(No Model.) 3 Sheets—Sheet 1.

W. C. EVANS.

HEEL BURNISHING MACHINE.

No. 385,702. Patented July 10, 1888.

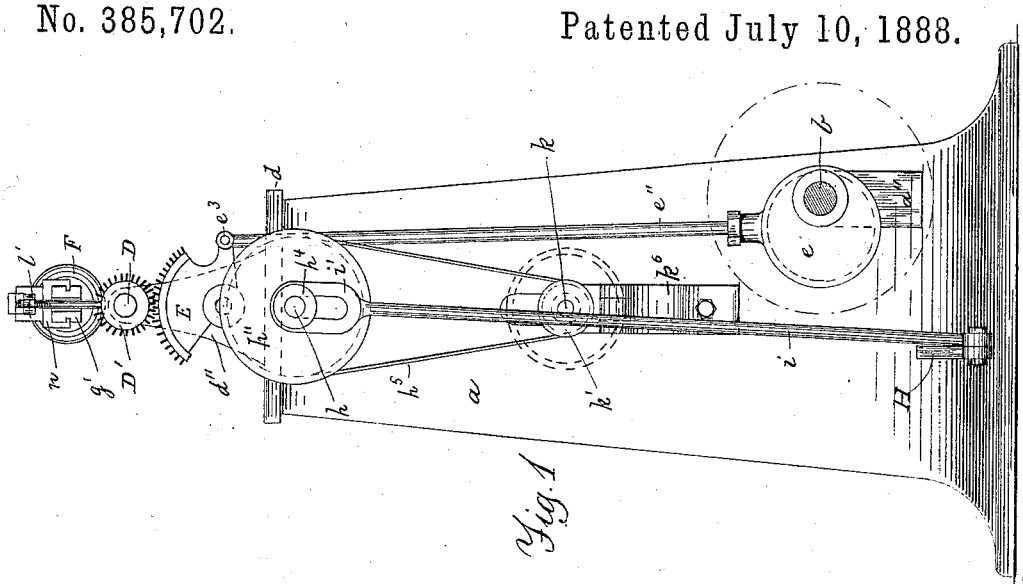

Fig. 1.

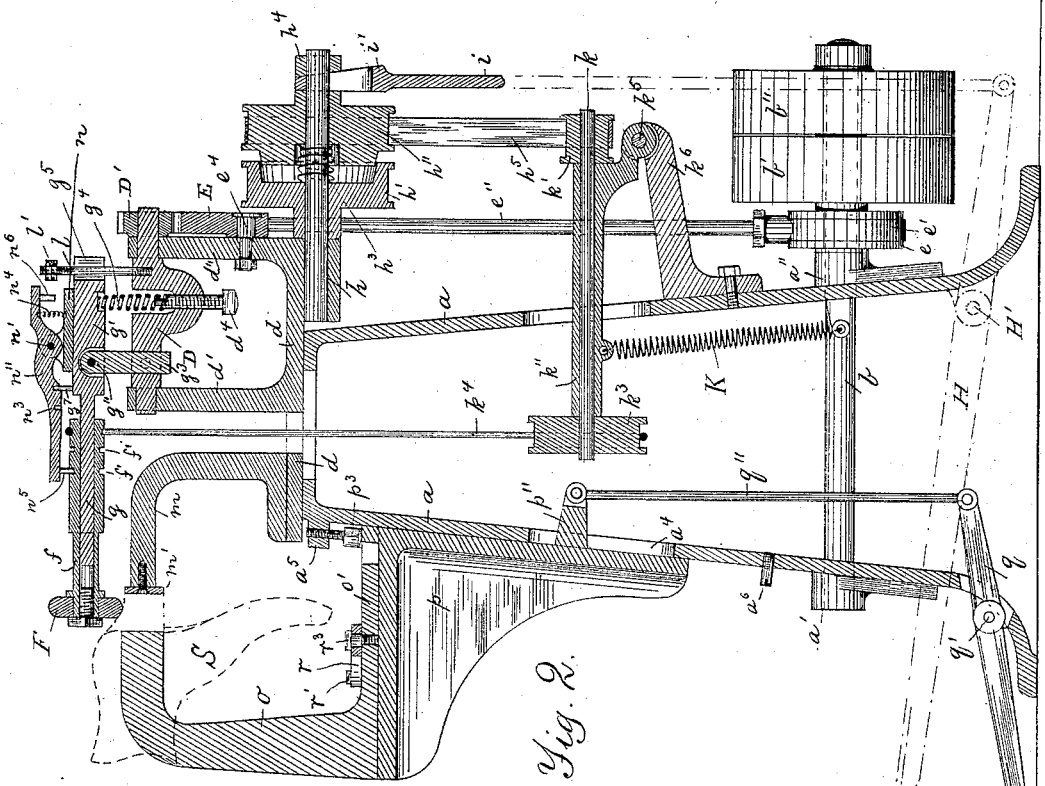

Fig. 2.

Witnesses.
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(No Model.)

3 Sheets—Sheet 2.

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Fig. 4.

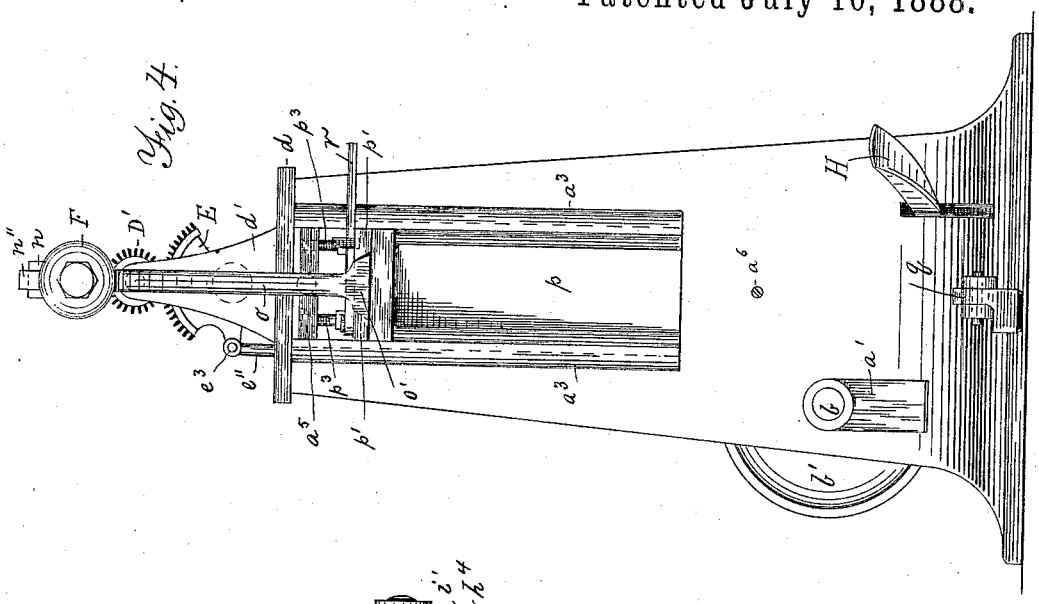

Fig. 3.

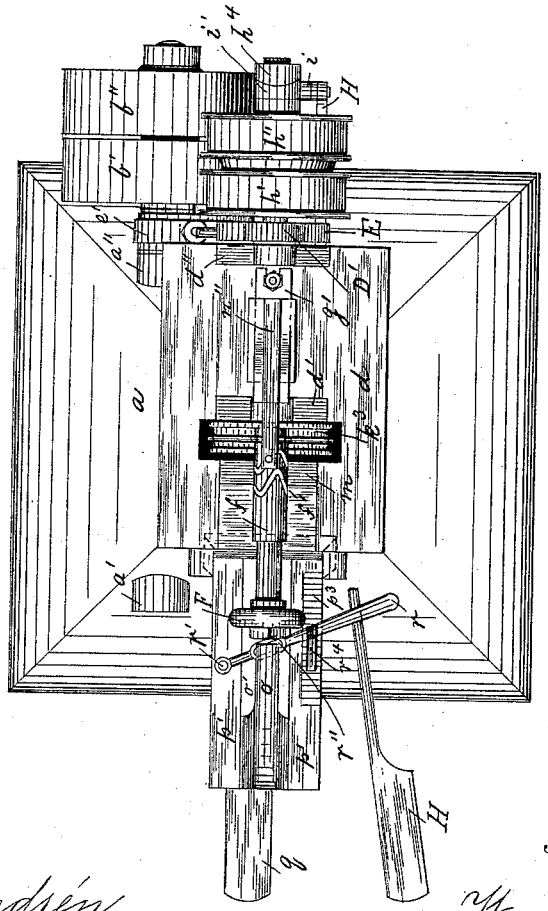

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Fig. 5.

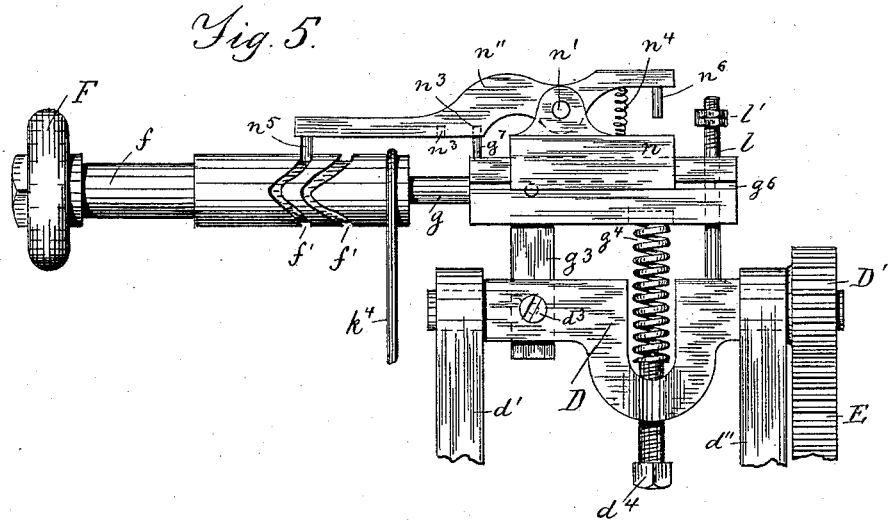
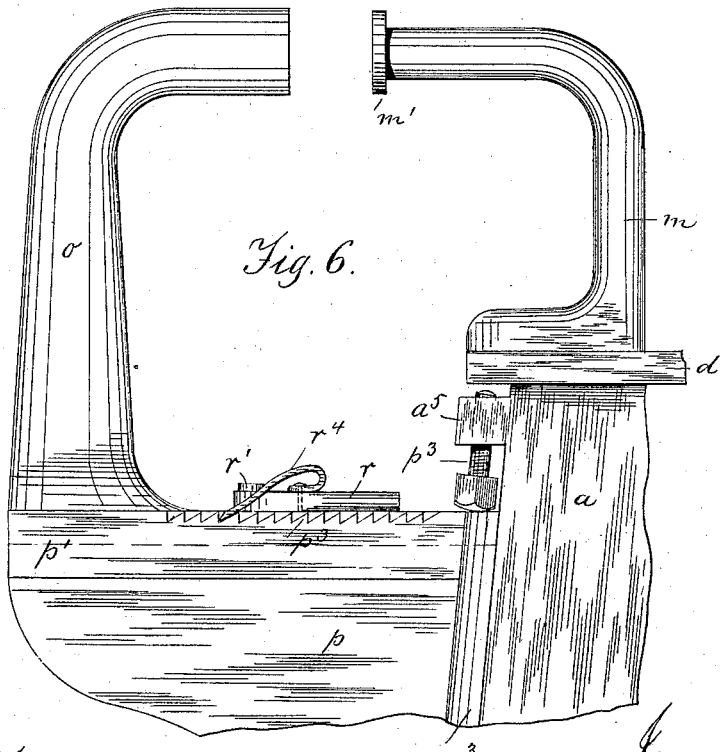


Fig. 6.



Witnesses.
Karl Andrén.
Henry Chadbourne.

Inventor.
Warren C. Evans
by Albert Andrén his atty.

UNITED STATES PATENT OFFICE.

WARREN C. EVANS, OF EXETER, NEW HAMPSHIRE, ASSIGNOR TO THE ROCKINGHAM MACHINE COMPANY, OF NEW HAMPSHIRE.

HEEL-BURNISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 385,702, dated July 10, 1888.

Application filed December 22, 1887. Serial No. 258,650. (No model.)

To all whom it may concern:

Be it known that I, WARREN C. EVANS, a citizen of the United States, and a resident of Exeter, in the county of Rockingham and State of New Hampshire, have invented new and useful Improvements in Heel-Burnishing Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention relates to improvements in heel-burnishing machines, and it is carried out as follows, reference being had to the accompanying drawings, wherein—

Figure 1 represents a rear view of the machine. Fig. 2 represents a vertical longitudinal section of the same. Fig. 3 is a plan view of the machine, and Fig. 4 represents a front elevation of the same. Fig. 5 represents an enlarged side elevation of the burnishing-tool and its connecting mechanism to the rock-shaft; and Fig. 6 represents an enlarged side elevation of the jacking device.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

a is the frame or standard of the machine, as usual.

b is the driving-shaft, located in bearings *a' a''* on the standard *a*, and provided with fast and loose pulleys *b' b''*, to which a rotary motion is imparted by means of a belt from a shaft above or below the machine.

To the top of the standard *a* is secured the plate *d*, having upwardly-projecting arms *d'* and *d''*, the upper ends of which serve as bearings for the ends of the rock-shaft or rocking head D, as shown in Fig. 2.

The mechanism for rocking the head D is carried out as follows: To the driving-shaft *b* is secured the eccentric-disk *e*, surrounded by the ring *e'*, to which is attached the link or rod *e''*, the upper end of which is pivoted at e^3 to the segmental gear E, that is journaled on a pin or stud, e^4, secured to the bearing-arm *d''*, as shown in Fig. 2. The teeth of the segmental gear E mesh into the teeth of the pinion D', secured to the rear end of the rock-shaft or rocking head D, and it will thus be seen that an automatic rocking motion is imparted to the shaft or head D from the rotary driving-shaft *b* for the purpose of oscillating the burnishing-tool, so as to cause it to follow the curvature of the heel from breast to breast.

F is the burnishing tool, which is firmly secured to the forward end of the sleeve *f*, which sleeve is adapted to rotate and slide forward and back upon the spindle *g*, that forms the forward extension of a lever, *g'*, which is pivoted at *g''* to a downwardly-projecting link, g^3, that passes through a slot or hole in the rock-shaft D, and is adjustably secured thereto by means of a set-screw, d^3. (Shown in Fig. 5.)

The burnishing-tool F is automatically held against the heel to be burnished with a yielding pressure by means of the spring g^4, interposed between the under side of the rear end of the pivoted lever *g'* and the upper end of an adjustable pressure-screw d^4, that is screwed through the rock-shaft *d*, as shown in Figs. 2 and 5. The burnishing-tool F is set in a quick rotary motion around its axis by the following mechanism: To the plate *d* is secured the shaft *h*, upon which are loosely journaled the friction-pulleys *h'* and *h''*, as shown in Fig. 2. The pulley *h'* is set in a rotary motion by means of a belt from a counter-shaft, preferably above the machine. Between the friction-pulleys *h'* and *h''* is located on the shaft *h* a spring, h^3, serving the purpose of disconnecting the pulley *h''* from the pulley *h'* whenever it is desired to stop the rotary motion of the burnishing-tool.

For the purpose of imparting a rotary motion from the driving-pulley *h'* to the pulley *h''*, I employ a treadle lever, H, pivoted at H' to the frame *a*, and having pivoted to its rear end the upwardly-projecting link or rod *i*, the upper end of which is made in the form of a forked or slotted incline or wedge, *i'*, that embraces the shaft *h* between the rear of the pulley *h''* and a wedge-shaped collar, h^4, secured to the outer end of said shaft *h*, as shown in Figs. 1 and 2. Thus by depressing the treadle-lever H the wedge *i'* causes the pulley *h''* to be brought and held in frictional contact with the driving-pulley *h'*, and is thereby set in a rotary motion.

From the pulley *h''* leads a belt or cord, h^5, to the small pulley *k'*, that is secured to the

shaft k, which shaft is journaled in the sleeve k'', and has secured to its inner end the pulley k^3, from which leads a cord or belt, k^4, to the rear portion of the burnisher-tool sleeve f, as shown in Fig. 2, thus causing the said sleeve and its burnisher-tool F to be quickly rotated when the treadle-lever H is depressed. During the rotation of the said burnisher-tool it is automatically reciprocated longitudinally in the direction of its axis by mechanism hereinafter to be described, so as to reach all parts of the heel from top lift to heel-seat, and during such reciprocatory motion of the burnisher-tool it is caused to rise and fall, according to the inclination or curvature of the heel from heel-seat to top lift, against which it is held in contact by means of the adjustable spring g^4, and to permit the sleeve f to rise and fall without loosening or tightening the cord or belt k^4, I pivot the sleeve k'' in its rear end at k^5 to the stationary arm or bracket k^6, that is secured to the rear of the standard a, as shown in Fig. 2. The cord or belt k^4 is automatically held at a proper tension on its pulleys by means of a suitable spring, K, one end of which is secured to the bearing-sleeve k'' and the other end to the frame a, or in any other suitable or equivalent manner.

To the rock-shaft D is secured the upwardly-projecting screw-bolt l, that passes through the slotted or forked rear end, g^5, of the lever g', as shown in Figs. 2, 3, and 5, and is provided in its upper end with adjustable set-nuts l' l', as shown, which latter serve to limit the downward-tipping motion of the burnisher-tool and its sleeve f and spindle g, so as to prevent said tool or its sleeve from coming in contact with the top lift-supporting arm m or the top-lift plate m', secured to its outer end, as shown in Fig. 2. The top-lift support m is secured in a suitable manner to the plate d or to the top of the standard a, as may be found most practical.

From the above it will be seen that the burnisher-tool F is rotated around its axis, oscillated forward and back from breast to breast of the heel, and allowed to yield against the influence of the spring g^4, so as to follow the curvature of the heel when the machine is in operation. In addition to such motions of the burnisher-tool, a longitudinal reciprocating motion is imparted to it in the direction of its axis to enable it to reach and burnish all parts of the heel from top lift to heel-seat, and the mechanism for imparting such motion to the burnisher-tool is carried out as follows:

In grooves g^6 on the sides of the rock-lever g' is adjustable forward and back the bearing or block n, to which is pivoted at n' the lever n'', having on its under side notches or recesses n^3 n^3, two or more, into which projects the locking projection g^7, that is secured to the rock-lever g', as shown in Figs. 2 and 5, the said levers n'' and g' being locked together in the positions shown in said figures by the influence of a spring, n^4, interposed between the rear end of the lever n'' and the upper portion of the adjustable block n, as shown in Figs. 2 and 5. The forward end of the lever n'' has a downwardly-projecting pin, n^5, the lower end of which projects into one of two or more cam-grooves, f' f', made on the periphery of the rotary sleeve f, as shown in Figs. 2, 3, and 5, such cam-grooves having each a longitudinal throw or pitch equal to the height of the heel to be burnished.

I make the pitch of one of said cam-grooves f' different from the other or others, so that by merely raising the forward end of the lever n'' and disengaging its projection n^5 from the cam-groove f' in which it was located, and at the same time unlocking the lever n'' from the locking-pin g^7 on the lever g', the block n and lever n'' may be moved forward or back on the lever g' and locked in such desired position by the pin g^7 and spring n^4, allowing the pin n^5 to project in another of the cam-grooves f', thus changing the longitudinal motion of the sleeve f and its burnisher-tool F, according to the pitch of the groove f' in which, for the time being, the projection or pin n^5 is inserted. The lever n'' being thus locked in position on the lever g and the sleeve f being rotated around the spindle g, it will readily be understood that the sleeve f will be automatically reciprocated in the direction of its axis a distance equal to the pitch of the cam-groove f' in which the projection n^5 on the lever n'' is, for the time being, inserted, and thus cause the burnisher-tool F to rub and burnish the heel from heel-seat to top lift.

n^6 is a stop projection on the under side of the rear end of the lever n'', that serves to limit the rocking motion of said lever while it is being rocked for the purpose of changing the position of said lever and block n relative to the sleeve f.

o is the jack, having horizontal plate o' in its lower end, that is adjustable to and from the standard a in suitable guides, p' p', in the jack-supporting bracket p, which latter is adjustable up and down in guides a^3 a^3 on the standard a, as shown in Fig. 4. The bracket p is moved upward in its guides by means of the treadle-lever q, pivoted at q' to the standard a, and having pivoted to its inner end the link or rod q'', the upper end of which is connected to an arm or bracket, p'', on the jack-support p, as shown in Fig. 2.

a^4 is a slotted perforation in the front wall of the standard a, through which the arm p'' projects, as shown in said Fig. 2.

p^3 p^3 are adjustable set-screws screwed through a rib or projection, a^5, on the standard a, as shown in Figs. 2, 4, and 6, such set-screws serving as stops against the upper end of the jack-support p to limit the upward motion of the latter and its jack, so as to retain the shoe in its proper position relative to the burnisher-tool F.

The boot or shoe heel is clamped in position between the top-lift plate m' on the support m

and the rear upper end of the jack o by means of the hand-lever r, pivoted at r' to one of the guides p', and provided with a slotted perforation, r'', through which a pin or bolt, r^3, passes loosely, said pin being secured to the jack-plate o', as shown in Figs. 2, 3, and 6. To the hand-lever r is secured in a suitable manner a spring-pressed pawl, r^4, the free end of which engages in the teeth of the toothed rack p^3 on the corresponding guide p', as shown in Figs. 3 and 6. Thus by pushing the free end of hand-lever r toward the machine the jack o is pressed forward until the heel of the boot or shoe S (in dotted lines in Fig. 2) is clamped firmly between said jack and the heel-plate m' on the support m, as shown in Fig. 2. The pawl r^4 retains the jack in working position on the bracket p until the heel is burnished, when the pawl r^4 is disengaged from the ratchet-bar p^3, the jack moved toward the operator, and the bracket p and jack o lowered by releasing the foot-pressure on the treadle q. The shoe is then removed from the jack and replaced with another, and so on.

a^6 is a stop-screw or projection on the front of the standard a to limit the downward motion of the jack-supporting bracket p.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent and claim—

1. In a burnishing-machine, the jacking mechanism, as described, consisting of the stationary arm m and its top-lift rest m', combined with the vertically-adjustable jack-supporting bracket p, having guides p' p' for the reception of the base o' of the jack o, and the lever r, connected to the jack-plate or base o', pivoted in one end to the guide p', and having spring-pressed pawl r^4, adapted to lock in the ratchet-bar p^3 on the jack-support, as and for the purpose set forth.

2. In a burnishing-machine, the rotary burnisher-tool F, secured to the sleeve f, and adapted to rotate and reciprocate on the spindle g, as described, and the mechanism for imparting a rotary motion to said sleeve f, consisting of the friction-clutch pulleys h' h'', the tubular bearing k'', adapted to swing on the fulcrum k^5, and having the tension-spring K, the spindle k, journaled in the bearing k'', and having pulleys k' and k^3, secured to its ends, with belts or cords k^5 k^4, leading, respectively, from said pulleys to the friction-pulley h'' and sleeve f, as and for the purpose set forth.

3. In a burnishing-machine, the mechanism for imparting an oscillating motion to the burnisher-tool, consisting of the rock-shaft or head D, journaled in the stationary bearings d' d'', and having pivoted to an extension or projection, g^3, the lever g', upon a spindle, g, of which is loosely journaled the burnisher-sleeve f, and the adjustable spring-pressure device d^4 g^4 for holding the burnisher-tool F in contact with the heel and to allow it to yield relative to the curvature of such heel, as and for the purpose set forth.

4. In a burnishing-machine, the automatic mechanism for reciprocating the burnisher-tool from top to bottom of the heel, consisting of the burnisher-tool sleeve f, journaled on the spindle g, and having one or more cam-grooves, f' f', as described, combined with the lever or arm g', the adjustable block n, secured to said lever g', and having pivoted to it the spring-pressed lever n'', provided with a pin or projection, n^5, adapted to fit in any one of the cam-grooves on the sleeve f, and means for locking it in position to the said lever g', as and for the purpose set forth.

5. In a burnishing-machine, the rocking shaft or head D, and the lever g', pivoted to an arm or extension of said head, the spindle g, secured to or made in one piece with said lever g', the burnisher-sleeve f, mounted loosely on said spindle g, and having one or more cam-grooves, f' f', combined with the block n, adjustable on the arm g', and having pivoted to it the spring-pressed lever n'', having a projection, n^5, adapted to enter any one of the cam-grooves f', and means for locking said levers n'' g' together, as and for the purpose set forth.

6. In the herein-described burnishing-machine, the friction-clutch pulleys h' h'', loosely journaled on the stationary shaft or spindle h, and having spring h^3, interposed between them, and the inclined block h^4, secured to the shaft h, in combination with the treadle H, pivoted at H', and having connecting-rod i, with forked or slotted wedge part i', interposed between the inclined block h^4 and the pulley h'', as and for the purpose set forth.

7. In a burnishing-machine, the rock-lever D, and the lever g', pivoted to an arm or extension, combined with the adjustable spring-pressure device d^4 g^4, interposed between the said levers, and the pin or bolt l, secured to one of said levers and provided with regulating stop-nuts or collars l', as and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 15th day of October, A. D. 1887.

WARREN C. EVANS.

Witnesses:

ALBAN ANDRÉN,

RICHD. C. BAYLDON.