2 Sheets--Sheet 1.

C. W. GLIDDEN.

Heel-Burnishing Machines.

No. 143,690. Patented Oct. 14, 1873.

Fig. 1.

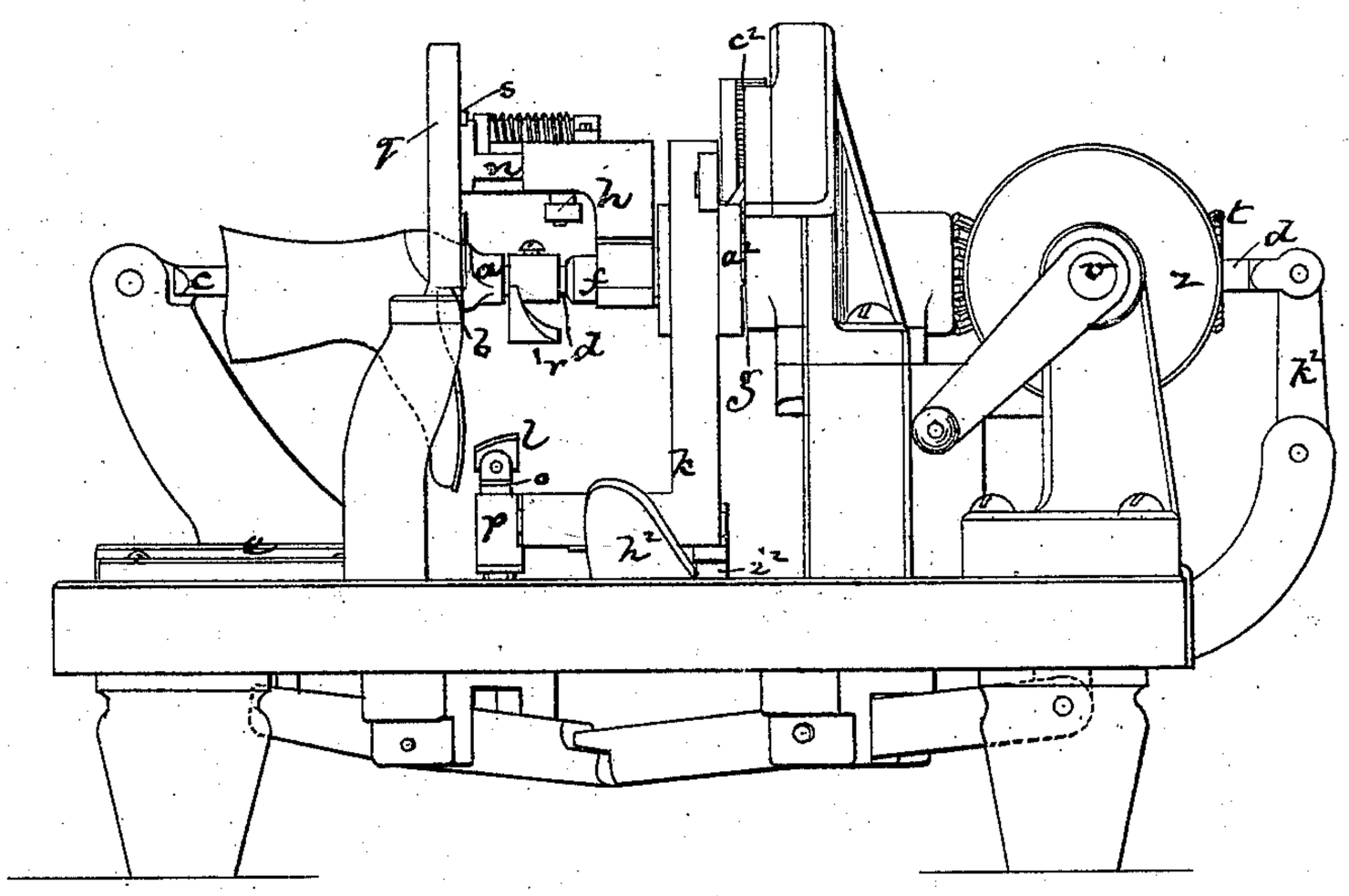
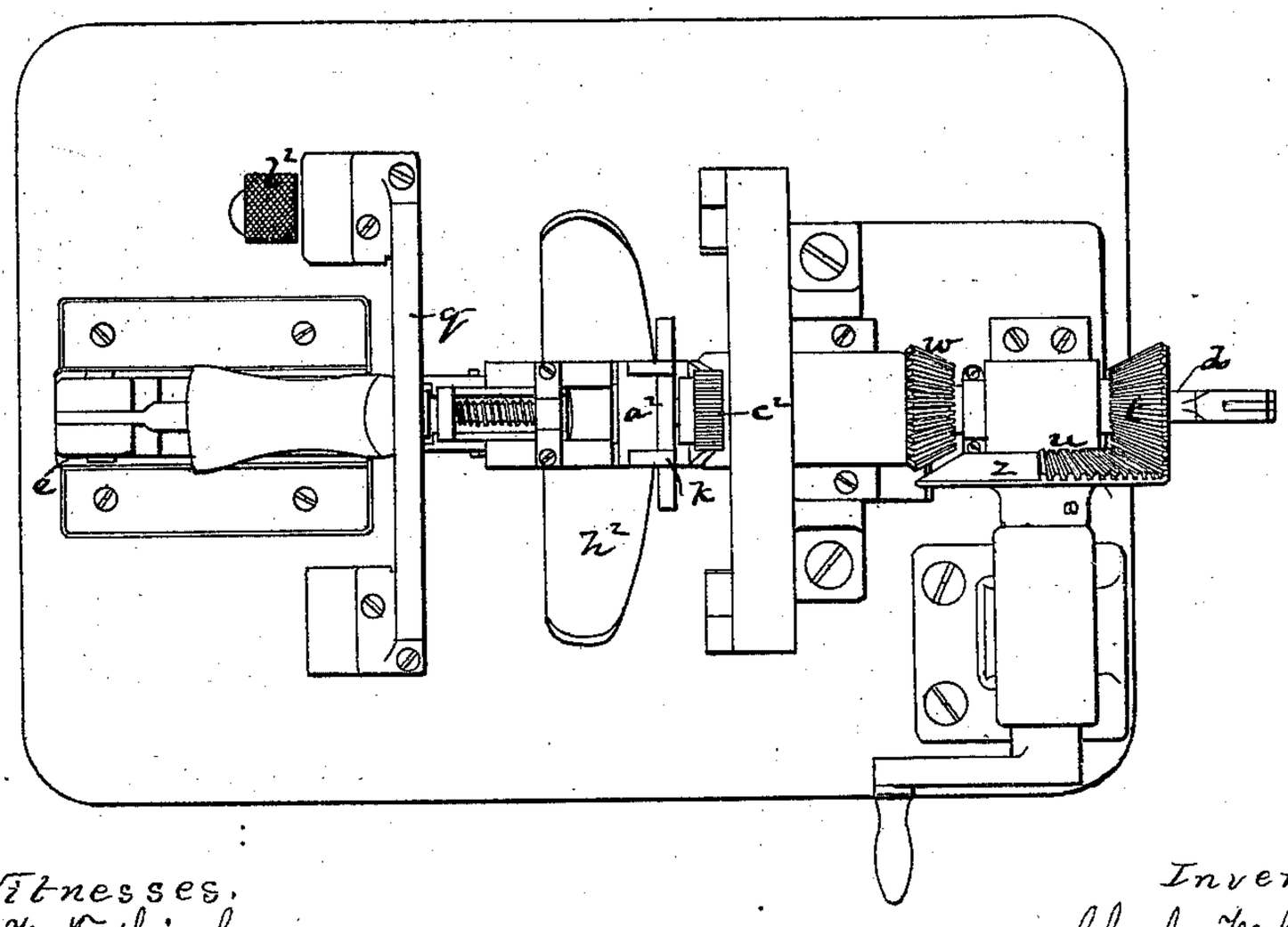


Fig. 2.



Witnesses.
M. W. Frothingham.
C. H. Laturner.

Inventor.
Charles W. Glidden.
By his Attys.
Crosby & Gould

2 Sheets--Sheet 2.

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Fig. 3.

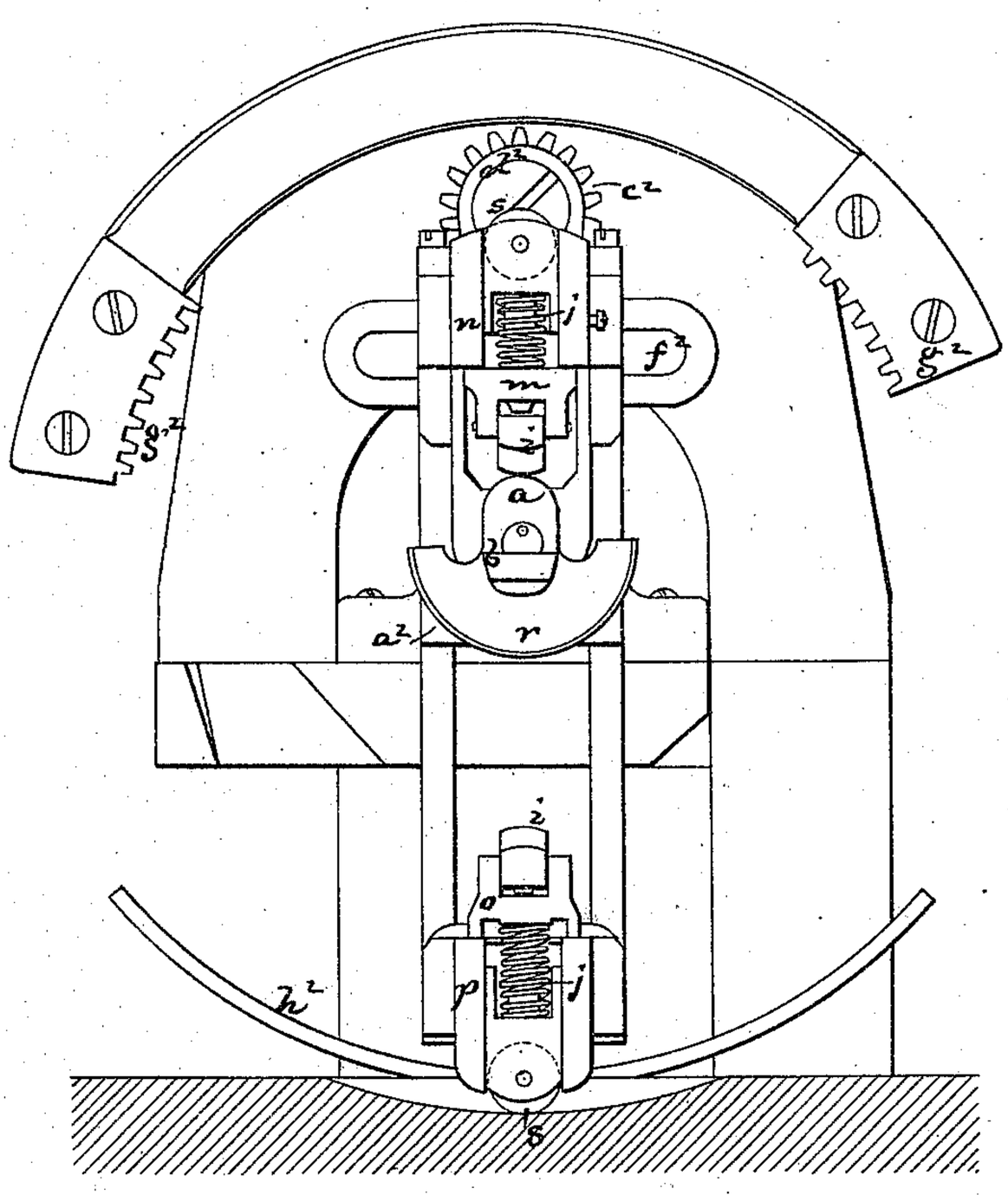
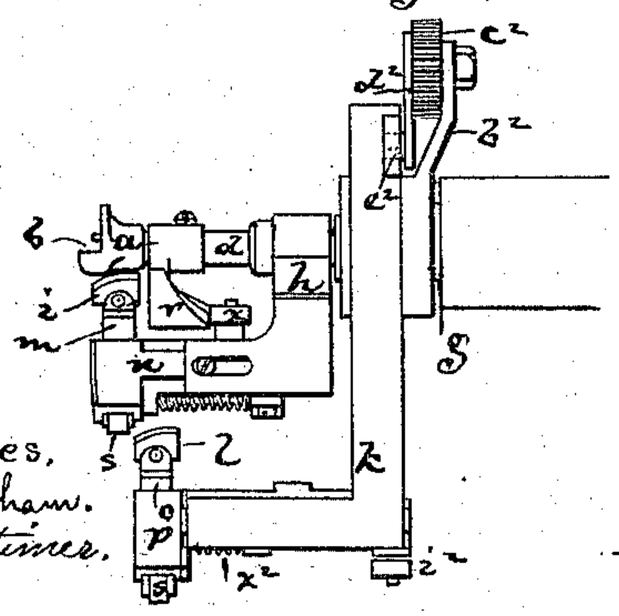
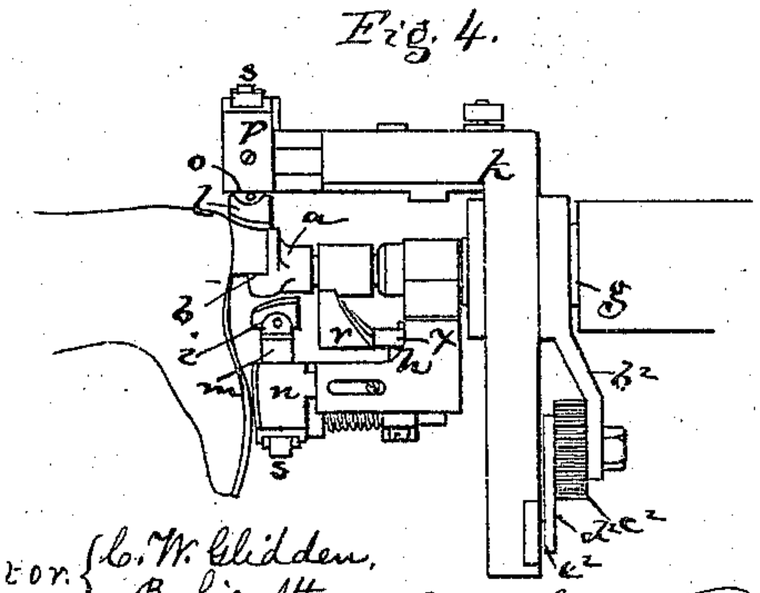


Fig. 5.



Witnesses,
H. W. Frothingham.
L. H. Latimer.

Fig. 4.



Inventor. { C. W. Glidden,
By his Attys.
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UNITED STATES PATENT OFFICE.

CHARLES W. GLIDDEN, OF LYNN, ASSIGNOR TO JAMES W. BROOKS, TRUSTEE, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN HEEL-BURNISHING MACHINES.

Specification forming part of Letters Patent No. **143,690**, dated October 14, 1873; application filed August 25, 1873.

To all whom it may concern:

Be it known that I, CHARLES W. GLIDDEN, of Lynn, in the county of Essex and State of Massachusetts, have invented an Improved Heel-Burnishing Machine; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

The invention relates to an organization of mechanism by which the heel of a boot or shoe may be burnished through the instrumentality of two burnishing-tools, running in opposite directions and acting intermittently, one tool passing over the entire curved surface to be burnished from one side to the opposite side thereof, and the other tool then passing in like manner over such curved edge, but in the opposite direction. My invention consists, primarily and broadly, in a heel-burnishing machine having two separate and independent burnishers or burnishing-tools thus operating.

The drawing represents a machine embodying the invention.

Figure 1 shows the machine in side elevation. Fig. 2 is a plan of the machine. Fig. 3 shows the burnishing-tools in front elevation.

In this machine the boot or shoe is supposed to be jacked in stationary position for the action of the burnishing mechanism; and for this purpose I show a clamp or tread-plate, *a*, having a seat, *b*, upon which rests the heel-breast, and a last-pin, *c*, the clamp-plate being shown as fixed upon the end of a shaft, *d*, and the pin, *c*, as jointed to an arm extending from a slide, *e*. When the slide is drawn back the pin may be swung up and the boot or shoe placed upon it or removed from it, and when the pin is moving down (the boot or shoe being upon it) the slide is thrown forward, bringing the heel-seat against the clamp-plate *a*. Upon the shaft *d* are two sleeves or tubular shafts, *f g*, and at the inner end of the sleeve *f* is a frame, *h*, that carries a burnisher, *i*, while at the inner end of the sleeve *g* is a frame, *k*, that carries a burnisher, *l*, the sleeve *f* extending through and beyond the sleeve *g* and the frame. The burnisher *i* is directly jointed to the end of a radial slide, *m*, which moves in the head of another slide, *n*, that moves in the main part of the frame extending from the sleeve *f;* and the burnisher *l*, in a similar manner, is jointed at the inner end of a radial slide, *o*, moving in the head of another slide, *p*, that moves in the main part of the frame *k*, extending from the sleeve *g*. Each burnisher-slide *m o* is pressed inward by the stress of a suitable spring, *j*, and the stress of such spring is increased at proper times by a slide-block, operated by a curved guide-rail, *q*, each block having a roll, *s*, that travels against the rail. The tubular shafts *f g* are intermittently rotated in opposite directions, and in such rotations the overhanging frame *h* passes inside of the overhanging frame *k*. In their respective rotative movements one burnisher is brought against one side of the heel at the corner thereof, and the frame with which such burnisher is connected is moved rotatively, the burnisher being pressed against the heel until it has passed over the whole length of the curved edge of the heel. Then the other burnisher is brought into contact with the side of the heel over which the first burnisher last passed, and is held against the curved surface of the heel until it has revolved over the whole curved surface thereof moving, in the opposite direction to the other tool. As the burnisher surfaces must revolve in the same general plane, each burnisher in turn makes way for the other, and their respective movements are produced as follows:

The lesser frame *h* is fixed to the end of its sleeve, and the sleeve bears a bevel-pinion, *t*, which is intermittently rotated by a segment bevel-gear, *u*, on a driving-shaft, *v*. When the burnisher *i* is beneath the heel it is held back by the curved surface of a stationary cam, *r*, acting against a roll, *x*, on the slide-plate *n*, and as the gear *u* turns the frame *h* the roll rides on the cam-plate, and the slide *n*, with the burnisher, moves forward until, reaching a horizontal position, the burnisher comes against the heel-edge, the roll *s* of the burnisher-slide passing under the curved rail *q*, which holds the slide forward, or compresses the spring *j*, so that the burnisher is forced

hard against the heel-edge. When the burnishing-tool has passed beyond the heel the roll *x* strikes the cam-plate *r*, and the burnisher passes under the plate *a*, and is drawn back by the cam-plate, so that it stands back of the sole, as seen in Fig. 4. Reaching this position, the gear-segment passes beyond the pinion *t*, and into engagement with another pinion, *w*, at the end of the other sleeve, *g*, and at the opposite side of the gear-wheel *z*. During the movement of the first burnisher the other burnisher is stationary under the shaft *d*, as seen at Figs. 4 and 5, and as the segment-gear *u* leaves the pinion *t* (the burnisher being then beneath the heel-plate) the gear engages with the pinion *w* upon the other sleeve, *g*. The frame *k* connected with this sleeve is a sliding frame sliding on a guide-plate, a^2, fixed upon the sleeve *g*. From this plate extends an arm, b^2, carrying at its end a gear-pinion, c^2, to which is fixed a crank-arm, d^2. From this arm a crank-pin, e^2, extends into a slot, f^2, at the end of the frame opposite to the burnisher. As the sleeve rotates the pinion c^2 is brought into contact with one of two stationary gear-racks, g^2, and its engagement therewith turns the crank and causes it to impart a radial movement to the burnisher-frame. In the position seen in Figs. 1 and 5 the burnisher-slide *p* is held back by a cam-plate, h^2, acting upon a roll, i^2, connected with the slide; and as the frame begins to rotate the cam lets the slide move forward, (by the stress of the spring r^2,) and this forward movement brings the roll *s* into line with the curved guide-rail *q*, while when the pinion c^2 next strikes the gear-rack g^2 the engagement of the pin and rack causes the frame to slide radially until the burnisher is brought into contact with the boot-heel, which contact takes place before the pinion passes out of engagement with the gear-rack, the contact being then maintained by the curved rail *q*. As the burnisher reaches the opposite side of the heel at the breast thereof, (having passed over the whole length of its curved edge,) the pinion c^2 reaches the opposite gear-rack g^2, which causes the frame to be thrown radially outward, and the roll i^2 comes into contact with the cam-plate h^2, movement against which draws draws back the burnisher, so that when the gear-segment *u* has brought the burnisher-frame to a vertical position beneath the shaft *d* (at which position the frame stops by reason of the segment *u* passing the pinion *w*) the frame *k* and burnisher *l* will be so located as to permit the other frame and its burnisher to pass by the frame. By these means both burnishers act upon the curved heel-surface in opposite directions, and by their rapid rotation and pressure against such surface they quickly effect the burnishing.

To enable the whole width of heel-edge to be properly burnished, the shaft *d* may have an end movement to move the shoe under the burnisher, and for this purpose the shaft is shown as jointed to one arm of a lever, k^2, whose other arm is connected, by a lever connection, with a pedal, l^2.

When the shoe is jacked in position the slide *e* is pressed toward the shaft *d*, and the heel will then be in position for the burnisher to burnish the upper part of the heel-edge. By pressing upon the pedal l^2 during the burnishing operation the shaft *d* and the jacked shoe are moved back, thereby bringing the burnisher into action upon the bottom part of the heel-edge. By alternately pressing the slide forward by hand and bringing it back by pressure of the foot upon the treadle, the burnishers will have a lateral movement across the heel-edge, as well as longitudinal movements against it.

I claim—

1. In combination with the mechanism for jacking the boot or shoe in position, the burnishers *i l*, acting alternately and in opposite directions against the heel-edge, substantially as described.

2. In combination with the heel-plate *a*, the hinged jack or last-pin *c*, jointed to the slide *e*, substantially as described.

3. The burnisher-frames *h k*, each having a yielding or sliding burnisher, *l* or *i*, and slides *m n*, substantially as shown and described.

4. In combination with the rotating burnishers, the guide-rail *q* operating to press or keep forward the burnishers, substantially as described.

5. In combination with the rotating burnishers, the cam-plates *r* h^2 for drawing back the burnishers.

6. In combination with the burnisher-frame *k*, the guide-plate a^2, pinion c^2, crank e^2 d^2, and gear-racks g^2, operating to intermittently actuate the frame, substantially as described.

7. In combination with the burnisher-frames *h k*, the sleeves *f g*, pinions *w t*, and gear-segment *u*.

Executed this 8th day of August, A. D. 1873.

C. W. GLIDDEN.

Witnesses:

FRANCIS GOULD,

M. W. FROTHINGHAM.