(No Model.)

2 Sheets—Sheet 1.

O. GILMORE.

SOLE LEVELING MACHINE.

No. 266,283. Patented Oct. 24, 1882.

Fig. 1.

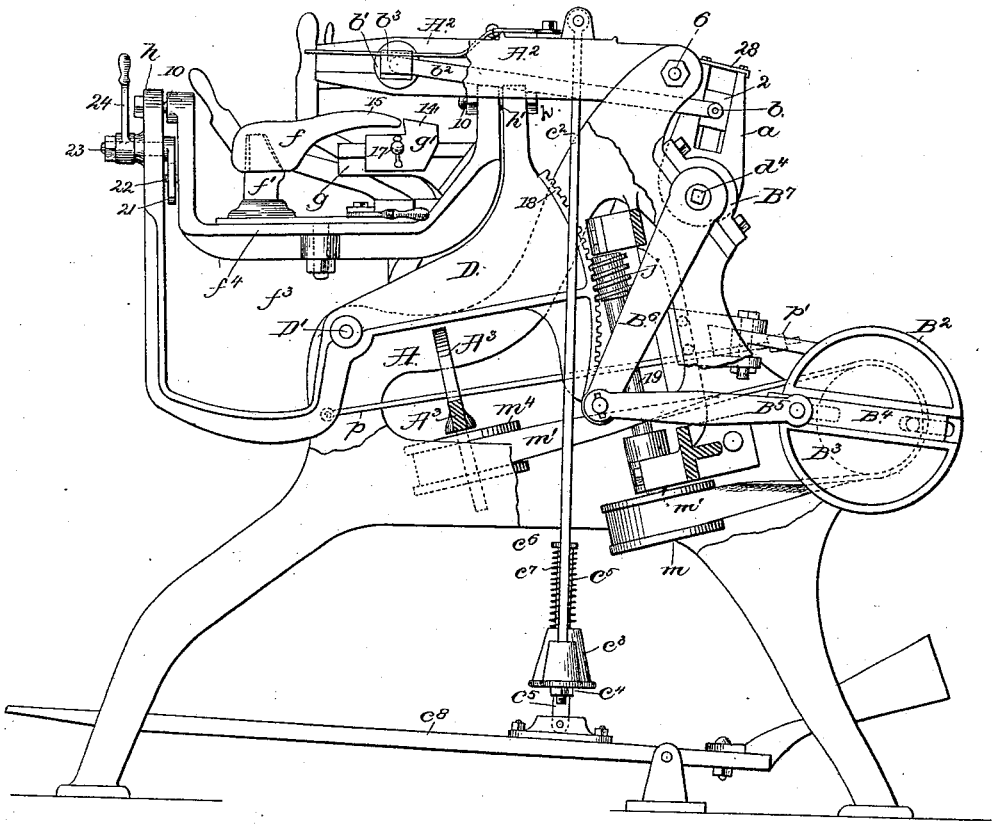


Fig. 2.

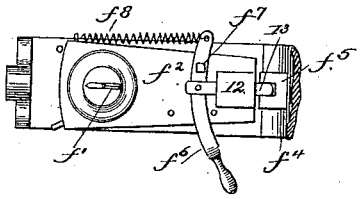
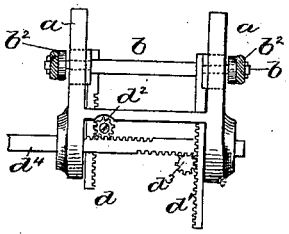


Fig. 3.



Witnesses.
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(No Model.) 2 Sheets—Sheet 2.

O. GILMORE.

SOLE LEVELING MACHINE.

No. 266,283. Patented Oct. 24, 1882.

Fig. 4.

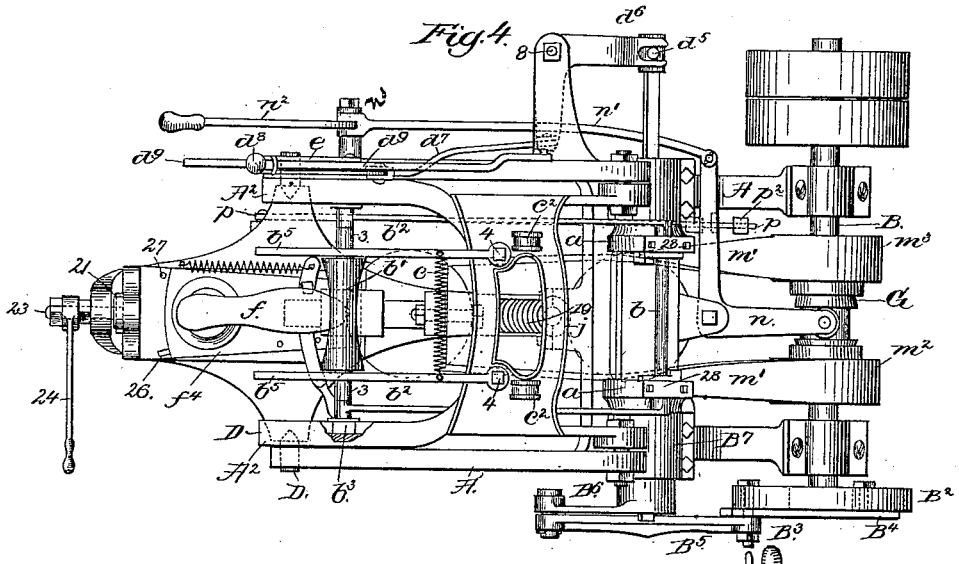


Fig. 5.

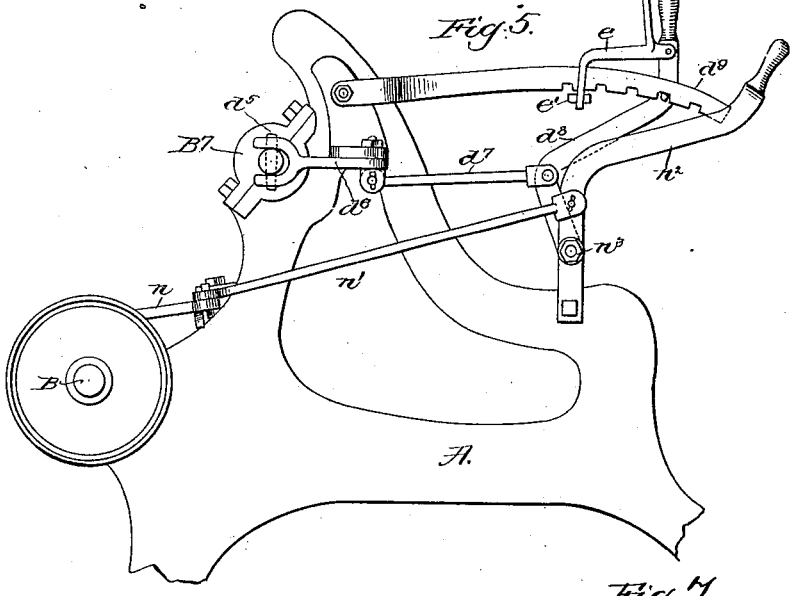
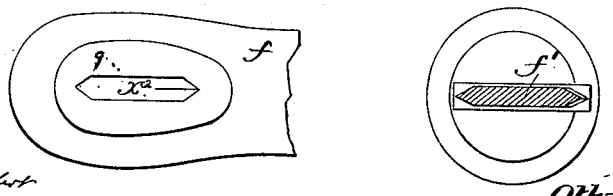


Fig. 7.

Fig. 6.



Witnesses
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UNITED STATES PATENT OFFICE.

OTHNIEL GILMORE, OF EAST BRIDGEWATER, MASSACHUSETTS.

SOLE-LEVELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 266,283, dated October 24, 1882.

Application filed April 15, 1882. (No model.)

To all whom it may concern:

Be it known that I, OTHNIEL GILMORE, of East Bridgewater, county of Plymouth, State of Massachusetts, have invented an Improvement in Sole-Leveling Machines, of which the following description, in connection with the accompanying drawings, is a specification.

This invention is an improvement on the class of machine represented in United States Patents Nos. 38,257 and 44,946, granted to Budding, to which reference may be had, wherein a roll having its journal held in a frame is reciprocated from end to end of the sole, the roll being held pressed down in contact with the said sole, leveling and bringing it into shape. In the Budding patents the frame in which the roller is held is actuated by a crank, making its length of stroke constant, and the jack with the shoe thereon is moved horizontally under the roller. In this my present invention I have connected the arms of the frame carrying the leveling-roller with the arms of a rock-shaft in such manner as will enable the operator to readily provide for greater or less throw of the frame and its roller by changing the point of connection of the said frame with the arms of the said rock-shaft. This rock-shaft, operated by a crank and link, may have a constant throw of greater or less strength by adjustment of the crank-pin away from or toward the center of the shaft which gives to it its rotation. In this my invention I employ an iron last having a chilled socket fitted to a wedge-like heel-pin, the shape of the heel-pin and socket being such as to keep the center line of the last in proper position with relation to the axis of the roller and its line of reciprocation. Near the toe of the said iron last I have placed a longitudinally-adjustable roller-receiver, the surface of which is so shaped with relation to the curvature of the bottom of the said last near its toe as to enable the leveling-roller to run upon and leave the sole without a blow.

Figure 1 represents a broken side elevation of a leveling-machine embodying my invention; Fig. 2, a detail of the jack for the last; Fig. 3, a detail of the adjusting mechanism between the arms of the rock-shaft and the frame which carries the leveling-roller. Fig. 4 is a plan or top view of Fig. 1; Fig. 5, a detail of a sufficient portion of the rear side of the machine shown in Fig. 1 to represent the shipper-lever; Fig. 6, a detail of the heel of the last to show the shape of the hole therein to receive the heel-pin, and Fig. 7 a cross-section of the heel-pin.

The frame-work A, of proper shape to sustain the working parts, has a main shaft, B, provided at one end with the usual tight and loose pulleys to receive the power-applying belt, (not shown,) and at its other end with a a disk, B^2, shown as grooved at its face to receive an adjustable slide, B^4, provided with a crank-pin, B^3, which by link B^5 is connected with the long arm B^6 of a rock-shaft held in bearings B^7, the said rock-shaft having two short arms, *a*. The arms *a* are forked and receive loose boxes 2 for the rear cross-bar, *b*, of the frame which carries the leveling-roller *b'*. The sides b^2 of this frame, loosely pivoted on the bar *b*, are extended forward and connected with a front cross-bar, 3, as in Fig. 4, having at its ends boxes b^3, made square and fitted to slide in suitable grooves in the arms A^2, pivoted on the frame-work at 6. The leveling-roller *b'* is placed loosely on the front cross-bar, 3, and as the arms *a* are vibrated the said frame and roller are reciprocated horizontally over the sole of the boot or shoe under it. The leveling-roller *b'* is held in place laterally on the bar 3 by spring-arms b^5, attached by screws 4 to the frame-work, and the said spring-arms are connected by means of a spring, *c*.

In Fig. 1 one of the arms A^2 has connected with it a rod, c^2, which at its lower end is extended down through a bar, c^3, and each rod c^2 below the bar c^3 is provided with a nut, c^4. The bar c^3, near its center, receives loosely a rod, c^5, having under its head c^6, and between said head and the top of said bar a spiral spring, c^7, and the lower end of rod c^5 is connected with the treadle c^8, so that by pressure on the said treadle the leveling-roller may be pressed down upon the sole in a yielding manner, but with the desired force.

The cross-bar *b* (see Fig. 3) has connected with it two toothed racks, *d d'*, which engage the teeth of long pinions properly supported or held in the arms *a a*, the said pinions being engaged by teeth at the opposite sides of a sliding rack-bar, d^4, located at the center of motion of the arms *a* and preferably made rectangular in cross-section. This rack-bar

has at one end a collar having a pin, d^5, which is embraced by one arm of the elbow-lever d^6, pivoted at 8, and having its other end connected by link d^7 with the hand-lever d^8, so that by the said hand-lever the rack-bar may be reciprocated more or less to move the toothed racks and place the cross-bar b more or less remote from the axis of motion of the arms a, and thus alter the length of forward and backward stroke of the roller b', according to the length of the last or the work to be done. The hand-lever d^8 has a pin at its side, (see Fig. 7,) which is engaged by the notched parts of a catch, d^9, to hold the hand-lever in place. When it is desired to move the hand-lever d^8 the operator, when grasping the hand part, will at the same time grasp the end of and turn the catch-lifting lever e, pivoted thereon, and provided with a suitable projection, e', to strike the under side of the catch. The slot in the elbow-lever d^6, (see Fig. 4,) which receives the pin d^5, is of such length that the said pin cannot leave the said slot as the arms a are being rocked, the rack-bar fitted at their axis of motion also at same time moving axially.

The last f, having a thin fore part and a rounded heel for the easy application to and removal therefrom of the boot or shoe the sole of which is to be acted upon by the leveling-roller b', has a hole, 9, cast therein (see Fig. 6) by what is known as the "chill process," so as to make a smooth hard-faced hole for the reception of the heel-pin f', shaped to fit the hole x^2 in the said last. The heel-pin is beveled at its front edge and substantially straight at its rear edge, as shown in Fig. 1 in dotted lines, and the hole 9 in the last is of substantially the same shape, so as to insure a proper fit and keep the last with its toe at the proper level. The heel-pin f' at its edges is shown as made V-shaped (see Fig. 7) to fit the correspondingly-V-shaped parts of the hole in the last, and thus prevent axial movement of the last on the heel-pin. Instead, however, of making the edges of the heel-pin V-shaped, they might be rounded; but I prefer the V shape. The heel-pin f' is extended upward from a jack-plate, f^2, having at its under side a stud, f^3, extended through a hole in the yoke f^4, swung on pivots 10. The jack-plate f has an ear, 12, in which is a bolt, 13, pressed forward to engage a notch of a block, f^5, fast on the yoke f^4.

The lever f^6, bolt, block, and spring constitute what I call the "locking device" for the jack-plate.

To apply the boot or shoe to the last or remove it therefrom, the jack-plate will be turned aside about its pivot or stud f^3. The yoke f^4 has an arm, g, upon which is placed a roller-receiver, g', made longitudinally-adjustable thereon toward and from the heel-pin, so as to enable the said roller-receiver to be placed correctly in position with relation to lasts of different lengths, the receiver, when adjusted, being held by a suitable fastening device, (shown as a screw,) 17. The top surface, 14, of this receiver is inclined upward in the direction of the curvature or incline 15 of the fore part of the bottom of the last, so that the roller b', when passing upon and from the sole of the boot or shoe at its toe, will not strike a blow and deface the said sole. The pivots 10 of the yoke f^4 are held in forks h h' of a U-shaped lever, D, pivoted at D', and having at one edge a toothed sector, 18, engaged and moved by a worm, j, on an inclined shaft, 19, having at its lower end a pulley, m, which receives a belt, m', which is extended about it, and two loose pulleys, m^2 m^3, on the main shaft B, and then about an idle-pulley, m^4, held in a stud of the cross-brace A^3 of the frame-work. Rotation of the shaft 19 in one or the other direction causes its worm, by its engagement with the sector, to turn the lever D on its pivot D', thus moving the last and shoe thereon in the arc of a circle under the longitudinally-reciprocating leveling-roller. While the last is being moved longitudinally it may be tipped sidewise about the pivots 10 by the slotted arm 21, which engages a pin, 22, on the yoke f^4, the said arm being carried by a shaft, 23, having a lever handle or arm, 24. (See Figs. 1 and 4.)

The main shaft has keyed to it, but movable thereon, a double conical friction clutch or hub, G, like that designated by the same letter in my United States Patent No. 231,708, it operating to engage and drive either of the loose pulleys m^2 or m^3 positively, and let the other then run as an idle-pulley. This hub is engaged by a forked lever, n, joined by link n' with a hand or shipper lever, n^2, pivoted at n^3. To effect the automatic shifting of the hub G as the last and shoe thereon reaches its extreme forward and backward positions, or at any intermediate position, and thus control the reciprocation of the jack and boot or shoe, I have provided the lever D with a link, p, (see Figs. 1 and 4,) extended back through the bell-crank lever n, and at each side the said lever, at the proper distances apart, I have attached to the said link two like collars, p^2, which at the desired times strike the lever n and move it and the hub G.

The jack-plate f has a pin, 26, which strikes a pin, 27, on the yoke f^4 and arrests the outward movement of the jack-plate.

The slots in the arms a are closed at the ends of the said arms by the plates 28.

The last and its holding-standard, not herein broadly claimed, will form the subject-matter of another application.

I claim—

1. In a sole-leveling machine, the pivoted arms A^2, the leveling-roller and its frame guided thereby, the roller-receiver and last, the vibrating arms a, and means, substantially as described, to vary the connection of the carrying-frame of the leveling-roller with the said arms, whereby the throw of the leveling-roller may be changed without altering the throw of the said arms, substantially as described.

2. The vibrating arms a, the pivoted arms A^2, and the leveling-roller, and the frame to connect it with the said arms, combined with

toothed racks, pinions, and rack-bar, to change the point of connection of the said frame with relation to the axis of motion of the said arms, substantially as described.

3. The arms *a*, their boxes and the cross-bar therein, the toothed racks, rack-bar, and intermediate pinions held by the arms *a*, combined with the lever to move the rack-bar, substantially as described.

4. The arms *a* and rectangular rack-bar fitted to slide in line with the axis of motion of the said arms, and the pin d^5, combined with the lever d^6 to move the said bar longitudinally, the slot in the said lever being of such length as to prevent the escape of the pin d^5 as the arms *a* are being vibrated, substantially as described.

5. The arms *a*, the rack-bar, its pin, the elbow-lever, link, and hand-lever d^8, provided with a pin, combined with the catch to hold the lever in place, substantially as described.

6. The hand-lever having a pin thereon and a catch to hold it, combined with a catch-lifting lever pivoted upon the said hand-lever, substantially as described.

7. The last, its heel-pin, the jack-plate, the pivoted yoke f^4, the U-shaped lever, its sector, the worm, shaft 19, the belt, loose pulleys, clutch-hub, and means to operate it, substantially as described.

8. The yoke f^4, the pivoted jack-plate, its heel-pin, and last, combined with the locking mechanism for the jack-plate, substantially as described.

9. The last and its heel-pin, and the reciprocating leveling-roller, combined with the roller-receiver having its top surface inclined with relation to the bottom of the fore part of the last, substantially as and for the purposes set forth.

10. The last, its heel-pin, and the roller-receiver, made horizontally-adjustable toward and from the heel-pin, combined with the jack-plate adapted to be moved away from the roller-receiver to permit the application to or removal from the last of a boot or shoe, substantially as described.

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

OTHNIEL GILMORE.

Witnesses:

G. W. GREGORY,

B. J. NOYES.