

(No Model.)

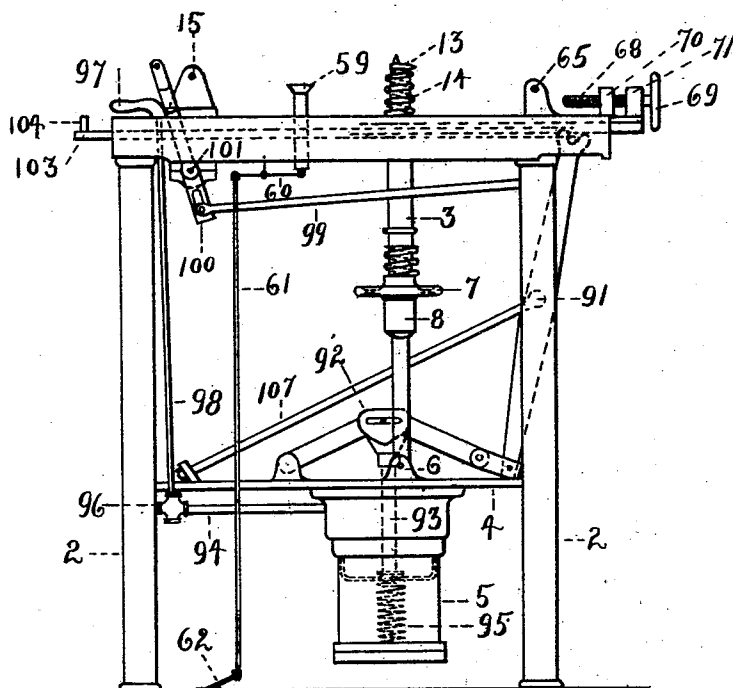
5 Sheets—Sheet 1.

G. FERGUSON.
LASTING MACHINE.

No. 569,017.

Patented Oct. 6, 1896.

Fig. 1.



WITNESSES:

A. P. Ockington.
Joshua Crane Jr.

INVENTOR:

George Ferguson
by his attorney
Lepine Hall Rice

(No Model.)

5 Sheets—Sheet 2.

G. FERGUSON.
LASTING MACHINE.

No. 569,017.

Patented Oct. 6, 1896.

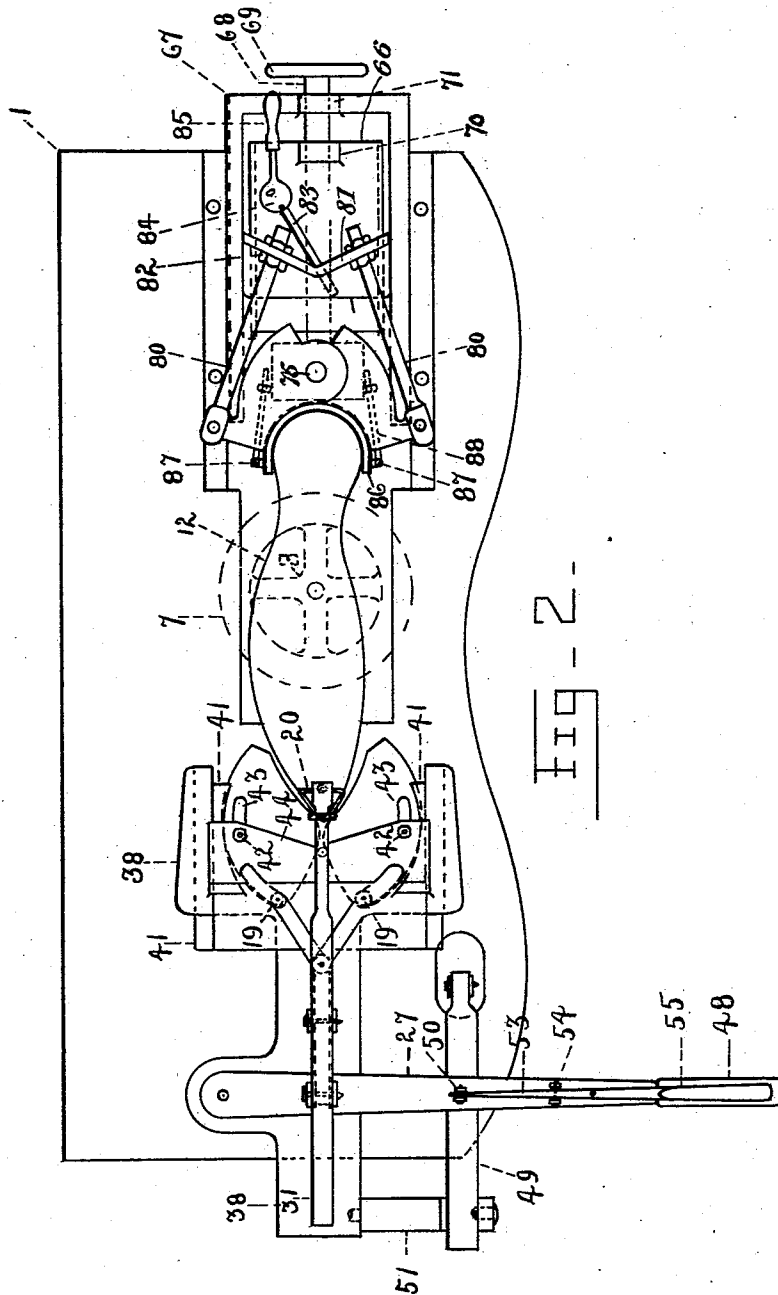


FIG. 2.

WITNESSES:

A. P. Ockington.
Joshua Crane Jr.

INVENTOR:

George Ferguson
by his attorney
Lepine Hall Rice

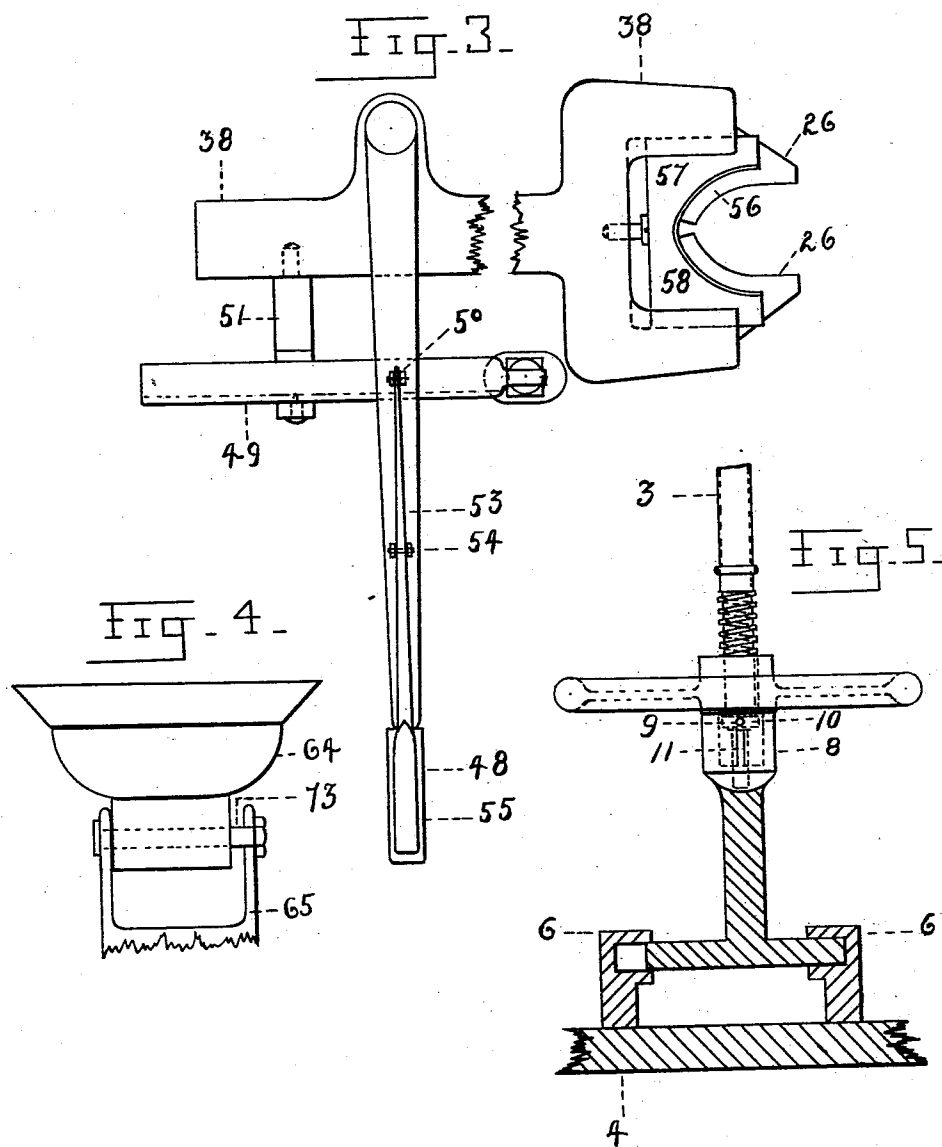
(No Model.)

5 Sheets—Sheet 3.

G. FERGUSON.
LASTING MACHINE.

No. 569,017.

Patented Oct. 6, 1896.



WITNESSES:
A. P. Dickinson.
Joshua Crane, Jr.

INVENTOR:
George Ferguson
by his attorney
Lepine Hall Rice

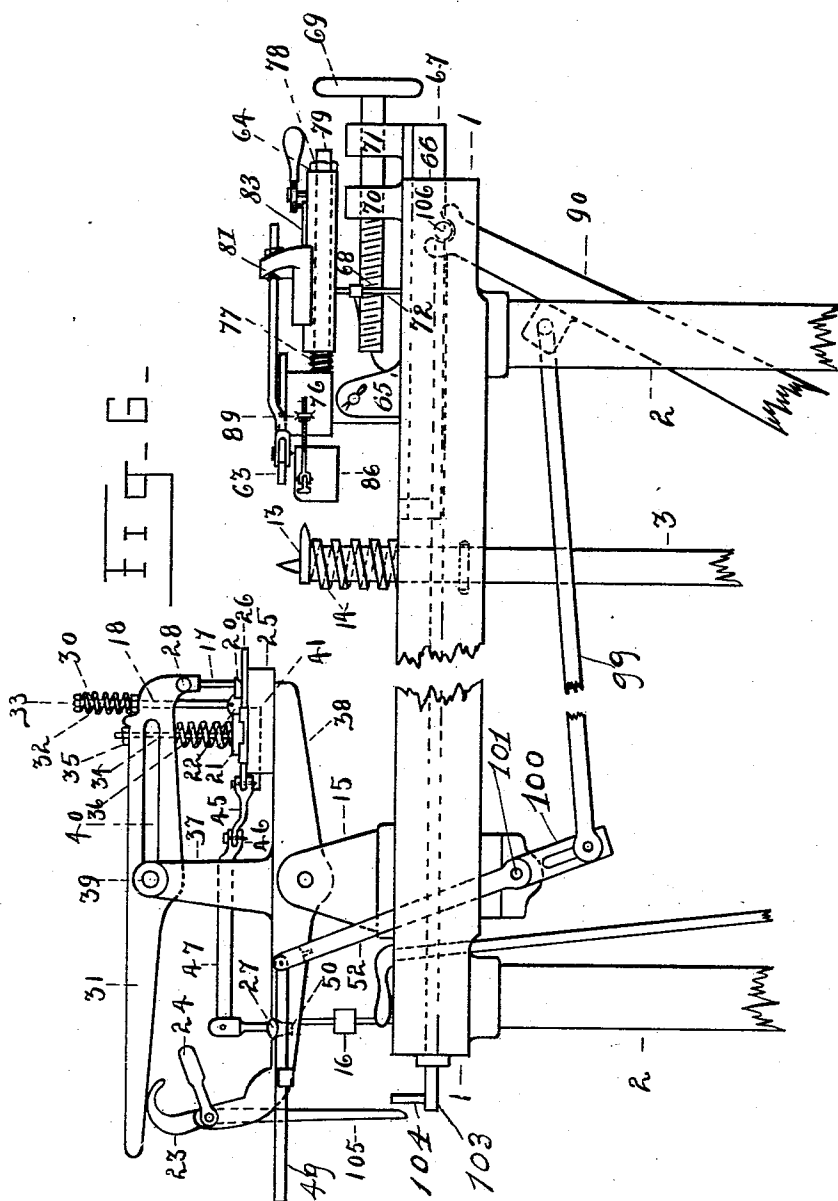
(No Model.)

5 Sheets—Sheet 4.

G. FERGUSON.
LASTING MACHINE.

No. 569,017.

Patented Oct. 6, 1896.



WITNESSES:
N. P. Dickinson
Joshua Crane Jr.

INVENTOR:
George Ferguson
by his attorney
Lepine Hall Rice

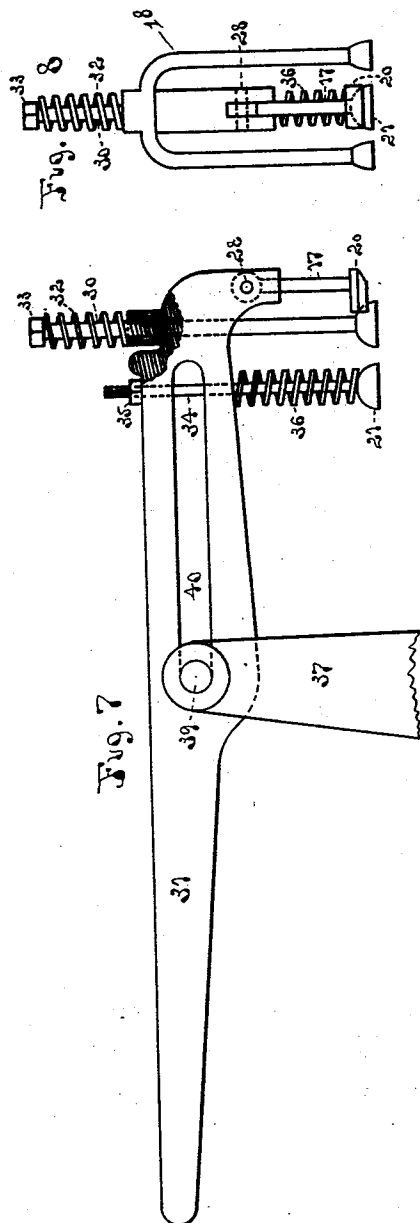
(No Model.)

5 Sheets—Sheet 5.

G. FERGUSON.
LASTING MACHINE.

No. 569,017.

Patented Oct. 6, 1896.



Witnesses

H. B. Brown
V. P. Ockington

Inventor

George Ferguson
by his attorney
Lepine Hall Rice.

UNITED STATES PATENT OFFICE.

GEORGE FERGUSON, OF BOSTON, MASSACHUSETTS.

LASTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 569,017, dated October 6, 1896.

Application filed October 5, 1894. Serial No. 524,982. (No model.)

To all whom it may concern:

Be it known that I, GEORGE FERGUSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Lasting-Machines, of which the following is a specification.

My invention relates to machines for lasting boots and shoes; and it consists in certain new and useful constructions and combinations of certain parts of the same, substantially as hereinafter described and claimed.

In the drawings, Figure 1 is a side view of the machine from the side where the operator stands, omitting most of the toe and heel wiping mechanism. Fig. 2 is an enlarged top view of the machine. Fig. 3 is an enlarged view of the toe-block and connected mechanism, shown partly from above and partly from below. Fig. 4 is an enlarged end view of the heel-block. Fig. 5 is an enlarged side view, partly in section, looking from the end of the machine, of the sliding last-post and adjustment-wheel. Fig. 6 is an enlarged side view of the ends of the table and the toe and heel lasting mechanisms. Fig. 7 is a side elevation of the presser-foot mechanism. Fig. 8 is an end elevation of the same.

A plate or table 1 on legs 2 carries the toe and heel lasting mechanism, while the post 3 that supports the last itself is carried on a lower bed or girth 4, which also carries the compressed-air actuating-cylinder 5. The post 3 is pivoted to ears 6 on the girth 4, placed farther apart than the thickness of the post, so that it is free to slide a limited distance in the line of the pivot, as shown in Fig. 5. The post 3 consists of two parts, the upper of which screws through a wheel 7 and slides into a hole in the end 8 of the lower part. Its end is provided with a collar 9, fitting the bore of the lower part and fastened to the upper part by a pin 10, which projects each way through slots 11 in the walls of the lower part, thus preventing the upper part from turning, while allowing it to slide. By turning the wheel, therefore, when it is in the position shown in Figs. 1 and 5, with a right-hand motion, the upper part of the post is raised to any desired extent, and an opposite motion of the wheel lowers it.

The post projects through a hole in the top of the table and its end is pointed enough to

be inserted in a hole in the bottom of the last 12, which latter is prevented from wobbling by a shouldered collar 13, pressed up by a spiral spring 14, coiled around the post. The last may therefore swing forward and back and may at will be raised or lowered and pushed sidewise a limited distance.

The toe-lasting mechanism is supported on a standard 15 on the table, so as to be able to tip forward or back to accommodate itself to any particular form of last, and is retained in any desired position by a set-screw 16. It supports not only the presser-feet 20 21 22 for stretching the vamp and for pushing the toe of the last down into place and the cam 23 and handle 24 for actuating the feet, but also the block 25, bearing the wipers 26, and the lever 27 for operating the wipers.

The presser-feet 20 21 22 are carried on one end of a lever. There are or may be four of these feet. One of them, 20, is placed so as to bear against the bottom of the toe of the last and is positively attached by a leg 17 and a pivot 28 to the end of the lever 31. The other presser-feet, 21 22, which are designed to hold and stretch the vamp while the last is pushed into place, are spring-held. The two side ones, 22 22, only one of which is shown in Fig. 6, are formed on the ends of an inverted-U-shaped piece 18, sliding on a post 30, which projects upward from the lever 31, near its end, through a hole in the middle of the bend of the U. The feet are held down by a spiral spring 32, whose pressure is regulated by a check-nut 33 on the upper end of the post. The rear foot 21 is on the end of a straight rod 34, running up through the lever and provided with a check-nut 35 on top and with a spiral spring 36 around the rod, confined between the foot and the lever.

The lever is pivoted to a standard 37 on the supporting-block 38, the pivot-bolt 39 passing through a slot 40 in the lever. The weight of the lever is so proportioned that it naturally slides back away from the toe of the shoe and entirely clear of the wipers, but when the presser-feet are to be applied the operator pulls the lever forward to the right position and turns the cam 23, which bears against the rear end of the lever, by means of the handle.

The wipers are mounted on a plate 41, sliding in an undercut groove in the plate 25, be-

fore mentioned. They are formed with a curved outer surface which slides in curved grooves on the sliding plate 41, and they are held in these grooves by pins 42 42, passing through correspondingly-curved slots 43 43 in the wipers themselves. A small plate 44, screwed to the sliding plate, helps to keep the wipers in place. To the rear end of each wiper is pivoted a link 45, the other ends of the links being attached to a common pivot 46 on the forward end of a rod 47, whose rear end is pivoted to the middle of a lever 27, pivoted to the block 38. A forward movement of the lever therefore moves forward both the wipers and the sliding plate 41, on which they are mounted; or if the plate is made to fit closely enough in its bearings it may be permanently adjusted at any particular place, and the movement of the lever will then actuate only the wipers. The free end of the lever is formed as a handle 48, by which it may be moved independently of any other part of the machine; but when the last has been inserted and the heel and toe mechanisms are approached to each other by the use of compressed air it is necessary that the toe-wipers should be actuated by the same force, so as not to require the workman's attention. To accomplish this, the lever is connected to a sliding bar 49 by a pin 50, passing through corresponding holes in both the lever and the bar. The bar is slid back and forth in the slotted end of a post 51, projecting from the block, by being pivoted to a rock-arm 52, whose connection with the compressed-air mechanism will be presently explained. The top of the pin is slotted to admit the end of a lever 53, pivoted at 54 to the wiper-working lever and having its handle 55 lying alongside that of the latter, so that when both the handles are grasped the lever attached to the pin will lift the pin out of the hole in the sliding bar and allow the wipers to be worked by hand independently of the compressed-air mechanism.

When the toe of the shoe is slipped under the toe-wipers, it comes against a piece of leather 56, Fig. 3, curved to receive it and backed by a metal form 57, sliding in a groove in the block and checked at any desired point with relation to the wipers by the head of an adjustable screw 58, screwing into the block. The toe of the last is held at the right height by a supporting-rod 59, passing down into the table and slid up by a lever 60, one end of which bears against the bottom of the rod, while its other end is attached by a cord or wire 61 to a treadle 62 at the floor. A depression of the treadle will therefore raise the toe of the last. At the heel end of the last somewhat similar wipers 63 are mounted on a plate 64, pivoted to a standard 65. This standard is on a plate 66, sliding in grooves in another plate 67, which latter slides in grooves in the table. The sliding plate 66 is moved back and forth with relation to the plate 67 by a screw 68, with hand-wheel 69 passing through

ears 70 71 on the plates 66 67, respectively. The pivoted plate 64, bearing the wipers, is adjusted by a set-screw 72 in the same way that the plate for the toe-wipers is adjusted. The heel-wiper plate is made shorter than the pivot 73, on which it turns, as shown in Fig. 4, so that it may be moved at will sidewise to one end or the other of the pivot. This is for the purpose of adjusting the heel-wipers to take either right or left lasts without any change of wipers or other mechanism.

The heel-wipers are mounted on a common pivot 75 on a block 76, provided with a plunger 79, sliding into a hole bored through the plate 64 and resisted in this sliding by a spiral spring 77, the tension of which is regulated by the check-nut 78 on the end of the plunger. To the outer ends of the wipers are pivoted rods 80 80, running back through holes in the L-shaped sliding plate 81, and there secured by check-nuts 82. This sliding plate 81 projects around the edge of the plate 66 on which it slides and is connected by a link 83 to an eccentric 84, actuated by a handle 85, by which the sliding plate may be thrown back and the wipers opened.

Underneath the wipers is a leather strip 86, bent into approximately the form of the heel and backed by a strip of flexible metal which has ears 87 at its ends, to which are pivoted on each side rods 88, running back through ears 89 on the block to which the wipers are pivoted and checked at any desired point by check-nuts.

To the sliding block 67 is fixed a pin 106, engaged by one end of a lever 90, pivoted at 91 to one of the legs of the table and connected at the other end by a knuckle-joint 92 to a piston 93, running down into a cylinder 5, to which is supplied the compressed air through a pipe 94. The piston is pressed upward by a spiral spring 95 and downward by the force of the compressed air when admitted through the pipe. A valve 96 in the pipe is worked by a handle 97 at the top of the rod 98.

Near the top of the lever is pivoted a link 99, whose other end is pivoted to an arm 100 on a rock-shaft 101, to which rock-shaft is affixed the rocker-arm 52, that actuates the sliding bar that works the toe-wipers.

A tripper-rod 103 runs through holes in the ends of the table and has a pin 104 projecting from it so as to trip an arm 105 on the same shaft as the cam that works the presser-feet at a certain point in its movement. The other end of the rod is pivoted to the pin 106, so that as the heel-wipers are moved toward the toe-wipers the rod will trip the lever bearing the presser-feet and will release the vamp from under them.

107 is a rod connecting the girths of the machine to strengthen it.

The operation of the machine is as follows: The operator places the last 12, with the vamp and insole properly fitted upon it, upon the post 3 and slides the post to one side or the

other, according as the last is a left or right. He also correspondingly slides the heel-plate on the rock-shaft or pivot 73. Heretofore it has been necessary to take out some part of the mechanism and replace it with a differently-formed part to accommodate rights and lefts. He now lays the projecting part of the vamp at the toe of the last flat upon the upper surface of the toe-wipers, pulls forward the lever 31, carrying the presser-feet, and applies the feet by means of the cam 23 and handle 24. This operation presses down the toe firmly into the vamp, while, owing to the presser-feet being spring-held, the vamp is not clamped rigidly, but slips at a certain pressure, accurately regulable by changing the tension of the springs. He then turns the handle 97, which admits compressed air to the cylinder 5, and by means of the mechanism already described the sliding plate 67 is slid forward, bringing the heel-form 86 against the heel of the last and gripping the last between the heel and toe forms. As the toe thus moves forward the presser-feet cease to hold the vamp, not only on account of the greater pull of the vamp itself, but because the tripper-rod 103 is pushed forward by the plate and releases the cam, allowing the presser-foot lever to tip up and slide back entirely out of the way of the workman. As the sliding plate continues to advance the spring-held block on which the heel-wipers are pivoted is forced back toward the plate 64, and this relative motion has the effect of thrusting forward the rods 80, pivoted to the heel-wipers, and thereby closing the wipers over the bottom of the last. At the same time the rocker-arm 52 and sliding bar 49, actuating the toe-wipers, are moved, closing those wipers over the toe in the same manner in which the heel-wipers are closed. The vamp is thereby wiped over the insole both at toe and at heel, but as a single wiping is not always sufficient the workman seizes the eccentric handle 85 and works it back and forth, thereby reciprocating the sliding plate 81, to which the heel-wiper rods are attached,

and working the heel-wipers back and forth as often as desired. He also seizes the lever 27, that works the toe-wipers, disconnects it from the sliding bar by the supplementary lever 53 and pin 50, and works it back and forth in the same manner as often as desired. During these operations of wiping the heel and toe it will be seen that the last is still firmly held between the heel and toe forms. Before it is released the tacking-machine is applied, so as to tack the vamp down upon the insole all around. If the shoe is to be hand-sewed, it is essential that its toe should project under the toe-wipers only a little distance. In lasting this class of shoes, therefore, the toe-form will be adjusted well forward by means of the set-screw 58, and the treadle will be brought into operation for forcing the toe of the last up firmly under the wipers. Upon completion of these operations the air-valve is again turned and the last released.

For different lengths of lasts the adjustment-screw 68 is turned one way or the other by the wheel 69, adjusting the whole heel mechanism with relation to the sliding block operated by the lever. Different styles of lasts may also require the adjustment of the last-post up and down and of the toe and heel plates on their pivots.

What I claim as new and of my invention is—

1. A heel or toe lasting mechanism mounted on a transverse pivot having a free limited axial play, to accommodate the mechanism to various lasts.

2. In combination with laterally relatively adjustable heel and toe lasting mechanisms, a last-post mounted on a pivot capable of corresponding lateral sliding.

3. The combination of the block 38, the forms 56 and 57, the wipers 26, and the set-screw 58, substantially as described.

GEORGE FERGUSON.

Witnesses:

LEPINE HALL RICE,
N. P. OCKINGTON.