advanced between them and bring the upper and counter into close relation to the rear face of the last and to the rear end of the innersole. They also press the ends of the counter inwardly
115 against the sides of the last and hold the said ends from displacement during the operation of the machine. The said members also position the heel end of the last laterally in a central position since they are interconnected for equal movement in opposite directions. In the further rearward movement of the last into working position the gage 32 is engaged by one side of the
120 portion of the last adjacent to the cone and

forced laterally against the tension of the spring 34. The heel portion of the last is brought into engagement with the rest 31 and the stationary rest face 30. It will be understood that the last is so sustained as to conform to the positioning action of the members 22 and the gage 32. This effect is secured by the loose fit of the last upon the pin 36 and also by arranging the spindle 35 so that it may have slight play as well as a slight turning movement. By the conjoint action of the members 22 and 32 the heel portion of the last is accurately positioned against the stationary rests as it is forced into the machine by the operator. As shown in Figs. 3 and 5, the said heel portion is guided into a position in which a median line thereof is at one side of the driver operating through the rest 29 and in which the driver will insert a tack or fastening in a direction intersecting a longitudinal median plane extending in the direction of the height of the last. In the movement of the last into working position after the members 22 have engaged the sides thereof the margins of the upper and counter extending above the innersole at the rear end of the last are engaged by the wiper 43 and pressed down upon the sole. The forward end of the wiper 43 is of upwardly curved contour so that as the last moves into working position the pressure of the wiper upon the work is increased. It will be understood that the wiper 43 not only turns the upper down upon the sole at the rear but also presses the counter downwardly into proper position wherein its flange lies in close relation to the sole or if a straight counter is used the edge thereof is turned down upon the sole by the wiper. The last having been brought into working position, the driving shaft 2 is set into rotation. Very shortly after the carrier 38 starts its forward movement, a tack is driven into the heel portion of the last by the driver 17, working through the spindle 16 and the rest 29, and at the end of said movement a tack is driven through the upper and counter into the innersole by the driver 44, working in the carrier 38.

In Fig. 1 the heel pin is shown in full lines in the position for use when small lasts are employed, such as are used in the manufacture of ladies' shoes. The pin 36 being positioned at the rearward end of the extension 37, the said extension will not interfere with the movement of the last into engagement with the rests 30 and 31. Where full-sized or large lasts are used, it may be found desirable to turn the spindle 35 180° to bring the heel pin into the position shown in dotted lines in Fig. 1.

It will be seen that the members 22 and the gage 32 are arranged to accommodate lasts of different widths and sizes. As will

be apparent from the drawings, the members 22, as the shoe is advanced between them, automatically adjust themselves to the width of the shoe also the space formed between the gage 32 and the surface 30 may be sufficient to receive lasts, the rear ends of which are quite blunt, as well as those having rear ends of smaller widths since the said gage, being sustained for yielding movement during the movement of the shoe into working position, does not interfere with bringing the heel portion of the last into engagement with the rest face 30, whatever may be the width of the last or the curvature of its rear face.

It should be understood that the present description and drawings are only illustrative of a particular embodiment of my invention, the invention being of a generic character and is not limited to the particular structure shown and described but being broad enough to include within its intent and scope machines of quite different detailed construction and being defined in its scope by the appended claims.

Having fully 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, means for supporting a shoe, and means for automatically inserting a fastening in the shoe at a point out of the plane of the sole thereof and in a direction at an angle to a median plane extending longitudinally in the direction of the height of the shoe.

2. A machine of the class described having, in combination, means for supporting a shoe, and means for insuring the insertion of a fastening in the shoe at a point out of the plane of the sole thereof so that said fastening shall intersect a median plane extending longitudinally in the direction of the height of the shoe.

3. A machine of the class described having, in combination, means for supporting a shoe, and means for insuring the insertion of a fastening in the shoe at a point out of the plane of the sole thereof and in a direction oblique to a median plane extending longitudinally in the direction of the height of the shoe.

4. A machine of the class described having, in combination, means for supporting a shoe, and means for insuring the insertion of a fastening in the heel portion of the shoe at a point out of the plane of the sole thereof and in a direction oblique to a median plane extending longitudinally in the direction of the height of the shoe.

5. A machine of the class described having, in combination, means for supporting a shoe, and means for insuring the insertion of a fastening in the heel portion of the shoe at a point out of the plane of the sole

thereof and in a direction at an angle to a median plane extending longitudinally in the direction of the height of the shoe.

6. A machine of the class described having, in combination, means for inserting a fastening, and means for locating a shoe relatively to said mechanism in position to receive a fastening from said mechanism in the heel portion of the shoe at a point out of the plane of the sole thereof and in a direction at an angle to a median plane extending longitudinally in the direction of the height of the shoe.

7. In a machine of the class described, mechanism for inserting a fastening, and means for locating a shoe relatively to said mechanism in position to receive therefrom a fastening at a point out of the plane of the sole of the shoe and in a line at an angle to a median plane extending longitudinally in the direction of the height of the shoe, said means being constructed to accommodate shoes of different sizes.

8. In a machine of the class described, means for centering a shoe and means for inserting a fastening in the shoe at a point out of the plane of the sole thereof, said last-named means being disposed in a direction at an angle to a median plane extending longitudinally in the direction of the height of the shoe.

9. In a machine of the class described, a last, means for wiping an upper over the rear edge of the last, and means for inserting a fastening in said upper at a point out of the plane of the sole of the last in a direction lateral to the path of said wiping means.

10. In a machine of the class described, means for supporting and centering a shoe and means for inserting a fastening in the shoe at a point out of the plane of the sole thereof in a line intersecting a median plane extending longitudinally in the direction of the height of the shoe and at one side of the median line of the heel thereof.

11. In a machine of the class described, means for supporting a shoe, means for inserting a fastening in the shoe at a point out of the plane of the sole thereof, and means located opposite said last-mentioned means for holding the shoe against the thrust thereof.

12. In a machine of the class described, means for supporting a shoe, means for inserting a fastening in the heel portion of the shoe at a point out of the plane of the sole thereof and means located opposite said fastening inserting means for holding the shoe against the thrust thereof.

13. In a machine of the class described, means for inserting a fastening, means for supporting a shoe relatively to said fastening inserting means in a position to receive therefrom a fastening at a point out of the plane of the sole of the shoe in a line inter-

secting a median plane extending longitudinally in the direction of the height of the shoe and at one side of the median line of the said heel portion and means engaging the shoe on the opposite side of said median line to hold said shoe against the thrust of the fastening inserting means.

14. In a machine of the class described, means for supporting a shoe, means for inserting a fastening in the shoe at a point out of the plane of the sole thereof and at one side of the median line of the heel thereof, and means located opposite said fastening inserting means for holding the shoe against the thrust thereof, said holding means being adjustable to accommodate shoes of different widths.

15. In a machine of the class described, means for supporting a shoe, means for inserting a fastening in the shoe at a point out of the plane of the sole thereof and at one side of the median line of the heel thereof and means located opposite said fastening inserting means for holding the shoe against the thrust thereof, said holding means being yielding to accommodate itself to shoes of different widths.

16. In a machine of the class described, a last, a gage formed to have engagement with one side of the heel portion of a shoe mounted on said last for positioning said shoe, means on the opposite side of the said heel portion and disposed in a line intersecting a median plane extending longitudinally in the direction of the height of the last for inserting a fastening in the shoe and means for sustaining said gage for yielding movement laterally of said last.

17. In a machine of the class described, means for inserting a fastening in a shoe at a point out of the plane of the sole thereof and at one side of the median line of the heel thereof, and means on the opposite side of said median line for resisting movement of the shoe away from the fastening inserting means.

18. In a machine of the class described, the combination of means for inserting a fastening in a shoe at a point out of the plane of the sole thereof and at one side of the median line of the heel thereof, and means on the opposite side of said median line and located in the same horizontal plane with said fastening inserting means for resisting movement of the shoe away from the fastening inserting means.

19. In a machine of the class described, a stationary rest, fastening inserting mechanism arranged to insert a fastening in the heel portion of a shoe, held in engagement with the rest, at a point out of the plane of the sole of the shoe, said fastening inserting mechanism being arranged at one side of the median line of the said heel portion and in a line intersecting a median plane extend-

ing longitudinally in the direction of the height of the shoe and a gage for engaging the shoe on the opposite side of said median line.

5 20. In a machine of the class described, a last, means for wiping an upper over the rear edge of the last, means for inserting a fastening in said upper at a point out of the plane of the sole of the last in a direction
10 lateral to the path of said wiping means, and means for restraining movement of the rear end of the last in said lateral direction.

21. In a machine of the class described, stationary mechanism for inserting a fastening in the heel portion of a last between
15 the bottom and cone of the last, means for adjusting the last laterally into position to receive said fastening in its heel portion at a point at one side of the median line of
20 said heel portion and in a line intersecting a median plane extending longitudinally in the direction of the height of the last.

22. In a machine of the class described, the combination of mechanism for inserting
25 a fastening in the heel portion of a shoe at a point out of the plane of the sole thereof and in a line intersecting a median plane extending longitudinally in the direction of the height of the shoe, and means for position-
30 ing in the path of the fastening a part of said heel portion at one side of the median line thereof.

23. A machine for assembling boots or shoes having, in combination, a last, a rest
35 positioned to be engaged by the heel portion of a shoe mounted on said last, tack driving mechanism laterally positioned in a line intersecting a median plane extending longitudinally in the direction of the height of
40 the last and at one side of the last and a gage on the opposite side of said last for positioning the shoe laterally with relation to the driving mechanism.

24. A machine for securing parts of boots

or shoes in assembled relation having, in
45 combination, a last, a wiper for wiping the rear portion of an upper over said last, tack driving mechanism positioned to drive a tack at an angle to the path of said wiper
50 and a gage for holding the last against lateral displacement with respect to the path of the wiper by said tack driving mechanism.

25. A machine of the class described having, in combination, a last, means for in-
55 serting a tack in said last through the heel portion of a shoe mounted thereon at a point out of the plane of the sole thereof and in a direction at an angle to a median plane extending longitudinally in the direction
60 of the height of the shoe, and a yielding gage opposite said tack inserting means for resisting lateral displacement of the last thereby.

26. In a machine of the class described,
65 the combination of means for supporting a shoe, a driving shaft, mechanism connected to said driving shaft for operating upon the shoe, and means for inserting a fastening in the shoe at a point out of the plane of the
70 sole thereof in a direction at an inclination to said driving shaft.

27. In a machine of the class described the combination of a shoe support, mechanism for centering and locating the shoe ap-
75 proximately in the central vertical plane extending from rear to front of the machine, and means moving in a path at an angle to said plane for inserting a fastening in the shoe at a point out of the plane of the sole
80 thereof.

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

ORRELL ASHTON.

Witnesses:

CHESTER E. ROGERS,
LAURA M. GOODRIDGE.