

No. 629,316.

Patented July 18, 1899.

W. C. EVANS & H. D. ALLARD.

SOLE EDGE BLACKING MACHINE.

(Application filed Mar. 11, 1896. Renewed May 23, 1898.)

(No Model.)

2 Sheets—Sheet 1.

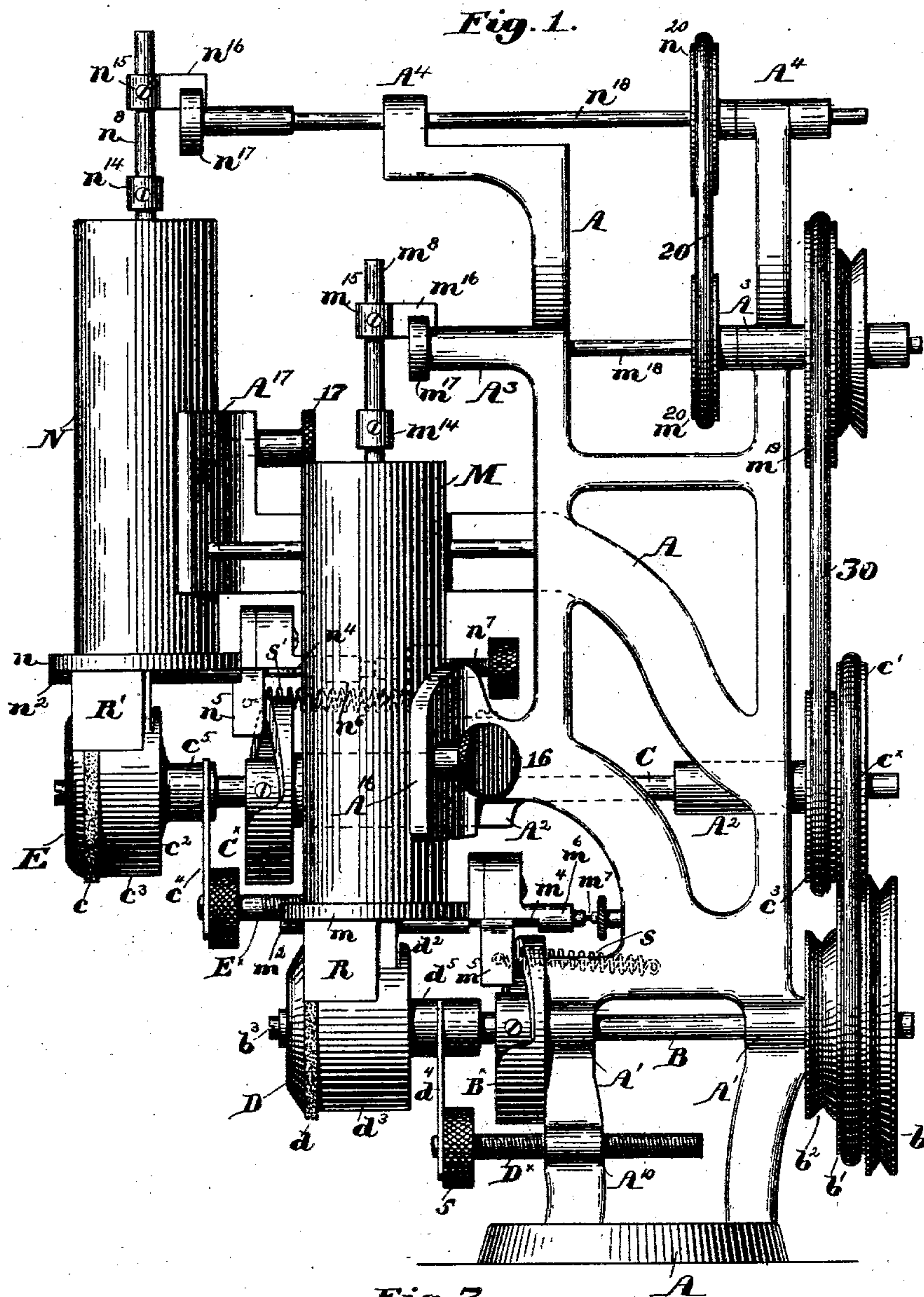
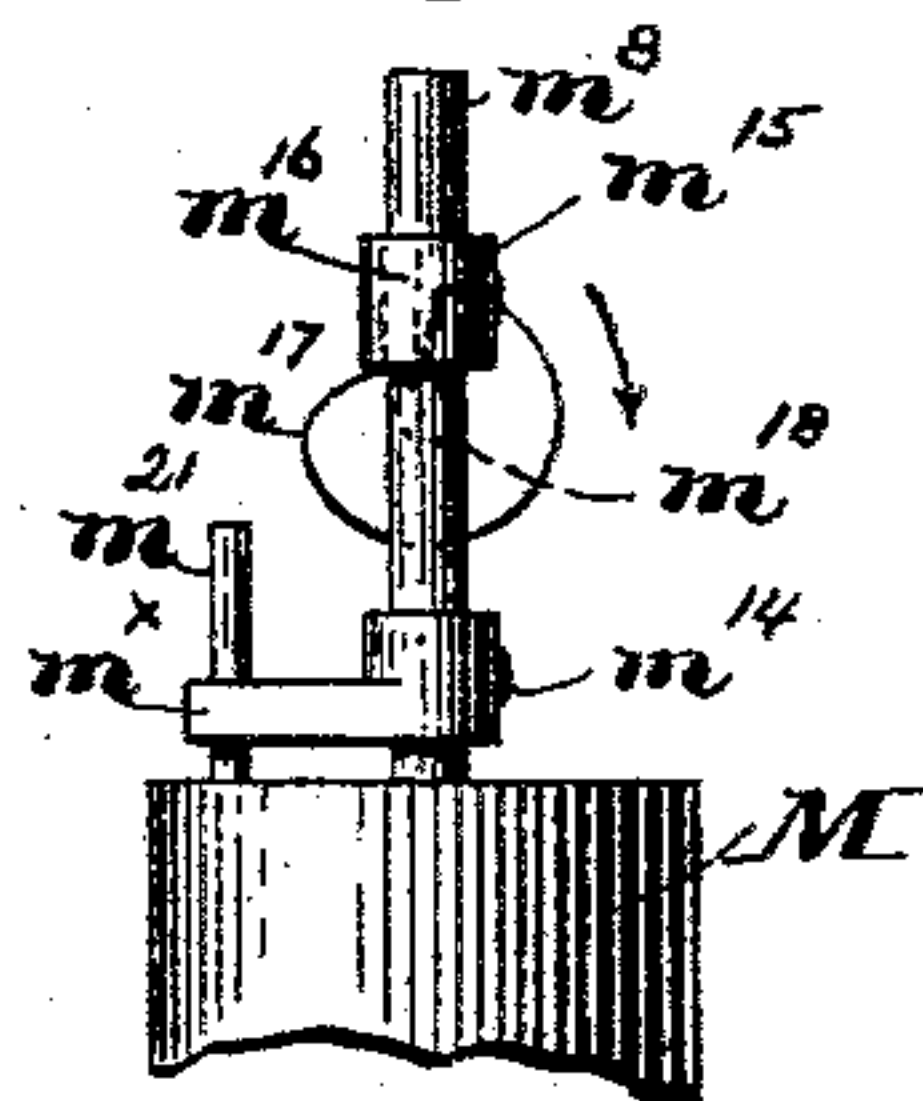


Fig. 7.



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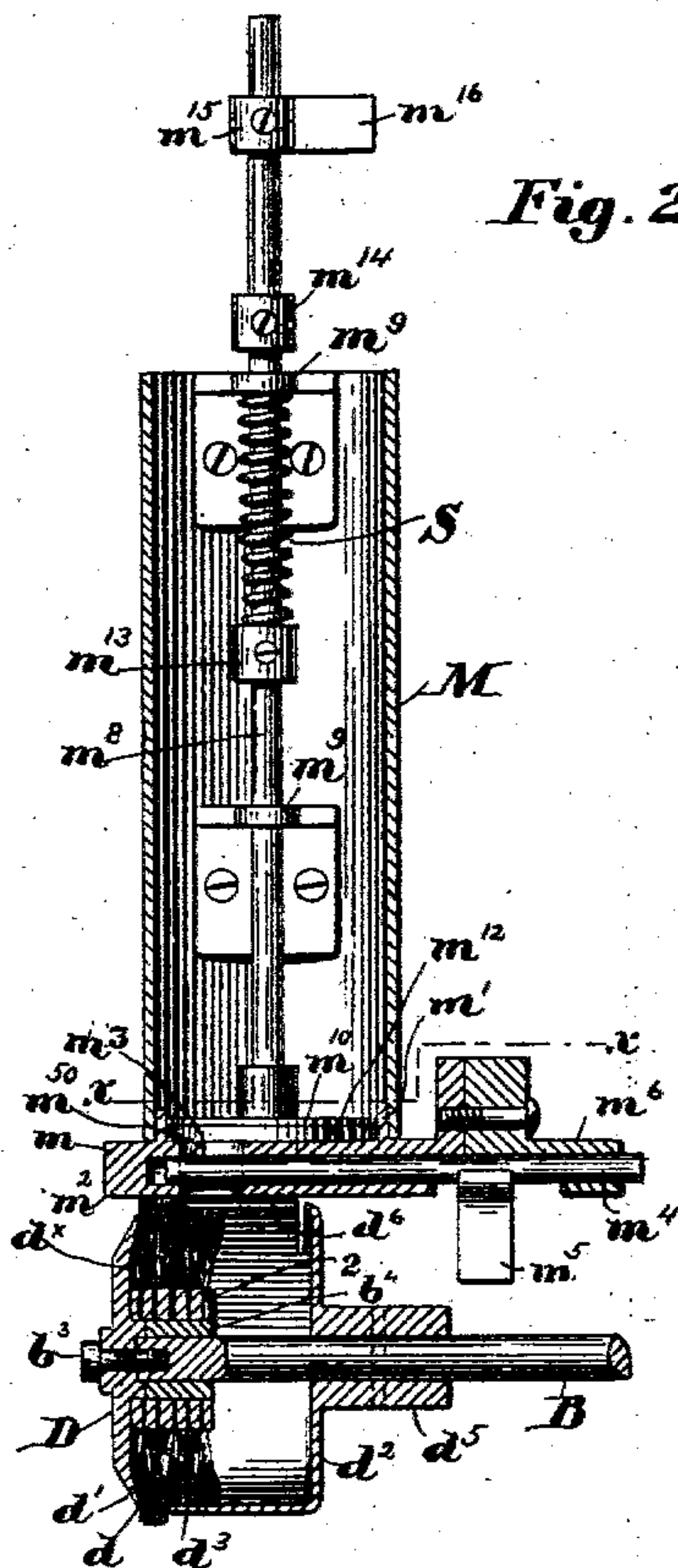


Fig. 2.

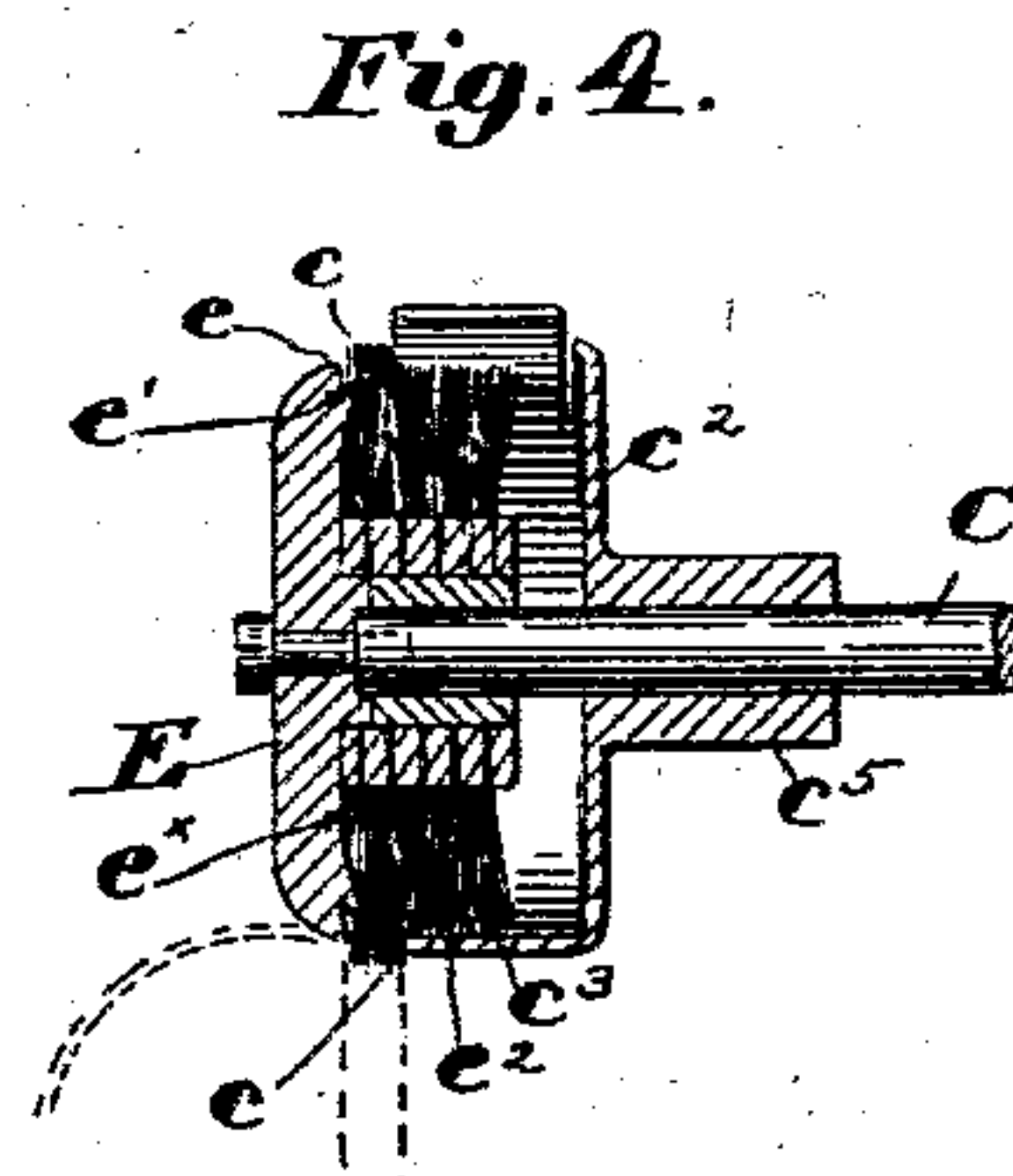


Fig. 4.

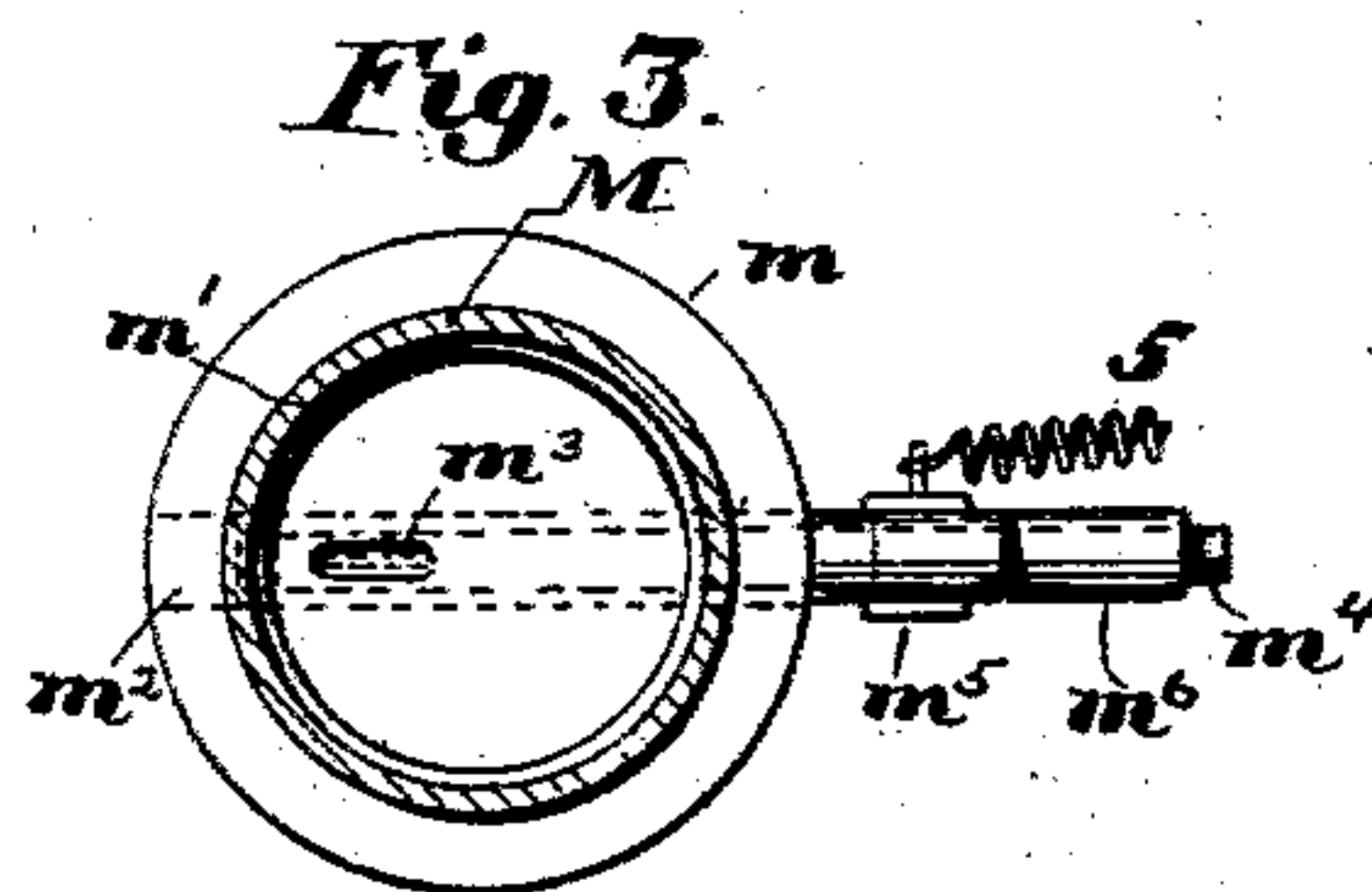


Fig. 3.

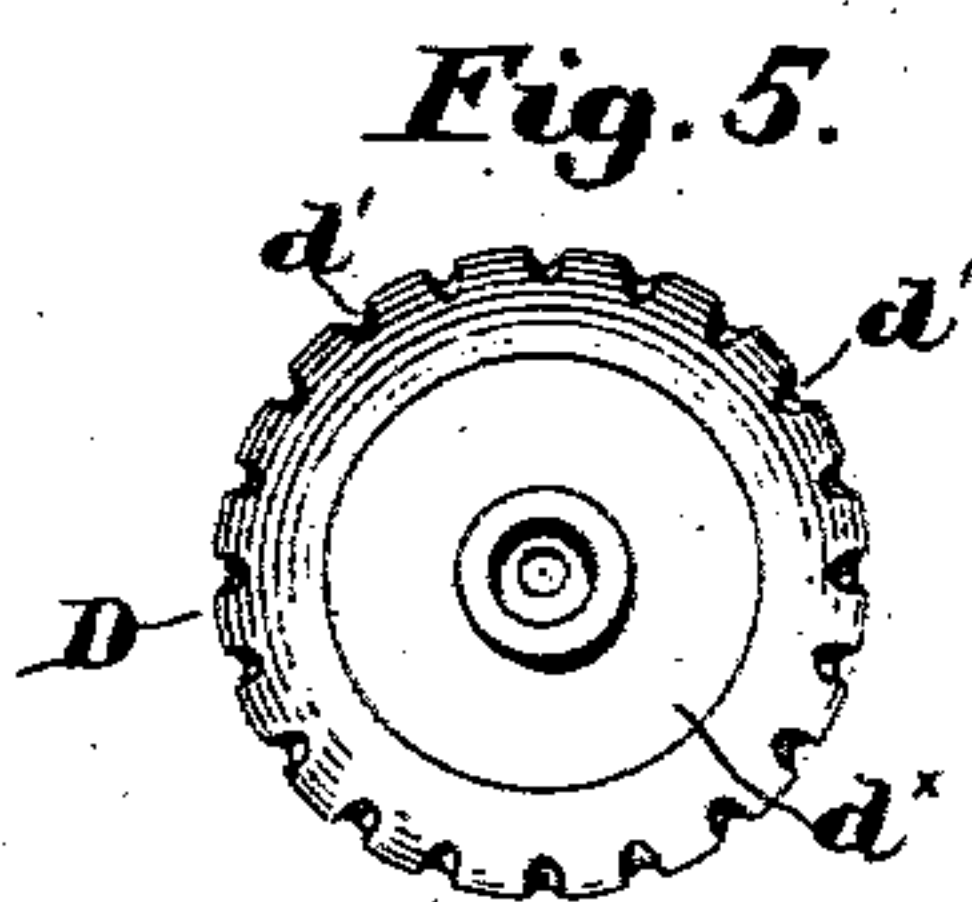


Fig. 5.

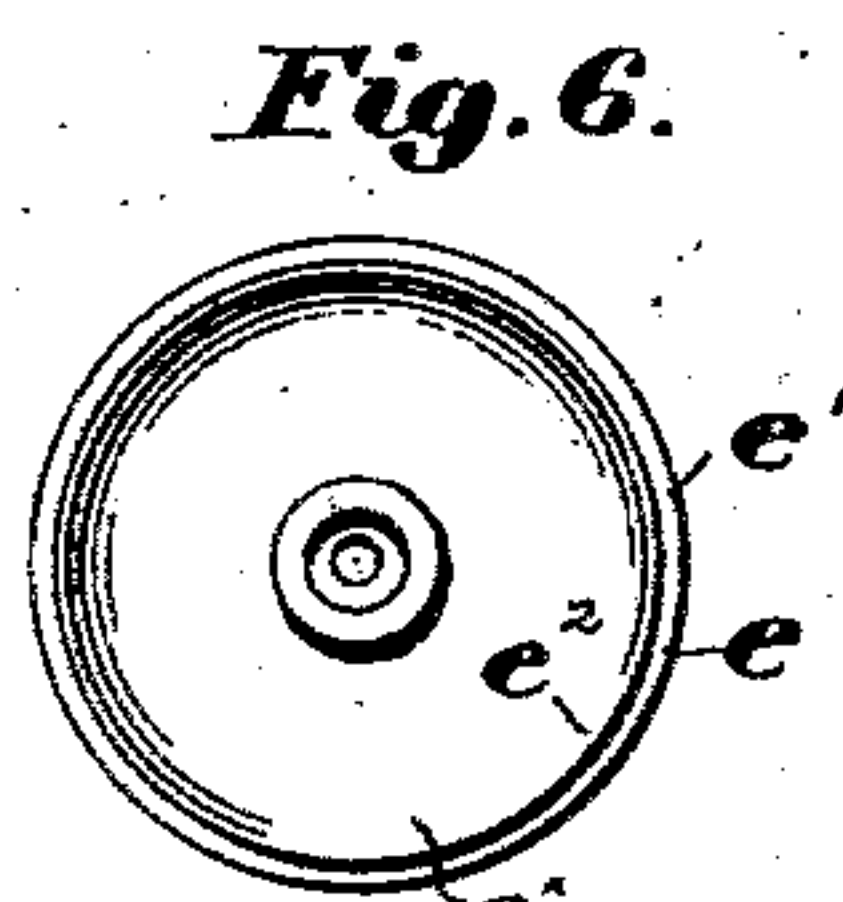


Fig. 6.

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UNITED STATES PATENT OFFICE.

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SOLE-EDGE-BLACKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 629,316, dated July 18, 1899.

Application filed March 11, 1896. Renewed May 23, 1898. Serial No. 681,502. (No model.)

To all whom it may concern:

Be it known that we, WARREN C. EVANS, of Exeter, county of Rockingham, State of New Hampshire, and HENRY D. ALLARD, of Bradford, county of Essex, State of Massachusetts, have invented an Improvement in Sole-Edge-Blackening Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention has for its object the production of a machine for blacking or coloring the edges of boot and shoe soles rapidly and accurately with an even coating of any desired density, means being provided to absolutely prevent the coloring-matter from touching the upper or the stitches in "fair-stitch" work, the effective width of the device for applying the coloring-matter being adjustable for soles of different thickness.

Other features of our invention will be hereinafter fully described in the specification and particularly pointed out in the claims.

Figure 1 in elevation represents a sole-edge blacking or coloring apparatus embodying our invention. Fig. 2 is a vertical sectional view of one of the blacking-reservoirs, showing the means for insuring the flow of the material. Fig. 3 is a transverse sectional view thereof, taken on the irregular line $x x$, Fig. 2, looking down. Fig. 4 is a vertical sectional view of the brush-holder and guard or shield. Figs. 5 and 6 are inner side views of the shields shown, respectively, in Figs. 2 and 4; and Fig. 7 is a detail showing the plunger-lifting mechanism in end elevation, to be described.

The apparatus is shown in Fig. 1 as mounted upon a frame A of suitable shape to support the operative parts, having bearings A' for a main driving-shaft B, held from longitudinal movement by a triple pulley $b b' b^2$ and a cam B^x, rotation being transmitted to the shaft by a belt (not shown) applied to pulley b . To the outer end of the shaft B we attach, by a suitable screw b^3 , a disk D, Figs. 1, 2, and 5, of less diameter than the circular brush or wheel d , mounted on a collar b^4 on the shaft adjacent the disk and held in place by a pin 2 on the collar entering a nick in the brush-

hub. The inner face of the disk-like guard D is concaved, as at d^x , and provided with a series of peripheral scallops or notches d' , as clearly shown in Fig. 5, to permit the coloring-matter to properly flow to the circumference of the brush when in use. An annularly-flanged disk d^2 is mounted on and longitudinally movable relative to the shaft B, with its flange d^3 adjacent to the brush, said disk being held from rotation by a forked clip d^4 embracing the grooved hub d^5 of the disk, the clip being erected rotatably upon an adjusting-screw D^x, Fig. 1.

The screw D^x enters a threaded bearing A¹⁰ of the frame, rotation of said screw by means of its head 5 moving it longitudinally, and thereby moving the flanged disk d^2 toward or from the brush or wheel d to change the effective width of the latter between the flange d^3 and the guard D.

The edge of the disk D forms a shield or upper guard and also a guide for the shoe, the edge being inserted in the crease between the sole and upper.

The flange d^3 is interrupted and upturned at d^6 , the opening between the ears d^6 permitting the passage of the blacking or coloring-matter from the reservoir to the brush d , as will be described.

We have herein shown a shaft C mounted in bearings A² of the frame A and provided with a pulley c' connected by a belt c^x with the pulley b' , said shaft having fast thereon a cam C^x similar in shape to the cam B^x, the shaft C carrying a brush c and a guard E, and a disk c^2 , flanged at c^3 , is mounted to slide on the shaft C. An adjusting-screw E^x, mounted in a threaded bearing of the frame A, is connected by a yoke c^4 to the hub c^5 of the disk c^2 to move the latter in order to adjust the width of the brush c in a manner similar to the adjustment of the brush d hereinbefore described, the flange c^3 being interrupted and upturned to form the sides c^6 of a hood.

The guard D is used for all plain work and about the shanks of boot and shoe soles, the thin edge thereof being interposed between the brush d and the upper to prevent application of blacking or color to the latter. With

fair-stitch work, however, it is necessary to protect not only the upper but the stitching at the top of the sole, and for such work we use the guard E, which has a concaved inner face at e^x and peripheral groove e' , leaving an outer lip e and an inner lip e^2 . As shown by dotted lines, Fig. 4, the lip e enters between the upper and sole, and the upper corner of the sole enters the groove e' between the lips e and e^2 , so that the top of the sole is protected. If any of the coloring-matter should work under the lip e^2 , it would gather in the groove e' and so would not be directed to the fair-stitching.

The two brushes c and d and their respective guards E and D are mounted on the same frame, as the guard D will be used around the shank whether on fair-stitch or plain work, the concaved inner face of the guard in either case being necessary to permit free access of blacking or color to the periphery of the brush.

Each brush has its own reservoir for the blacking or coloring material, the reservoirs and their operative parts being counterparts one of the other, and only one will be described in detail, the reference-letters M m m' , &c., of one corresponding, respectively, to the letters N n n' , &c., of the other.

The frame A has open seats A^{16} A^{17} for the reservoirs M N, (shown as cylindrical and open at their upper ends,) detachably secured in the seats by screws 16 17, respectively, and with their lower ends located just above the interrupted portion of the annular flanges surrounding the brushes c and d .

The bottom m of reservoir M has an upturned annular flange m' , surrounded tightly by the lower end of the cylindrical body M, said bottom having a diametrical thickened portion M^2 , extended between the sides d^6 of the hood and slotted at m^3 over the brush, serving as an outlet for the contents of the reservoir, as clearly shown in Fig. 2. A valve, shown as a rod m^4 , is adapted to move longitudinally in the part m^2 to close and more or less open the outlet, according to the retraction of the valve, a spring s , connected at one end to a fixed part of the frame A and at its other end to the rod m^4 , normally retracting the latter to open the outlet. A lug or ear m^5 , fast on the rod m^4 , is adapted to be engaged by the cam B^x on the shaft B to at times close the outlet m^3 , holding the valve-rod m^4 against the action of its spring s . The bottom piece m has secured thereto a bearing m^6 for the inner end of the rod m^4 to steady it and prevent twisting, and an adjustable stop, shown as a screw m^7 in the frame A, in the path of the said valve-rod limits its inward movement. A piston or plunger m^8 , vertically movable in bearings m^9 in the reservoir M, has a head or piston m^{10} , provided with a face m^{12} , of rubber or other suitable yielding material, to fit snugly within the flange m' when the plunger is depressed, as by a spring S surrounding said plunger between one of the bearings m^9 and a collar m^{13} ,

adjustable on the plunger. When the plunger is lifted, its head is raised above the top of the flange m' and a portion of the material in the reservoir can pass beneath the head, so that when the plunger is depressed said material will be positively expelled through the outlet m^3 , the valve m^4 being withdrawn more or less at such time. A collar m^{14} , adjustable on the plunger m^8 above one of the bearings, limits its depression, while another collar m^{15} , fast on the upper end of the plunger, is provided with an offset m^{16} to be engaged by a cam m^{17} on a counter-shaft m^{18} , supported in bearings A^8 of the frame. Rotation is imparted to said shaft by a belt 30 passing over a pulley m^{19} thereon and over a pulley c^{30} on the shaft C.

The shaft n^{18} , mounted to rotate in bearings A^4 of the frame and which lifts the plunger n^8 , has fast thereon a pulley n^{20} , connected by a belt 20 with a pulley m^{20} on shaft m^{18} , so that rotation is imparted from shaft m^{18} to shaft n^{18} .

An ear m^x on collar m^{14} (see Fig. 7) receives loosely therethrough a vertical pin m^{21} , erected on the reservoir M, to prevent rotative movement of its plunger, a similar construction being provided for the plunger n^8 of reservoir N.

The cams B^x C^x , which control the outlets of the reservoirs, are so arranged relatively to the cams m^{17} n^{17} that when the latter are raising their respective plungers the outlets of the respective reservoirs will be closed, and as or just before the plungers are released the cams B^x C^x will permit the opening of the reservoir-outlets to permit the plunger-heads to force the blacking or coloring-matter out and onto the coöperating brushes.

The screw n^7 , which regulates the inward or opening movement of the rod n^4 , is reversed in position, as shown in Fig. 1, owing to the construction of the frame.

Referring to Fig. 2, we have shown in dotted lines a spur or point m^{50} on the rod m^4 and upturned into the outlet m^3 , which may be used if the blacking is very thick to aid in keeping the outlet open.

A greater quantity of blacking or color must be delivered when it is thick than when it is thin, so that if it is thick the full throw of the rod m^4 is permitted, while if it is thin the extent of outlet-opening is regulated by the screws m^7 n^7 to decrease the throw of the rods m^4 n^4 .

The reciprocation of the plungers and their heads serves to agitate or stir the contents of the reservoir when the apparatus is in use.

Shields R R' are secured to the reservoirs to project over and partially cover the brushes to protect the operative and the work from spattering of the blacking as it is delivered to the brush.

The operator holds the boot or shoe in his hands and with the edge of the guide in the crease between the sole and upper presses the edge of the sole against the edge of the

rotating brush, applying the blacking or color evenly and rapidly to the sole edge as it is turned to present new portions to the brush, the guide also acting as a guard to protect the upper most effectually.

Our invention is not restricted to the precise construction and arrangement herein shown and described, as the same may be modified and rearranged without departing from the spirit and scope of our invention.

Having fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a sole-edge-blackening apparatus, a rotatable brush, against which the sole edge is held, a reservoir adjacent the brush and provided with a discharge-opening, means to positively force the contents of the reservoir therethrough, and an automatically - controlled valve for said outlet, substantially as described.

2. In a sole-edge-blackening apparatus, a rotatable brush, against which the sole edge is held, a reservoir adjacent the brush and provided with a discharge - opening, means to positively force the contents of the reservoir therethrough, an automatically - controlled valve for said outlet, and means to regulate the effective opening of the valve, substantially as described.

3. In a sole-edge-blackening apparatus, a rotatable brush, against which the sole edge is held, a reservoir adjacent the brush and provided with a discharge-opening, a reciprocating piston within said reservoir, to positively compress a portion of the contents of the reservoir intermittingly, a valve to control the discharge-outlet, and means to open the valve when the piston descends, and to close it on the ascent of the plunger, substantially as described.

4. In an apparatus of the class described, a reservoir having a discharge-outlet for its contents, means to intermittingly force a portion of its contents through the discharge-outlet, a reciprocating valve to open and close the outlet, means to actuate the valve automatically, and an adjusting device to regulate the extent of movement of the valve to open the outlet, substantially as described.

5. In an apparatus of the class described, a circular blacking-brush fast thereon, an adjustable non-rotatable flanged disk at one

side of the brush, a disk-like upper guard and guide secured to the shaft at the other side of the brush and having a concaved inner face, and means to move the flanged disk on the shaft longitudinally to vary the effective width of the brush-face, substantially as described.

6. In an apparatus of the class described, a rotatable shaft, a circular brush fast thereon, a disk-like upper guard secured to the shaft at one side of the brush, said disk having a peripheral groove between inner and outer lips, and with its inner face concaved, substantially as described.

7. In an apparatus of the class described, a rotatable shaft, a circular brush fast thereon, an upper guard at one side of the brush, secured to the shaft and having a scalloped periphery and concaved inner face, an adjustable flanged disk at the other side of the brush, provided with a hood, and a reservoir located above the brush and provided with a discharge-outlet located within the hood, substantially as described.

8. In an apparatus of the class described, a plurality of rotatable, circular blacking-brushes, a reservoir for each, means to positively discharge the contents intermittingly onto the brushes, a disk-like upper guard at one side of and rotatable with each brush, and having a concave inner face, one of the guards having a scalloped periphery and the other two peripheral lips separated by an annular groove, and means to rotate the brushes, substantially as described.

9. In an apparatus of the class described, a rotatable circular brush, a reservoir having a discharge-outlet adjacent thereto, a reciprocating plunger having a head, movable in said reservoir, means to gradually raise the plunger, a depressing-spring therefor, and an intermittingly-movable valve to open and close the outlet as the plunger-head is depressed and raised respectively, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

WARREN C. EVANS.

HENRY D. ALLARD.

Witnesses:

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JENNIE A. MESSU.