

P. HILLE.

Machines for Cleaning and Polishing Boots and Shoes.
No. 221,557. Patented Nov. 11, 1879.

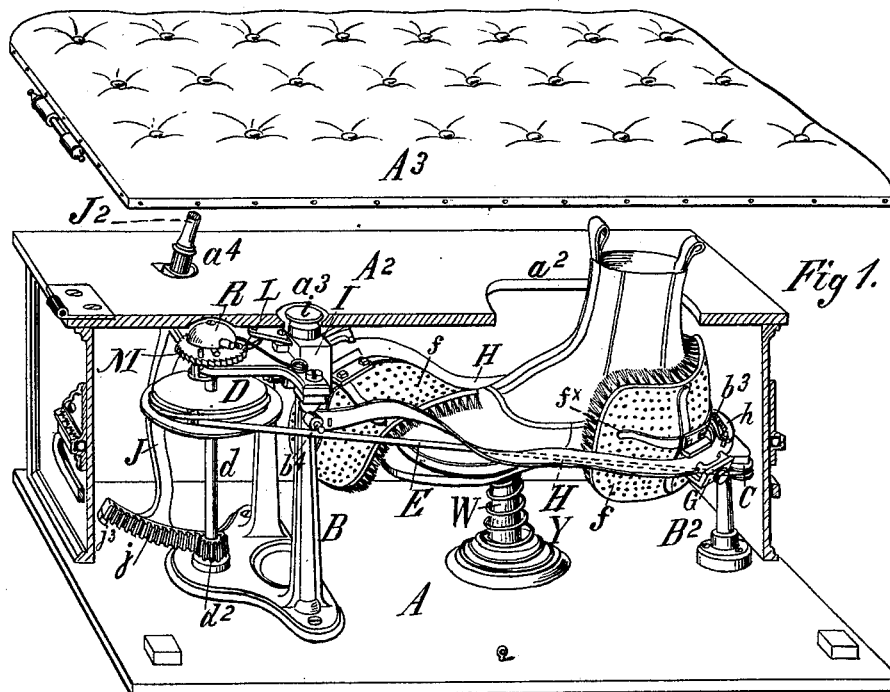


Fig. 1.

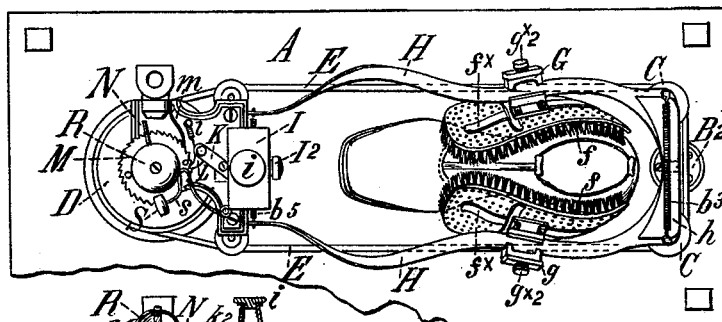


Fig. 2.

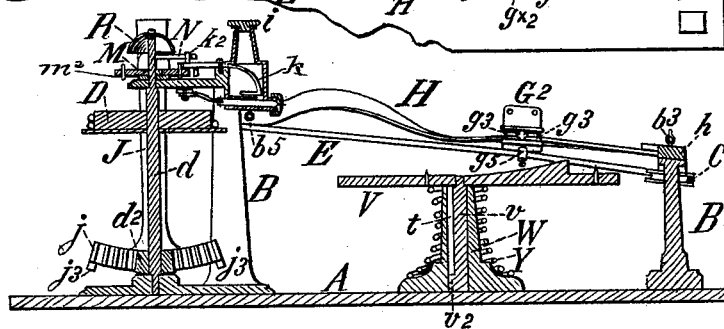


Fig. 3.

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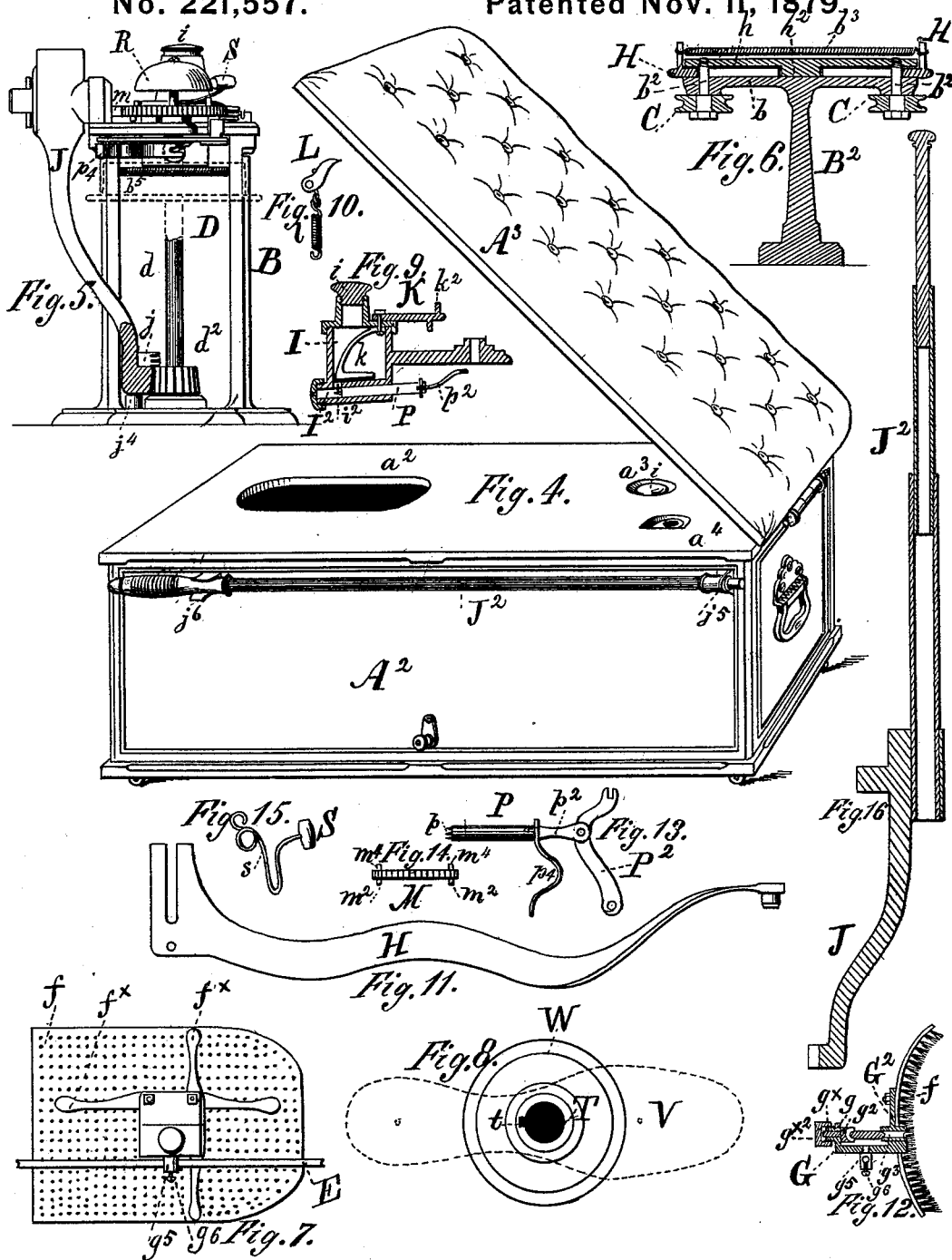
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UNITED STATES PATENT OFFICE.

PAUL HILLE, OF UNION, NEW JERSEY, ASSIGNOR TO HIMSELF AND LOUIS C. HAUSTEIN, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR CLEANING AND POLISHING BOOTS AND SHOES.

Specification forming part of Letters Patent No. 221,557, dated November 11, 1879; application filed May 16, 1879.

To all whom it may concern:

Be it known that I, PAUL HILLE, of town of Union, in the county of Hudson and State of New Jersey, have invented a new and useful Machine for Cleaning and Polishing Boots and Shoes; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to a means for cleaning, blacking, and polishing boots and shoes by machinery while on the feet of the wearer.

The invention consists in a novel construction, arrangement, and combination of devices, whereby an apparatus is produced by means of which the boot or shoe of the wearer is cleansed from dirt, blacking is applied thereto, and the same is polished all at one and the same operation of the apparatus; and whereby, also, provision is made for preventing the escape of dust from the apparatus into the room in which it is used; and whereby, further, the apparatus may be utilized as an article of furniture, and several other advantages are obtained, all as hereinafter particularly set forth.

The accompanying drawings illustrate a mode of carrying out my invention.

Figure 1 is a perspective view, partly in section, of an apparatus embodying my improvements. Fig. 2 is a top view of the same. Fig. 3 is a longitudinal vertical section. Fig. 4 is a perspective view of the exterior of the apparatus. Fig. 5 is a front end view of the working parts. Fig. 6 is a sectional view of the rear end. Fig. 7 is a rear view of one of the brushes. Fig. 8 is a top view of a device for holding the boot or shoe while being cleaned and polished. Fig. 9 is a detail sectional view of the blacking-reservoir. Figs. 10, 11, 12, 13, 14, 15, 16 are detail views hereinafter particularly referred to.

The working parts of the machine are attached to and carried by a base-board or bed-plate, A, provided with a front pedestal, B, and a rear pedestal, B², which two pedestals support said working parts, and the whole is covered by a box or cover, A², which serves as a dust-arrester, and prevents the escape of dust from the apparatus, but at the same time

is adapted to be readily removed in order to afford access to the parts, when desired, for cleaning, repairing, or inspecting them. Said box or cover is provided with hooks and eyes or other suitable fastenings for securing it to the bed-plate when in place. In the top of the box or cover is an opening, a², of suitable shape and size to allow the foot to be passed through it in order to clean and polish the boot or shoe, as hereinafter described. There are also openings a³ a⁴ in the top of said box, for the purpose hereinafter described.

The box or cover may be made as handsome and ornamental as desired, and is preferably provided with a lid, A³, which may be hinged thereto, so as to be readily removed when desired, as shown in Fig. 1, or be raised up, as shown in Fig. 4. This lid A³ may also be cushioned and upholstered, as shown, so that when the apparatus is not in use for cleaning and polishing purposes the casing may be used as an article of furniture, (as a seat or footstool, for example,) and, if desired, it may be provided with casters. In some cases it may be arranged as a drawer in a desk, bureau, or other article of furniture, and in such cases the cushioned lid may be dispensed with.

At the upper end of the rear pedestal, B², is an arm or cross-piece, b, running transversely of the bed-plate and carrying at its ends two pulleys, C C. (See Fig. 6.) The front pedestal, B, is provided at the top and bottom with two projections or lugs, in which is journaled a vertical shaft, d, carrying at its upper end a drum, D, to which the ends of a band, E, are attached. (See Figs. 3 and 5.)

The band B passes around the pulleys C C at the rear of the machine, and carries the brushes f f, one on each side, so that when the drum-shaft is rotated back and forth the brushes will be made to reciprocate in opposite directions. (See Fig. 1.)

The drum-shaft may be rotated by means of mechanism of any suitable description. As here represented, the shaft d carries a pinion, d², which meshes into a rack, j, at the lower end of a lever, J, having its fulcrum on a pin or stud projecting from the front pedestal, B, and its upper end near the opening a⁴ in the

box or cover A^2 . By oscillating the lever J a reciprocating rotary motion is imparted by the rack j and pinion d^2 to the drum shaft d . The motion of the lever J is limited by means of stops j^3 , one at each end of the rack j , which strike an abutment, j^4 , projecting from the bed A , and thus prevent the rack from traveling too far in either direction. The long arm of the lever J consists of a removable handle, J^2 , fitting in a socket at the upper end of the lever. This handle is here shown as made in a single piece, and when not in use it is held in place on the outside of the box or cover by means of a ring or eye, j^5 , and a spring-clamp, j^6 , as shown in Fig. 4. If desired, however, the handle may be made telescopic, as shown in Fig. 16, or may be jointed in any suitable manner, so as to occupy but little space when not in use.

The brushes f are attached to the band E by means of carriages constructed as follows: Each carriage consists of a plate, G , having at one edge a flange, g , carrying a grooved guide, g^2 , and at the opposite edge two pulleys, g^3 , which are attached to and held in place on said plate by means of screws, bolts, or rivets, passing through them to form bearings for them, and through the plate G and an angle-plate, G^2 , to which the brushes f are attached.

The guides g^2 and pulleys g^3 ride on guideways H , one on each side, constructed as follows: Each guideway consists of a strip of metal, H , (see Fig. 11,) curved to conform to the general outline of the boot or shoe, and to allow the brushes to follow the general form thereof. The rear end of each guideway is slotted for the reception of a pin or stud, b^2 , projecting from the arm or cross-piece b , which pin or stud may form the bearing for the pulley C , as shown in Fig. 6. The rear ends of the two guideways are connected by a spring, b^3 , having a tendency to pull them toward each other.

The front end of each guideway is perforated, and through the perforation passes a rod, b^4 , which extends laterally from the front pedestal, B . The front ends of the two guideways are connected by a spring, b^5 , having a tendency to pull them toward each other. By this means the guideways are enabled to accommodate themselves to feet of different sizes, and to always allow the brushes to exert the proper degree of pressure on the boot or shoe when cleaning and polishing the same. The rear ends of the two guideways H are held down and also prevented from coming too close together by means of a plate, h , having a downward projection, h^2 , which rests on the upper side of the arm or cross-piece b . (See Fig. 6.)

The guides g^2 are attached to the carriage G as follows: Each guide is provided with a stem, g^* , which passes through a sleeve or socket in the flange g of the carriage, as shown in Fig. 12, so as to allow it to swivel in following the curves of the guideways. The stem is slightly longer than the sleeve or socket, and

projects beyond the rear end of the same, which is screw-threaded, and is covered by a screw-cap, g^{*2} , so that the screwing up of the cap has a tendency to press the guide g^2 against the edge of the guideway H . By this means the carriage may be properly adjusted on the guideway, and when the guide g^2 becomes worn it may be tightened by screwing up the cap g^{*2} .

The brush f is attached to the carriage G by means of bolts or screws passed through the back of the brush and through the angle-plate G^2 , and secured by nuts on the outside of said angle-plate. The brushes have flexible and elastic backs, provided with springs f^* for pressing them upon and enabling them to follow closely the general form of the foot.

The carriage G is attached to the band E by passing said band through a swivel-pin or stud, g^5 , on the lower side of said carriage, and securing it therein by a set-screw, g^6 , as shown in Figs. 7 and 12, by which means the carriage may be properly adjusted on the band.

The brushes, attached and operated as above described, serve to clean the boot or shoe, to distribute the blacking thereon, and to polish the same after the blacking has been distributed. The dirt is first cleaned from the boot or shoe. The blacking is then applied thereto, and the polishing process is accomplished by the continuation of the motion of the brushes.

The blacking used in connection with this apparatus is in liquid form, and is carried in a reservoir arranged in a suitable position with relation to the other parts to enable it to be properly applied to the boot or shoe.

As shown herein, the blacking-reservoir I is located in the front part of the apparatus at a suitable point to enable the blacking to be deposited on the front of the boot or shoe, and then distributed to all other parts thereof.

The blacking-reservoir, as here represented, consists of a box, cup, or tank, I , (see Fig. 9,) provided with a neck for filling it, furnished with a screw cap, i , said neck and cap protruding slightly through the opening a^3 in the top of the box or cover A^2 , so as to enable it to be filled without removing said box or cover, as shown in Figs. 1, 2, 3, and 4.

In order to keep the blacking stirred and prevent the accumulation of sediment in the bottom of the reservoir, a stirring device is provided, consisting of a wire, k , bent in such form as to follow the general shape of the bottom and sides of the reservoir, and having its upper end attached to a lever, K , pivoted on or near the top of the reservoir I .

On the upper side of the lever K is a pin or stud, k^2 , and to the under side of said lever is pivoted a pawl, L , provided with a spring, l , for retracting it. (See Fig. 10.) The pawl L engages with a ratchet-wheel, M , which works loosely on the drum-shaft d , and is prevented from receding by means of a flat spring-pawl, m , projecting from a portion of the front pedestal.

From the upper portion of the drum-shaft d

extends an arm, N, which, at every backward motion of the shaft d , strikes the pin or stud k^2 and oscillates the stirrer k , so as to stir the blacking in the reservoir, and at the same time it causes the pawl L to move the ratchet-wheel M the distance of one tooth. When the shaft d moves forward again, the stirrer is retracted by means of the spring l , which also retracts the lever K, and causes the pawl L to engage with another tooth of the ratchet M, so as to be ready for another movement of said ratchet.

The blacking is applied to the boot or shoe in the following manner: In the bottom of the reservoir I is a tube or cylinder, I^2 , which may be cast in one piece with said reservoir or formed in any suitable manner. One end of this tube or cylinder is provided with either perforations or a narrow slot or slit, as may be preferred, so that the liquid issuing therefrom may be in either the form of spray or of a sheet or thin broad stream. This end of the tube I^2 may extend beyond the side of the reservoir for a distance depending on the desired quantity of blacking to be received and discharged. Inside the reservoir is an opening, i^2 , through which the liquid may pass to the tube I^2 . A piston or plunger, P, works in the tube or cylinder I after the manner of a syringe, and carries on its front end a series of spurs or points, p , corresponding with the perforations or slot in the front end of the tube or cylinder I^2 , the object of said spurs being to keep said openings clear and prevent them from becoming clogged by the drying or caking of the blacking. The rear end of the piston or plunger is connected by a link, p^2 , with a lever, P^2 , (see Fig. 13,) having its fulcrum at a suitable point on or connected with the front pedestal.

On the under side of the ratchet-wheel M is a stud, m^2 , and as said ratchet-wheel is rotated, as before described, said stud m^2 bears against said lever P^2 during a portion of said rotation, so as to cause said lever to draw the piston or plunger P back a certain distance. Said stud m^2 then slips beyond the end of the lever, and allows it to escape, whereupon the piston or plunger is driven suddenly forward by a spring, p^4 . While the plunger is being drawn back the liquid blacking passes through the opening i^2 into the tube I^2 , and forms a charge ready to be applied to the boot or shoe. When the plunger is released by the stud m^2 , it is driven forward by the spring p^4 and forces the charge of blacking upon the boot or shoe in a spray, jet, or stream.

On the upper side of the ratchet-wheel M is a stud, m^4 . Above this wheel is a bell, R, which at certain intervals is struck by a hammer, S. The hammer-tail s is made of elastic wire, bent in the shape shown in Fig. 15, so as to form at once a hammer-tail and a spring. As the ratchet M is rotated the stud m^4 engages with the hammer-tail s , so as to move it backward, and after said stud has traveled

a certain distance during the rotation of the ratchet the hammer-tail slips off and causes the hammer to strike the bell.

The operation of the parts above described is as follows: When motion is first applied to the drum-shaft a certain number of strokes of the brushes accomplish the work of removing the dirt from the boot or shoe, during which time the action of the arm N on the lever K and pawl L rotates the ratchet and draws back the plunger P, so as to allow a charge of blacking to enter the tube or cylinder I^2 . The parts are so arranged with relation to each other that as soon as the cleaning is accomplished the blacking is discharged upon the shoe. As the motion of the brushes continues the blacking is distributed over the entire surface, and the shoe is then polished by the action of the brushes. When the operation is completed the stud m^4 releases the hammer-tail and allows the hammer to strike the bell as a signal to remove the foot.

There may be any suitable number of teeth on the ratchet-wheel, and also any suitable number of the studs m^2 m^4 . As shown herein, the wheel has thirty teeth, and there are two of each of the studs m^2 m^4 . By this arrangement one complete revolution of the ratchet-wheel is sufficient to produce two complete operations of the cleaning and polishing devices.

The foot is supported during the cleaning and polishing operation by the devices shown in Figs. 1, 3, and 8, in which V represents a plate or block corresponding with the general outline of the sole of the foot. It is provided with a downwardly-extending stem, v , having on one side a key, rib, or stud, v^2 , for engagement with a groove, t , in a vertical socket, T, in a pedestal, W, resting on the base-board A. Surrounding the pedestal W is a spring, Y, the lower end of which rests upon the board A, and the upper end supports the plate or block V.

When not in use the spring Y holds the plate V at a suitable height to spread the brushes apart and enable the foot to be easily placed in proper position thereon. When the foot is pressed down the plate V descends to the proper level to insure the engagement of the brushes with all parts of the surface of the boot or shoe. When the foot is withdrawn the plate resumes its former position.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the foot-supporting devices, of the traveling brushes, the automatic blacking-discharging device, and mechanism connecting said brushes and blacking-discharging devices together and to a common prime motor, substantially as described.

2. In a machine for cleaning and polishing boots and shoes, the combination of the flexible elastic back brushes, the spring-compressed guides, the devices for connecting said brushes

to said guides, and mechanism for imparting reciprocating motion to said brushes, substantially as described.

3. In a machine for cleaning and polishing boots and shoes, a guideway corresponding with the general form of the foot, and adapted, by mechanism substantially as described, to accommodate itself to feet of different sizes, for guiding the brushes during the cleaning and polishing operation, substantially as described.

4. In a machine for cleaning and polishing boots and shoes, the combination, with a blacking-reservoir, of a stirring device for the blacking, substantially as and for the purpose herein described.

5. In a machine for cleaning and polishing boots and shoes, the combination, with the blacking-stirring device, of a reciprocating rotating shaft provided with an arm for operating said stirring device, substantially as herein described.

6. In a machine for cleaning and polishing boots and shoes, the combination, with the tube or cylinder and the piston or plunger of the blacking-reservoir, of the cleaning devices *p*, substantially as and for the purpose herein described.

7. In a machine for cleaning and polishing boots and shoes, a reciprocating rotating shaft, *d*, oscillating arm *N*, pivoted lever *K*, pawl *L*, spring *I*, ratchet-wheel *M*, stud *m*², lever *P*², and spring *p*¹, in combination with the piston or plunger *P*, for operating said piston or plunger to receive and discharge the blacking, substantially as herein described.

8. The carriage *G* and angle-plate *G*², in combination with the brush *f*, attached and arranged as herein shown and described.

9. The combination, with the guideway *H*,

of the carriage *G*, pulleys *g*³ *g*³, and grooved guide *g*², substantially as and for the purpose herein described.

10. The swivel grooved guide *g*², provided with the stem or shank *g*⁴, in combination with the carriage *G*, provided with the flange *g* and socket, the cap *g*², and a suitable brush and ways, substantially as and for the purpose herein described.

11. The combination of the swivel-pin or stud *g*⁵, set-screw *g*⁶, and carriage *G*, fitted upon a suitable way or guide, and adapted to be operated by a driving-band, substantially as described.

12. The foot-rest consisting of the plate *V* and its stem *r* and the pedestal *W*, provided with the grooved socket *T*, substantially as herein shown and described.

13. The combination of the pedestal *W*, the foot-plate *V* and its stem *r*, and the spring *Y*, substantially as and for the purpose herein shown and described.

14. The combination, with the cleaning and polishing devices of a boot and shoe cleaning and polishing machine, of a covering and inclosing shield or dust-arrester having an opening therein for the insertion of a boot or shoe, substantially as described.

15. In a machine for cleaning and polishing boots and shoes, a brush having its back flexible both longitudinally and transversely, in combination with springs pressing upon the sides and ends of said brushes, and devices for imparting reciprocating motion to said brushes.

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