Oct. 4, 1938. T. ROBERTS 2,131,847

LASTING MACHINE

Filed Oct. 25, 1934 4 Sheets-Sheet 1

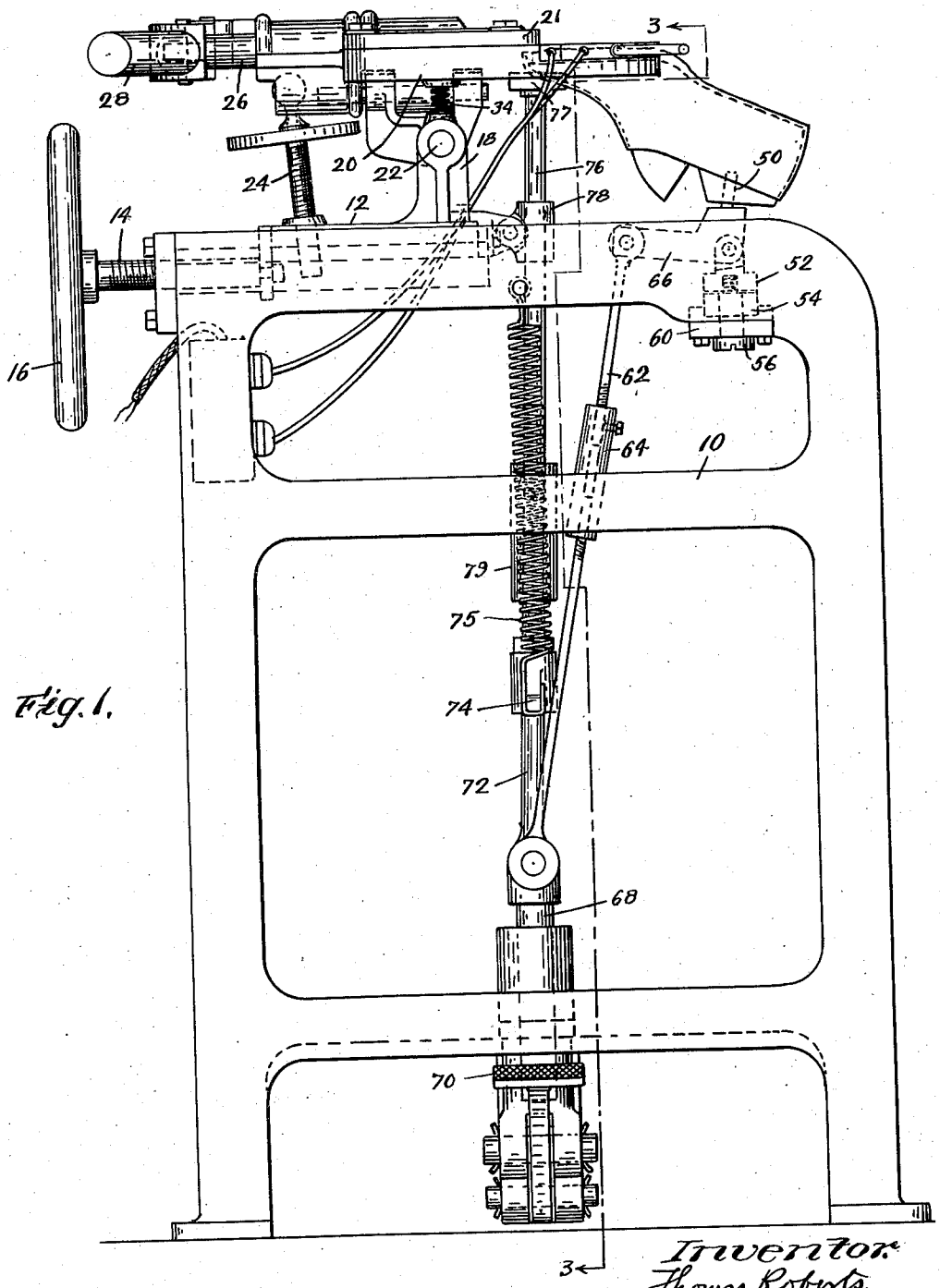


Fig. 1.

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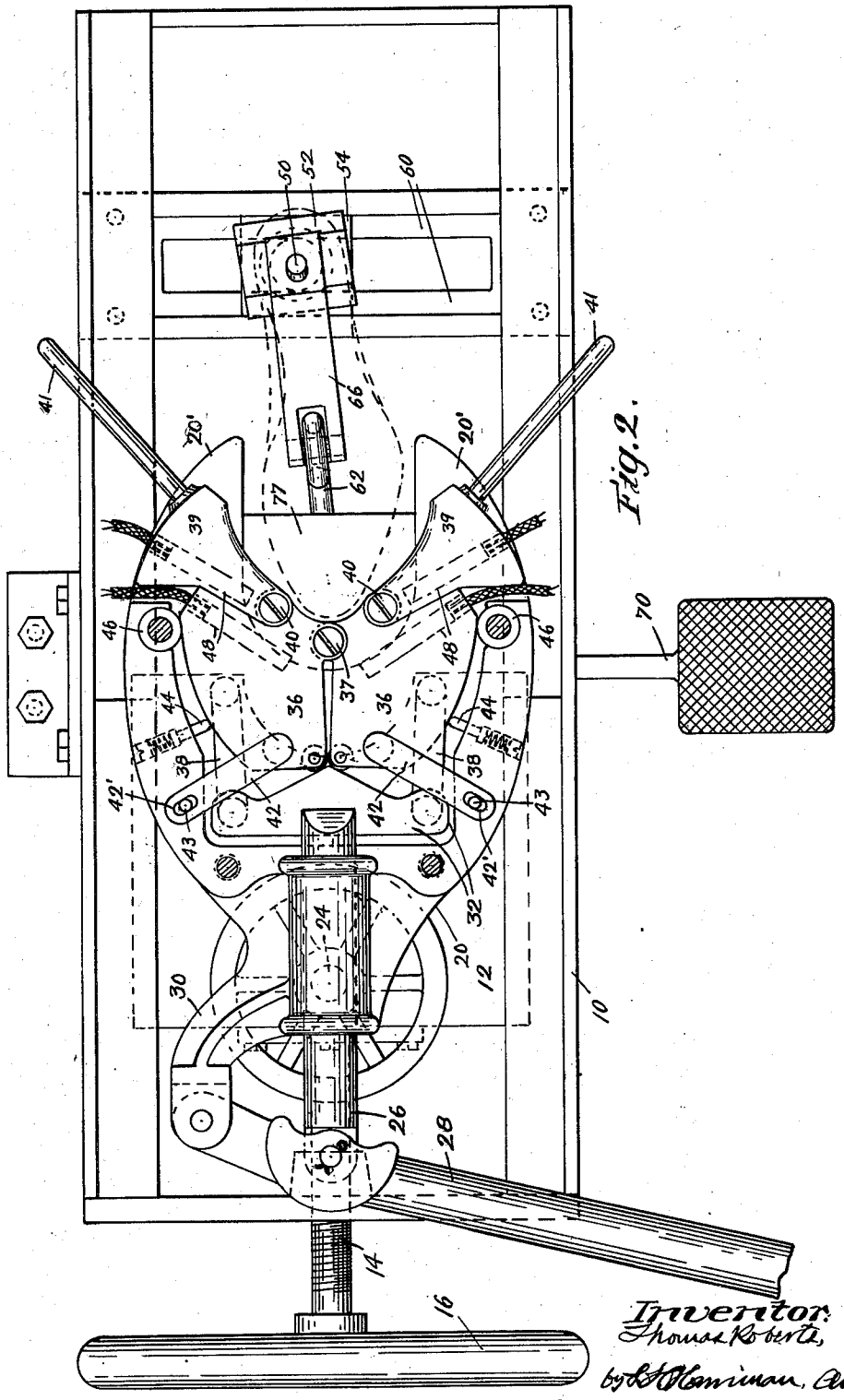


Fig. 2.

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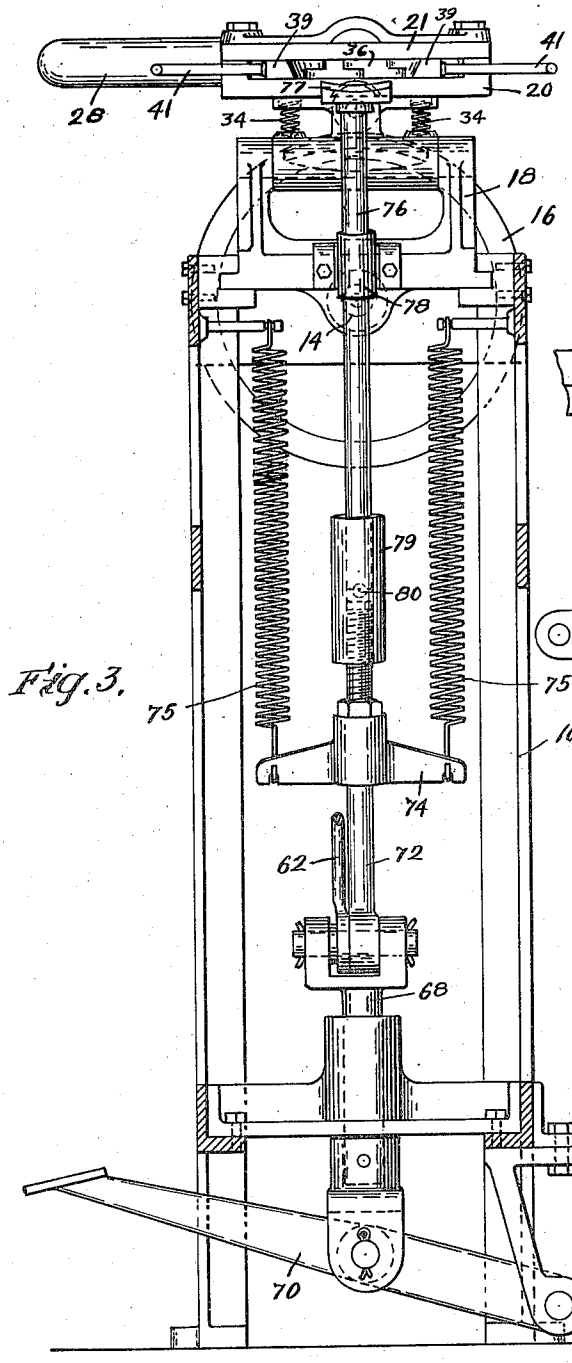


Fig. 3.

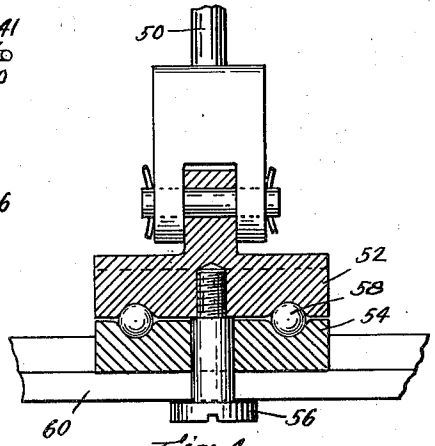


Fig. 4.

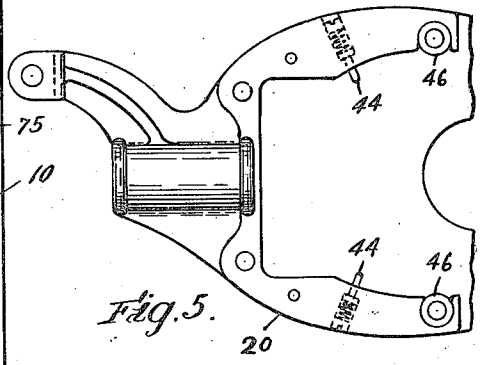


Fig. 5.

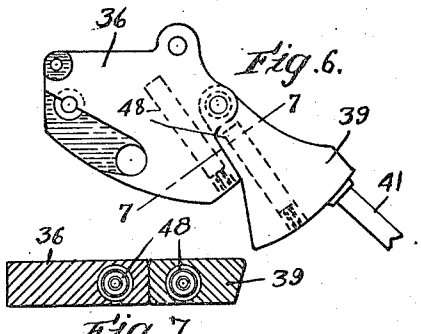


Fig. 6.

Fig. 7.

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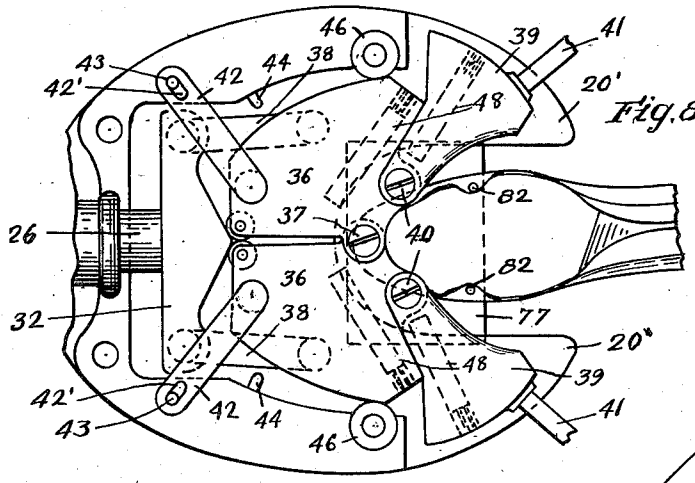


Fig. 8.

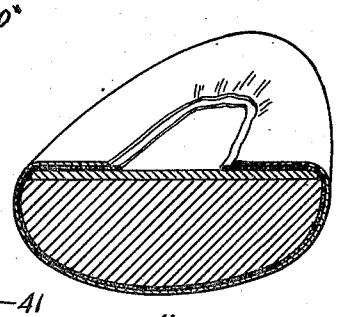


Fig. 11.

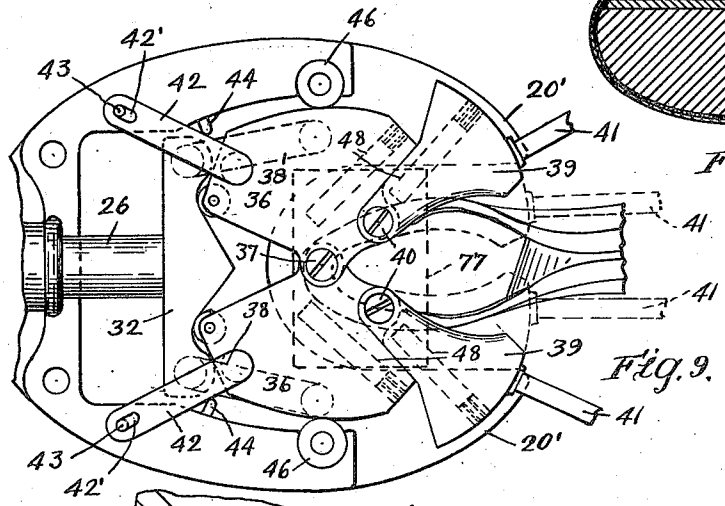


Fig. 9.

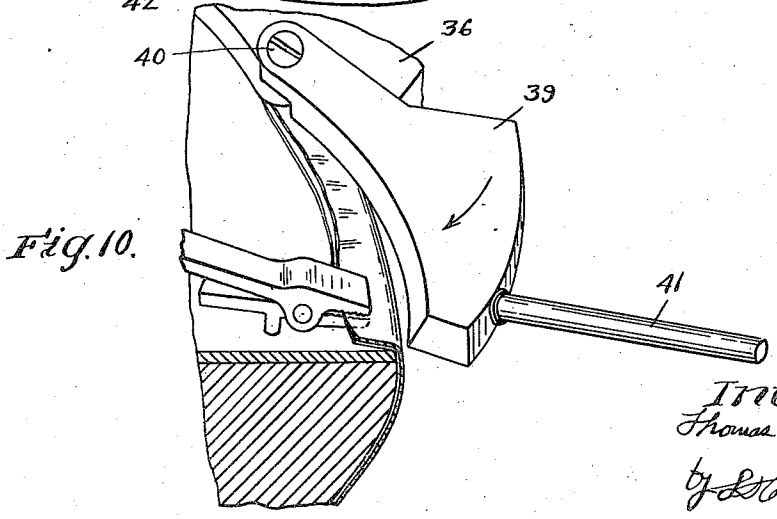


Fig. 10.

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UNITED STATES PATENT OFFICE

2,131,847

LASTING MACHINE

Thomas Roberts, Haverhill, Mass., assignor to United Shoe Machinery Corporation, Boston, Mass., a corporation of New Jersey

Application October 25, 1934, Serial No. 749,932

4 Claims. (Cl. 12—14)

This invention relates to lasting machines for shoes in which the upper is attached to an inner sole by an adhesive, prior to the attachment of the outer sole by an adhesive or by sewing.

In the preparation of shoes for the connection of the outer sole and the upper by an adhesive, it is particularly desirable that the lasted-in surface of the upper, to which the outersole is to be connected, be made as smooth as possible, so that all wrinkles, or other raised portions which would tend to prevent contact at all portions of the surface, will be flattened, and the sole will be secured over the entire surface of the lasted-in portions of the upper.

It is also very desirable that all metallic fasteners, for holding the upper in lasted-in position until the outer sole is secured thereto, be eliminated.

Objects of the invention are to provide a lasting machine by means of which the edge portions of the forepart of the upper from the toe approximately to the ball portion may be lasted or drawn in tightly about the last, and by means of which the lasted in portion may be pressed down and smoothed out flat and even, so that there will be no unevenness in the surface to which the outer sole is subsequently to be connected, and at the same time, the upper will be secured adhesively to the shoe bottom in lasted-in position, so that the use of all metallic fasteners for this purpose will be unnecessary.

Further objects are to provide a lasting machine which may be readily adapted to either a right or a left shoe and to a large range of sizes without appreciable delay in the operation.

These and other objects of the invention are accomplished, as herein illustrated, by providing a machine having, in connection with suitable adjusting means, a pair of toe wiper jaws which are arranged to wipe in the toe or tip portion of the forepart and to the end portions of which manually operated side wipers or wiper jaws are pivotally connected, so that the side portions of the upper may be drawn in tightly about the last by hand pincers and its edge portions may then be wiped in by the side wipers, while held by the pincers, said wiper means having electrical heating units therein, so that their upper engaging faces will be heated to a suitable temperature and the heated surfaces will act effectively to iron out all wrinkles and flatten and crimp the lasted-in upper portion. Accordingly, the surface to which the outersole is subsequently applied will be wiped perfectly smooth, and, at the same time, a rubber adhesive, which has been placed between the shoe bottom and the upper edge portion, will be vulcanized almost instantly, so that the upper will be securely attached adhesively thereto, in lasted-in position, by the time the wipers are moved back out of contact with the shoe, the use of metallic fastening means thus being made unnecessary.

For a more complete disclosure of the invention, reference is now made to the following specification in connection with the accompanying drawings in which:

Fig. 1 is a front elevation view of a machine containing a preferred embodiment of the invention.

Fig. 2 is a top plan view thereof, with parts removed.

Fig. 3 is a sectional view at line 3—3 of Fig. 1.

Fig. 4 is a detail sectional view of the heel post support.

Fig. 5 is a detail view of the bottom section of the wiper jaw casing.

Fig. 6 is a detail view of the bottom side of one of the toe wiper jaws and the side wiper connected thereto.

Fig. 7 is a sectional view at line 7—7 of Fig. 6.

Figs. 8 and 9 are plan views and Fig. 10 is a perspective view of the wiper jaws illustrating the action thereof.

Fig. 11 is a view of the toe portion of a lasted shoe.

As shown in the drawings, the main frame 10 of the machine has a base member 12 mounted in the top portion thereof to slide horizontally in guideways formed therein, said member being adjusted by means of a screw 14 threaded in the frame, having a swivel connection with the member and a hand wheel 16 at its outer end. A bracket 18 on the top side of the base member 12 has a casing 20 mounted on a horizontal pivot 22 in said bracket, said casing having a removable top section 24, and being adapted to be tilted by means of an adjusting screw 24, which is threaded in the base member and has a universal swivel connection with casing 20 at its top end.

A round shaft 26 is mounted in casing 20 and a lever 28 is pivoted at one end on a bracket 30 extending from said casing and is engaged with the adjacent end of the shaft 26, to permit the latter to be moved horizontally thereby. A crosshead 32 is secured to the opposite end of shaft 26 from lever 28 and is adapted to be tilted sidewise with the casing 20 from a horizontal position, against the action of a pair of oppositely disposed springs 34. A pair of wiper jaws 36 supported on the casing 20 are connected by a pivot 37 and are respectively connected to the crosshead 32 by links

36, said jaws being of metal and of substantial thickness and having their adjacent edges beveled and their under sides smooth.

A side wiper member or jaw 39 is connected to he end portion of each jaw 36 by a pivot 40, so that each member 39 may swing horizontally in the plane of its jaw 36, said members 39 being arranged in oppositely disposed positions and having their inner edges beveled and their under sides smooth, so that, when in their operative posi ions, their beveled edges will be substantially continuous with the beveled edges of the jaws to which they are attached and will extend in directions corresponding to the side edges of a shoe fore par , and when in their inoperative positions, said beveled edges will extend obliquely in divergent directions. Each member 39 has a handle 41 which extends horizontally therefrom by which it may be conveniently operated with one hand. The casing 20 has a horizontal top surface which provides a supporting surface for the jaws 36, and has ex ended portions 20' which provide supporting surfaces for the members 39.

A pair of links 42 are pivotally connected at one end to the jaws 36, respectively, in the rear of the points of connection of the links 38 thereto, and the opposite ends of said links 42 are connected to pivot pins 43 set in the casing 20, said links 42 having longitudinal slots 42' through which said pins extend, which permit a short longitudinal movement of the links relative to the pins, for a purpose to be explained. Spring pressed pins 44 are mounted in casing 20 and are arranged in engagement wi h the outer side edges of the jaws 36 and friction rolls 46 are also mounted in casing 20 and arranged to engage the side edges of jaws 36.

Each of the jaws 36 and their side members 39 has a cylindrical chamber formed therein in which an electrical heating element 48 is located, as shown in Fig. 7, said elements being connected to a source of electrical supply, so hat said jaws and side members may be heated to the required temperature, for purposes to be explained.

As shown in detail in Fig. 4, a heel post 50 is pivotally mounted on a base, comprising top and bottom members 52, 54, and a connec ing pivot bolt 56, said members having a circular ball race, with balls 58 therein, so that the top member is free to move rotatably with relation to he bottom member about a vertical axis. The bottom member 54 is seated on the frame 10 in guideways 60 formed on the frame, which extend transversely thereof, or at right angles to shaft 26, as shown in Fig. 2.

A link 62, which is adjustable in length by means of a sleeve 64, or other convenient means, is pivotally connected at one end to an arm 66 ex ending from the heel post 50 and at the other end to the top end of a vertically movable rod 68, which is arranged to be controlled by a treadle lever 70, so that, when the latter is depressed, the post may be swung forwardly. A rod 72 is also pivotally connec ed to the top of rod 68 and has a cross bar 74 adjustably mounted thereon, to which the lower ends of a pair of coil springs 75 are attached, the top ends thereof being attached to the frame, so that they may act to lift the rod 68. A rod 76, having a toe rest 77 on its upper end, is arranged for vertical movement in a bracket 78 which is pivotally connected to the adjacen end of base member 12, the lower end of rod 76 being set into a socket 79 on the top end of rod 72, in the bottom of which a friction ball 80 is placed, so that the toe rest is free to turn to an extent.

As a preliminary to the use of the above described machine, the innersole is secured on the last and the upper is pulled over and held in position by two tacks.

Previous to the pulling over operation, a coating of rubber latex cement is placed on the surfaces of the innersole and upper which are to come in contact, the cement employed being of a nature which does not become adhesive readily except on the application of heat and pressure sufficient to cause a vulcanizing action thereof.

The last is then placed in position on the heel post, with the toe on the toe rest, the treadle is depressed to force the toe end down on the toe rest by tipping the post 50 while also lowering the toe rest somewhat, and the heel post is adjusted laterally in one direction, or the other, according to whether the shoe is a right or left, so that the toe wiper jaws and side wiper members may extend to approximately the same distance at each side of the shoe, as shown in the position of Fig. 2. Suitable adjus ments may also be made by screws 14 and 24, as will be obvious. The lever 28 is then drawn forward, advancing the middle portion of the jaws 36 over the toe portion of the shoe and thereby first wiping in the tip end of the toe portion of the upper, he parts being thereby moved to the position of Fig. 8 from the initial position of Fig. 2. During this movement there is no closing movement of the jaws, as the slots 42' in the links 42 permit movement of the latter without operative engagement with the pins 43.

On further advancing movement of the crosshead 32, the pins 43 engage the ends of the slots 42' and, during the res of the movement, the jaws are swung towards each other by the action of the links 42, to the full line position of Fig. 9, thereby wiping in the remainder of the toe portion. When this point is reached in the operation he upper will be securely clamped to the last at the toe portion, and the pulling over tacks, indicated at 82 in Fig. 8, will no longer be effective in holding the upper in position, so that they will then be removed.

The operator then takes his lasting pincers and draws in the upper at one side of the shoe, between the toe portion which has already been wiped in and the shank portion, tightly about the last, and, while he holds it in this position by means of his pincers with one hand, he swings in the jaw member 39, at that side of the shoe, by means of its handle 41, so that it partly wipes and then clamps the drawn in upper portion firmly down on the shoe bottom, as indicated in Fig. 10, after which it is swung farther inward to complete the wiping operation. This operation is then repeated on the upper at the opposite side of the shoe, so that the parts are moved to the dotted line position of Fig. 9, completing the operation at both sides.

The electric current will have been turned on so that the jaws 36 and jaw members 39 are thoroughly heated to the necessary temperature. Consequently, as soon as the wiping-in operation begins, a vulcanizing effect also begins to take place on the latex cement, which is sufficiently completed to cause firm adhesion of the upper to the inner sole by the time the above described operation is finished. Preferably during the latter part of the operation, the treadle 70 is released, permitting the springs 75 to force the toe rest firmly against the last and consequently

the shoe bottom against the under sides of the jaws, so that the wiped-in upper will be pressed with considerable force against the innersole. As a result the wiped-in upper will also be crimped, the wrinkles being gathered and pressed down flat, so that the upper conforms to the curvature of the last, this action being made effective by the heat of the jaws **36** and jaw members **39**. When the parts are returned to their initial positions, the upper will be held in lasted-in position by the adhesive and a smooth surface will be provided on the lasted-in upper portions for the subsequent operation of adhesively connecting the outer sole thereto.

In practice surplus upper stock is likely to be provided at the toe of the shoe which the wiper jaws do not pass over, and which must be trimmed off with a hand knife before the outer sole is applied, so that the toe portion farther inwardly than the jaws will be left smooth like the other portions engaged by the wiper jaws, as indicated in Fig. 11.

As the jaws are returned to initial position, the spring pins **44** act to open the jaws to their fullest extent, so that the links **40** will be moved to a position in which the pins **43** are disengaged from the ends of the slots **42'**, as shown in Fig. 2.

With the above described construction, the lasting operation may be satisfactorily performed on a considerable range of shapes and sizes of shoes, including both rights and lefts, by making suitable adjustments of the machine.

The jaws **36** and jaw members **39** thus provide a continuous smooth unbroken surface on the shoe forepart for the adhesive attachment of the outersole, and no lasting tacks or staples are left in the shoe. While this result may be secured without the aid of lasting pincers, by the use thereof the upper is drawn more tightly to the last and the operation is therefore much more satisfactorily performed.

I claim:

1. In a shoe lasting machine, a pair of horizontally disposed, pivotally connected toe wiper jaws and means for moving them longitudinally and for swinging them together horizontally to wipe in the toe portion of the upper of a shoe supported therebetween, a side wiper member pivotally connected to the end portion of each jaw, the side wiper members being arranged to be swung horizontally from inoperative positions at opposite sides of the shoe to positions in engagement with the opposite edge portions of the shoe bottom from the toe portion approximately to the ball portion thereof, and a handle extending from each of said members for manually operating the same.

2. In a shoe lasting machine, a pair of toe wiper jaws, and means for moving the same longitudinally and swinging them towards each other to wipe in the toe portion of the upper of a shoe supported therebetween and to clamp said upper portion against the shoe bottom, a side wiper member pivotally connected to the end portion of each jaw and arranged to extend therefrom approximately to the ball portion of the shoe and to be swung from a position at one side of the shoe to a position over the edge portion thereof, whereby the operator may draw in the upper side portion by hand and then clamp it in lasted-in position by means of said wiper member, and means for heating each wiper member to flatten the wiped in edge portion and facilitate the action of an adhesive placed between the same and the shoe bottom.

3. In a shoe lasting machine, a pair of toe wiper jaws and means for moving the same to wipe in the toe portion of the upper of a shoe supported therebetween, a side wiper member pivotally connected to the end portion of each of said jaws, the side wiper members being arranged to be swung horizontally from inoperative positions at opposite sides of the shoe into operative positions over the side edge portions thereof to press the lasted-in upper portion down on the shoe bottom, and means for heating said jaws and members to crimp the lasted-in upper portion and to cause a vulcanizing action on an adhesive placed between the upper and shoe bottom.

4. In a shoe lasting machine, a pair of toe wiper jaws and means for moving the same to wipe in the toe portion of the upper of a shoe supported therebetween, a side wiper member pivotally connected to the end portion of each of said jaws, the side wiper members being arranged to be swung horizontally from inoperative positions at opposite sides of the shoe into operative positions over the side edge portions thereof to press the lasted-in upper portion down on the shoe bottom, and an electrical heating element disposed within each of said jaws and members adjacent the inner edges thereof for heating the upper engaging faces thereof.

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