(No Model.) 4 Sheets—Sheet 1.

E. O. BICKNELL.

BOOT OR SHOE POLISHING MACHINE.

No. 526,362. Patented Sept. 18, 1894.

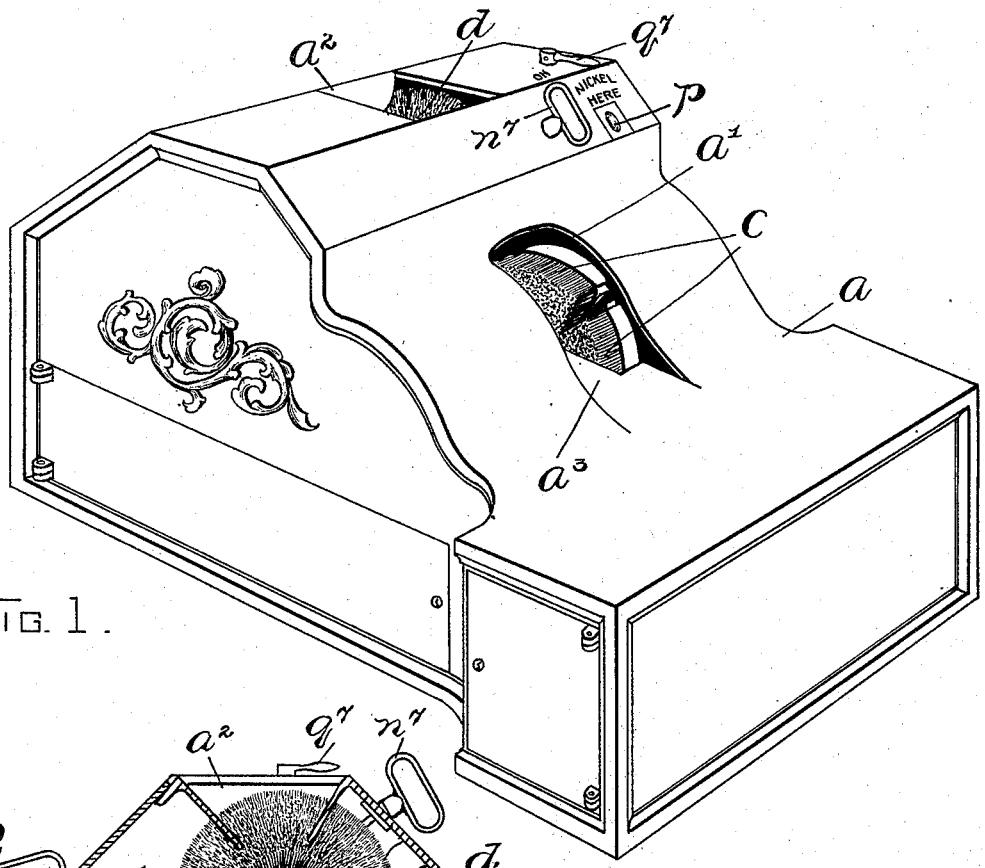

FIG. 1.

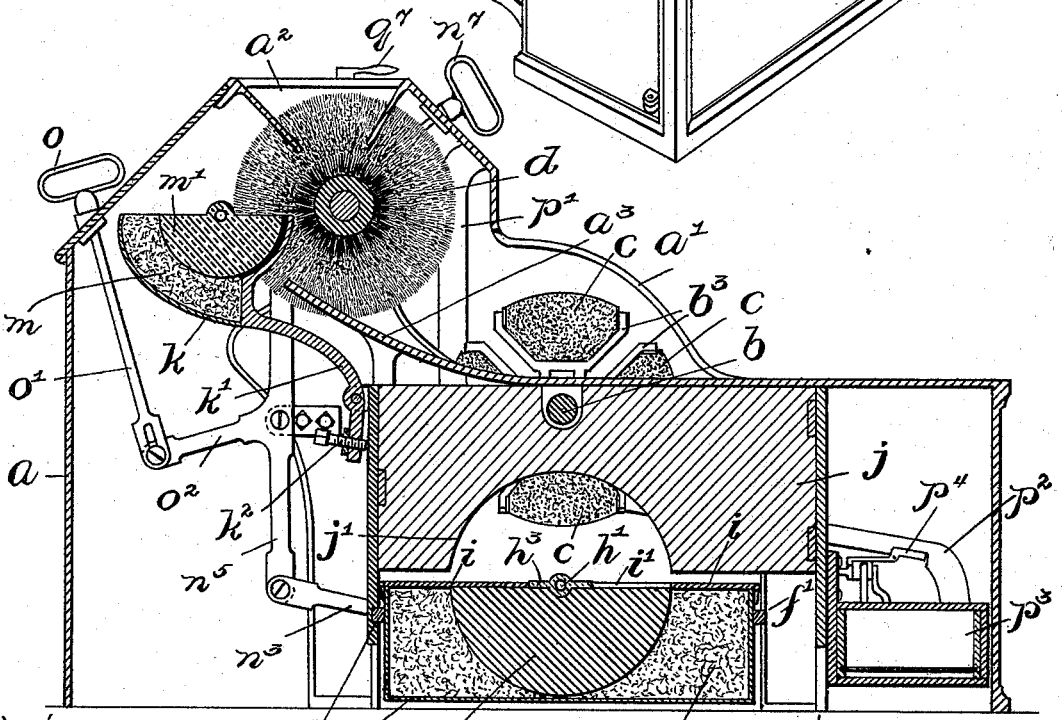

FIG. 2.

WITNESSES:
A. D. Harrison.
Parker Davis.

INVENTOR:
E. O. Bicknell
By Wright, Brown & Crosby, Attys.

(No Model.) 4 Sheets—Sheet 2.

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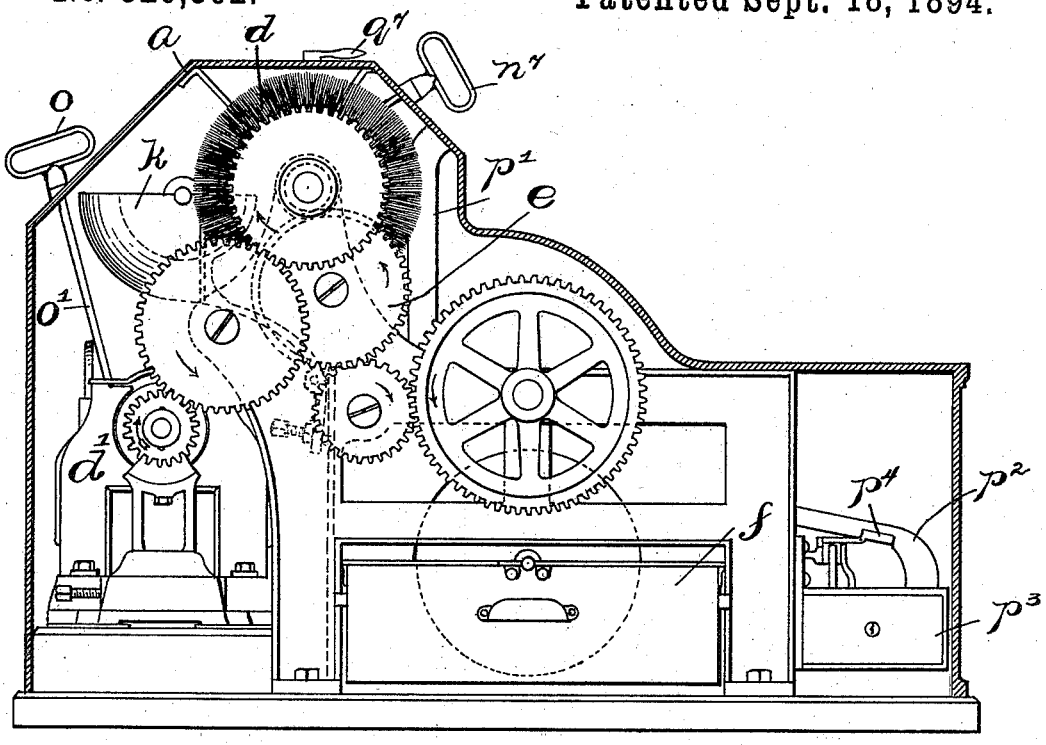

FIG. 3.

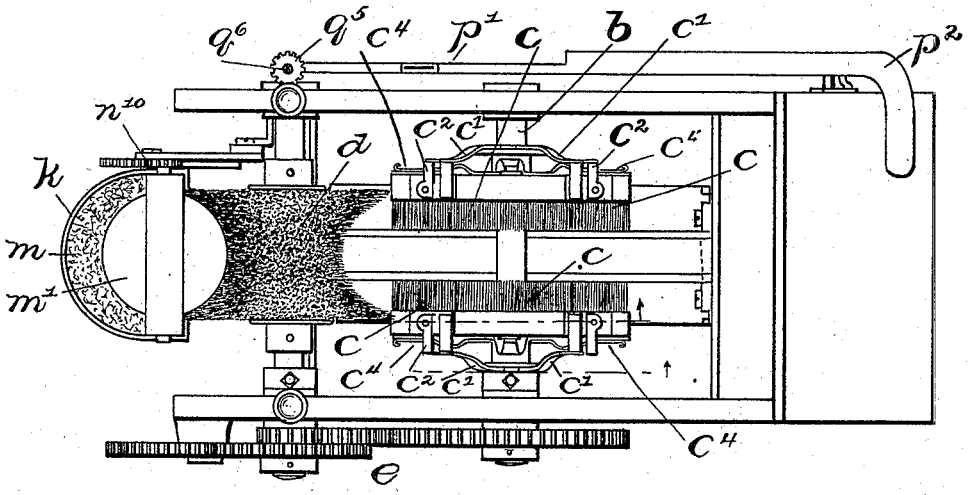

FIG. 5.

WITNESSES:
A. D. Harrison.
Parker Davis.

INVENTOR:
E. O. Bicknell
By
Wight Brown & Crosley,
Attys.

(No Model.) 4 Sheets—Sheet 3.

E. O. BICKNELL.

BOOT OR SHOE POLISHING MACHINE.

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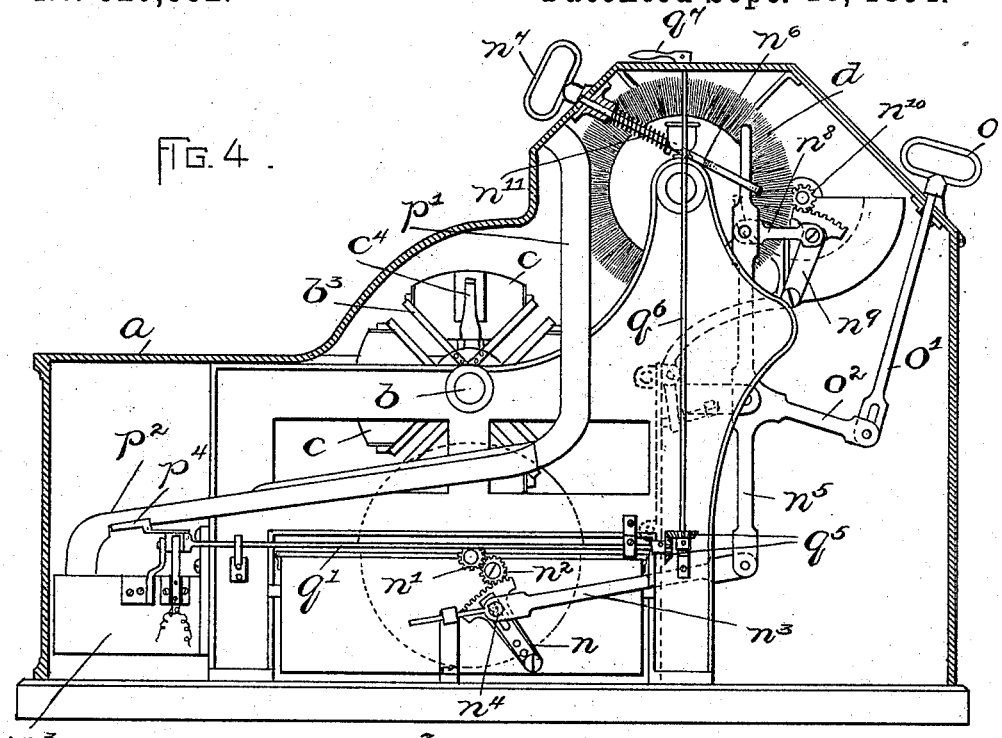
FIG. 4.



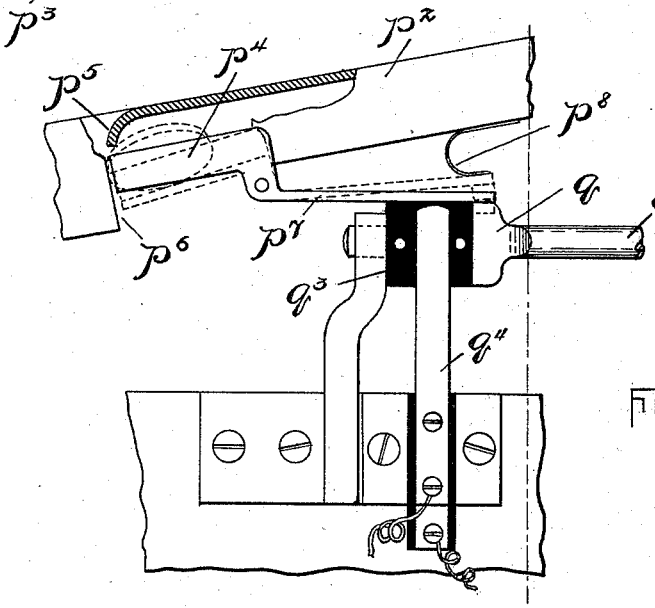


FIG. 9.

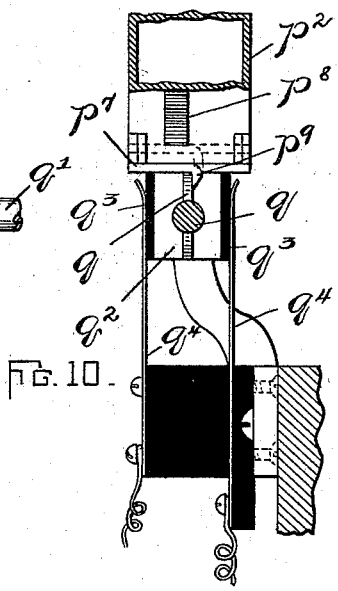


FIG. 10.

WITNESSES:
A. D. Harrison
Parker Davis.

INVENTOR:
E. O. Bicknell
By Wright, Brown & Crossley,
Attys.

(No Model.) 4 Sheets—Sheet 4.

E. O. BICKNELL.

BOOT OR SHOE POLISHING MACHINE.

No. 526,362. Patented Sept. 18, 1894.

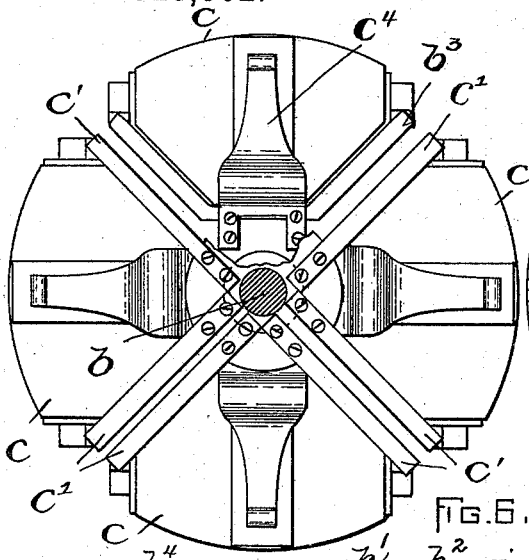


FIG. 6.

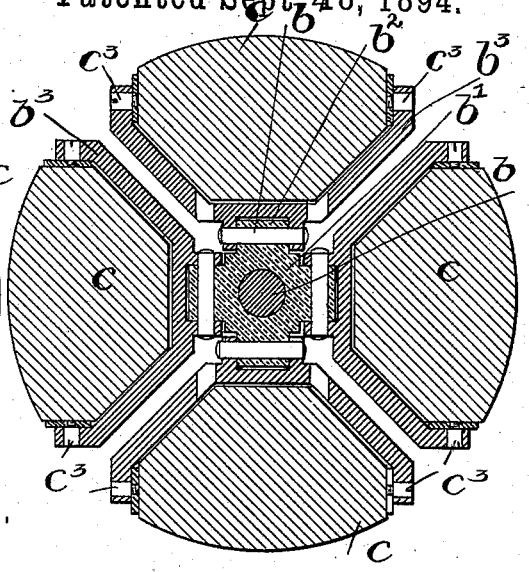


FIG. 7.

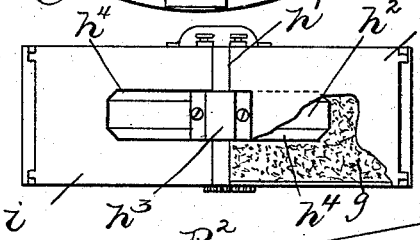


FIG. 8.

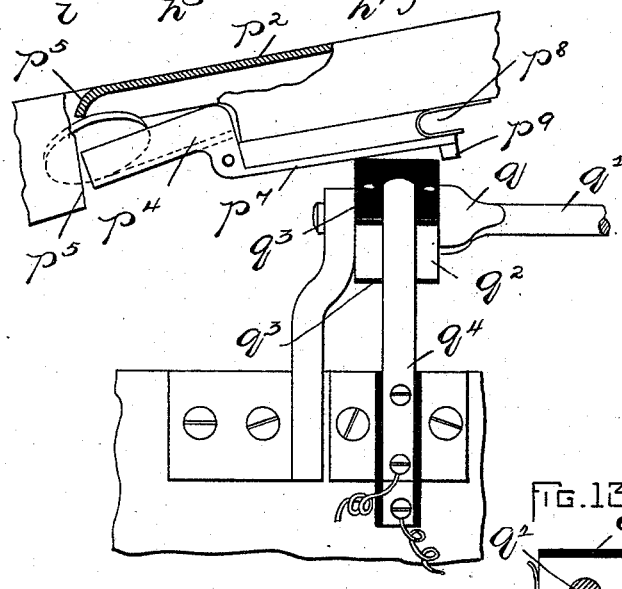


FIG. 11.

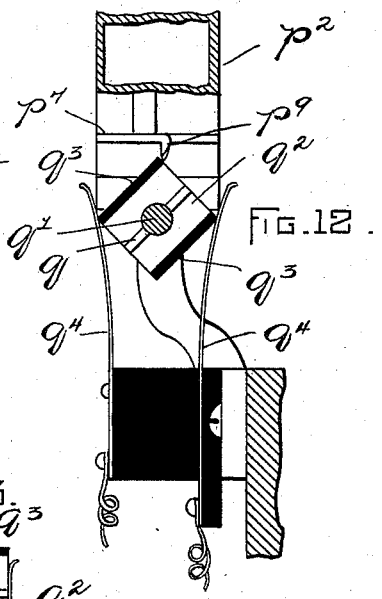


FIG. 12.

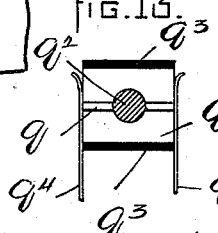


FIG. 13.

WITNESSES:

A. D. Harrison.

Baker Davis.

INVENTOR:

E. O. Bicknell

By Wright, Brown & Crosby

Attys.

UNITED STATES PATENT OFFICE.

EMERY O. BICKNELL, OF BOSTON, MASSACHUSETTS.

BOOT OR SHOE POLISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 526,362, dated September 18, 1894.

Application filed March 12, 1894. Serial No. 503,272. (No model.)

To all whom it may concern:

Be it known that I, EMERY O. BICKNELL, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Boot or Shoe Polishing Machines, of which the following is a specification.

This invention relates to an improvement in machines for polishing boots and shoes, and is an improvement upon the machine shown and described in my application for Letters Patent of the United States filed August 19, 1892, Serial No. 443,475.

The main objects of the present invention are to provide an improved construction of side brushes, whereby they will conform more perfectly to the contour of the shoe; and to provide improved means for transferring the blacking to the brushes.

To these ends, the invention consists in the novel features of construction and arrangements of parts hereinafter described and pointed out in the claims.

Reference is to be had to the annexed drawings, and to the letters marked thereon, forming a part of this specification, the same letters designating the same parts or features, as the case may be, wherever they occur.

Figure 1 shows a perspective view of the machine in its case. Fig. 2 shows a longitudinal section. Fig. 3 shows an elevation, as viewed from one side, with the casing in section. Fig. 4 shows an elevation, as viewed from the opposite side, with the casing in section. Fig. 5 shows a top plan view, with the casing removed. Figs. 6 and 7 show detail views of one of the side-brushes. Fig. 8 shows a top plan view of the blacking receptacle, with a portion of the cover broken away. Figs. 9 to 13 inclusive show details of devices employed for setting the machine in operation by means of a nickel which is dropped into a slot.

In the drawings, the reference letter a designates the exterior casing of the machine, in the front side of which is an opening a' to receive the shoe which is to be polished; and in the upper side of which is an opening a^2, in which the heel of the shoe may be inserted. The casing is constructed so that a portion a^3 extends below the opening a' and into the interior of the machine, so as to form a rest for the shoe. Said portion a^3 inclines upwardly as it recedes, so as to support the toe of the shoe in proper position.

A pair of rotary polishing brushes have position at opposite sides of the front opening a', and are both mounted on a shaft b, which extends transversely of the machine, and is supported in bearings below the rest a^3. Each of these rotary brushes comprises a central support or hub b', fixed on the shaft b and substantially square in cross-section, a joint-ear b^2 being formed on each of its four sides; four segmental frames b^3, pivoted to the joint-ears b^2 respectively, by means of pins b^4; and segment-shaped brushes c, pivotally supported in the frames b^3 respectively. Each of the frames b^3 is sustained in a position extending substantially at right angles to the shaft b, by flat springs c', rigidly secured at their inner ends to the hub b', and bearing at their outer ends against projections c^2 at the outer ends of the frame. The pivots c^3 of each brush c have such position that portions of said brush extend on each side of the pivots, and the brush is yieldingly held in a position where it extends in substantially the same plane as the frame by means of a flat spring c^4, which bears against its rear side on each side of the pivots, and is secured at its inner end to the frame b^3.

It will be observed that, in a brush of the construction described, each section is a substantial quadrant, and the whole brush is a four-leaved structure, and is circular in general outline. The two side-brushes are so located with respect to each other that, when a shoe is inserted between them, the sections which the shoe engages will be spread apart, and it will be seen that, by the peculiar construction which I employ, the brushes will conform perfectly to the contour of the shoe, and in operation will reach every part of its surface.

The brush d, which acts on the toe of the shoe, is supported at a position above and back of the side-brushes, and below the opening a^2 in the casing. This brush has a similar form to that shown in my former application above referred to. All the brushes are connected by gearing e, or it may be belting, and are driven from a motor d' contained within the casing a, the gearing or belting

being so arranged that the brushes will be revolved in a direction which tends to draw the shoe into the machine.

The blacking for the side-brushes is contained in liquid form in a receptacle *f*, mounted at the bottom portion of the casing *a* below the said side-brushes, and shown in the present instance as a drawer, arranged to slide in ways *f'* in the casing, so that it may be readily removed, for the purpose of replenishing the supply of blacking or for any other purpose. The liquid blacking is intended to remain at the bottom of the receptacle, and the receptacle is filled with an absorbent material, such as a sponge *g*, which will take the blacking through its pores by capillary attraction.

A semi-circular slab is supported on a shaft *h'*, which rests in bearings on the upper side of the receptacle *f*, and said slab may occupy a position within the receptacle, where it is in contact with the absorbent material *g*, and receives blacking on its sides therefrom. The slab is preferably composed of a central section h^2, of wood, to which a bearing h^3 is secured, and pieces of slate h^4 fastened to opposite sides of said central portion.

The top of the blacking receptacle is closed by a pair of covers *i*, hinged to its two ends, and one of said covers extends over the slab, while the other has an opening *i'* to permit said slab to pass out of the receptacle. The slab can move through only one-half of a revolution, however, as it then encounters the upper side of the other cover *i*. When the slab is moved out of the receptacle, it occupies a position where the brushes *c*, in rotation, pass over its sides and take blacking therefrom.

A stationary slab *j*, of stone or any other suitable material, is supported above the blacking receptacle and between the two side-brushes, and this stationary slab is formed with a semicircular concavity *j'* to receive the movable slab when it is turned on its pivot. The object of providing this stationary slab is to afford a surface over which the brushes may pass after taking blacking from the movable slab, whereby such blacking may be properly distributed over the brushes, and, when applied to the shoe, will have the desired effect. The toe-brush *d* is supplied with blacking in a similar manner, from a receptacle *k*, which is supported on the upper end of a lever *k'*, pivoted to a stationary support and having a downwardly-extending portion receiving a set-screw k^2, which bears against a portion of the casing and may be employed to adjust the receptacle and compensate for wear of the brush *d*. The receptacle *k* contains absorbent material *m*, which conveys the liquid blacking to a hemispherical block *m'*, pivotally supported in the receptacle and arranged to be moved out of the same into a position where the brush *d* will pass over its surface and take the blacking therefrom.

Any suitable means may be provided for oscillating the movable slabs to supply blacking to the brushes at the will of the operator. Those I have chosen to illustrate here comprise the following parts: A sector *n*, pivoted to the end of the receptacle *f*, is geared with a pinion *n'* on the shaft *h'*, through an intermediate gear n^2, and a rod or pitman n^3 carries a pin n^4 at one end, engaging a slot in said sector, and at the opposite end is connected with a lever n^5, pivoted to a stationary support and projecting at its upper end through a slot in a pull-rod n^6 having a handle n^7, projecting from the front side of the machine. A rod or link n^8 connects the lever n^5 with a sector n^9, in gear with a pinion n^{10} on the journal of the hemispherical block *m'*. It will now be seen that, upon pulling out the handle n^7, the sectors *n* and n^9 will be moved on their pivots, and will cause the slab *h* and block *m'* to be turned on their pivots to positions where the brushes may take blacking from them. A spring n^{11} restores the parts to their normal positions, when the handle n^7 is released. The handle n^7 is intended to be operated by the person whose shoes are being blacked. I also provide a handle *o*, at the rear of the machine, which may be operated by an attendant in charge of the machine to accomplish the same purpose. This handle *o* is on the end of a pull-rod *o'*, which is connected with an arm o^2 of the lever n^5. The pull-rods n^6 and *o'* are slotted where they connect with the lever n^5, so that the operation of one pull-rod does not affect the other.

It is evident that lineal racks might be arranged in mesh with the pinions on the journals of the slabs instead of the sector-shaped racks and operated by a suitably arranged lever.

The machine is designed to be operated as a "nickel-in-the-slot" machine, and the mechanism here shown by which the insertion of a nickel sets the machine in operation will next be described.

A slot *p* is formed in the front portion of the casing *a*, and is of a size to receive a nickel. A chute *p'* extends from said slot to an inclined trough p^2, which leads to a till p^3 incased at the front of the machine. At a suitable point, the trough p^2 is provided with a pivotal section p^4, and the trough has a downturned lip p^5 at the front end of said pivotal section, so that the latter has to move downward on its pivot before a nickel can pass the lip p^5 and continue through the trough, which has an offset p^6 at this point. The trough has sufficient width to allow the nickel to tilt slightly when it enters the same, and it occupies such a position when it arrives on the pivotal section p^4. The latter is formed with a projecting arm p^7, which is acted upon by a spring p^8, whose function is to hold the pivotal section p^4 in the position shown in Fig. 9, where it forms an obstruction to the passage of the nickel. The arm p^7 is provided with a lip or catch p^9, which engages a flattened por-

tion or web q, formed on a shaft q', which is supported in stationary bearings on the machine frame. Said shaft carries a square head q^2, having two opposite sides covered by insulation q^3. A pair of contact-springs q^4 are arranged to bear with spring-pressure against opposite sides of the head q^2, and these contact-springs form terminals of an electric circuit, which includes the motor d'. In the normal condition of the machine, the contact-strips q^4 bear against the insulation q^3, and the circuit is broken and the motor is dormant. The shaft q' is connected by bevel-gears q^5 with a vertical shaft or spindle q^6, which carries a handle or crank q^7 on the upper side of the machine casing. When a nickel is introduced into the slot p, it falls through the chute p', and rolls down the trough p^2 and on to the pivotal section p^4, which it depresses sufficiently to raise the catch p^9 out of engagement with the flattened portion q of the shaft q'. The handle q^7 may now be turned, and through the gearing q^5 rotates the shaft q' and turns the head q^2 to a position where the contact-springs q^4 may bear against the uncovered sides of the said head, and thereby the circuit is completed and the motor d' rendered active, so that it drives the brushes. As the head q^2 is turned, its corner acts against the arm p^7, and elevates the same to a sufficient degree to permit the passage of a nickel by the lip p^5, so that it may continue through the trough p^2 to the till p^3.

When the polishing of a pair of shoes has been completed, the handle q^7 is turned back, and the motor is cut out by the turning of the head q^2.

It is evident that the constructions here shown for carrying out my invention may be varied in many particulars, without departing from the spirit and scope of the invention, which is not, therefore, limited to such constructions.

Having thus explained the nature of the invention and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made or all of the modes of its use, it is declared that what is claimed is—

1. In a machine for polishing boots and shoes, a brushing device, comprising a rotary support, a frame pivotally connected therewith and spring-actuated, and a brush pivotally supported in said frame and yieldingly held in position, substantially as described.

2. In a machine for polishing boots and shoes, a brushing device, comprising a rotary support, a plurality of segmental frames pivotally connected with said rotary support and spring-actuated, and brushes pivotally supported in said frames respectively and yieldingly held in position, substantially as described.

3. A machine for polishing boots and shoes comprising in its construction a movable brush, a blacking receptacle containing absorbent material, a pivoted oscillatory semicircular block or slab, adapted to take position in said receptacle, and means for oscillating said block or slab at intervals into and out of position for contact with the brush, as set forth.

4. A machine for polishing boots and shoes comprising in its construction a movable brush, a blacking receptacle containing absorbent material, a pivoted oscillatory block or slab adapted to take position in said receptacle, a pinion on the pivotal support of the block or slab, toothed devices for engaging said pinions for oscillating said block or slab at intervals into and out of position for contact with the brush, as set forth.

5. A machine for polishing boots and shoes, comprising in its construction a movable brush, a blacking receptacle, a movable slab arranged to transfer blacking from the receptacle to the brush, and a stationary slab over which the brush passes after taking blacking from the movable slab.

6. A machine for polishing boots and shoes comprising in its construction a movable brush, a blacking receptacle, a block or slab pivotally supported and adapted to take position in said receptacle and also to move to a position where the brush will encounter it, a rack meshing with a pinion on the journal of the pivotal slab, and a lever for operating the rack.

7. A machine for polishing boots and shoes comprising in its construction side-brushes, a toe-brush, means for driving the same, blacking receptacles adjacent to the side-brushes and toe-brushes respectively, pivotal transferring blocks or slabs, racks in meshes with pinions on the journals of the slabs, and a lever for operating said slabs.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 10th day of March, A. D. 1894.

EMERY O. BICKNELL.

Witnesses:

ARTHUR W. CROSSLEY,

A. D. HARRISON.