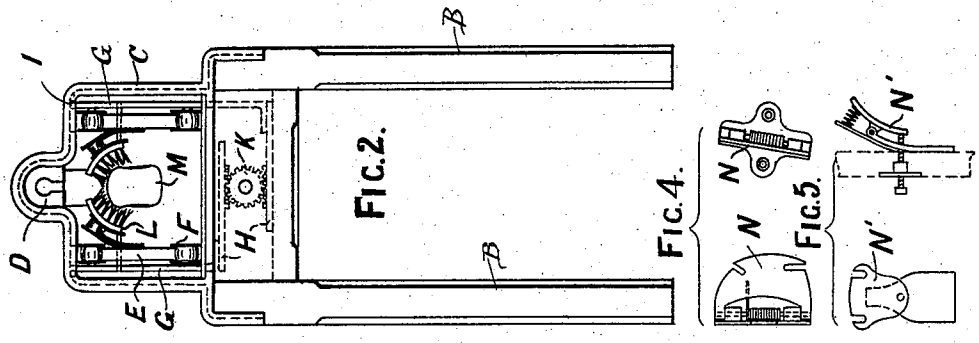
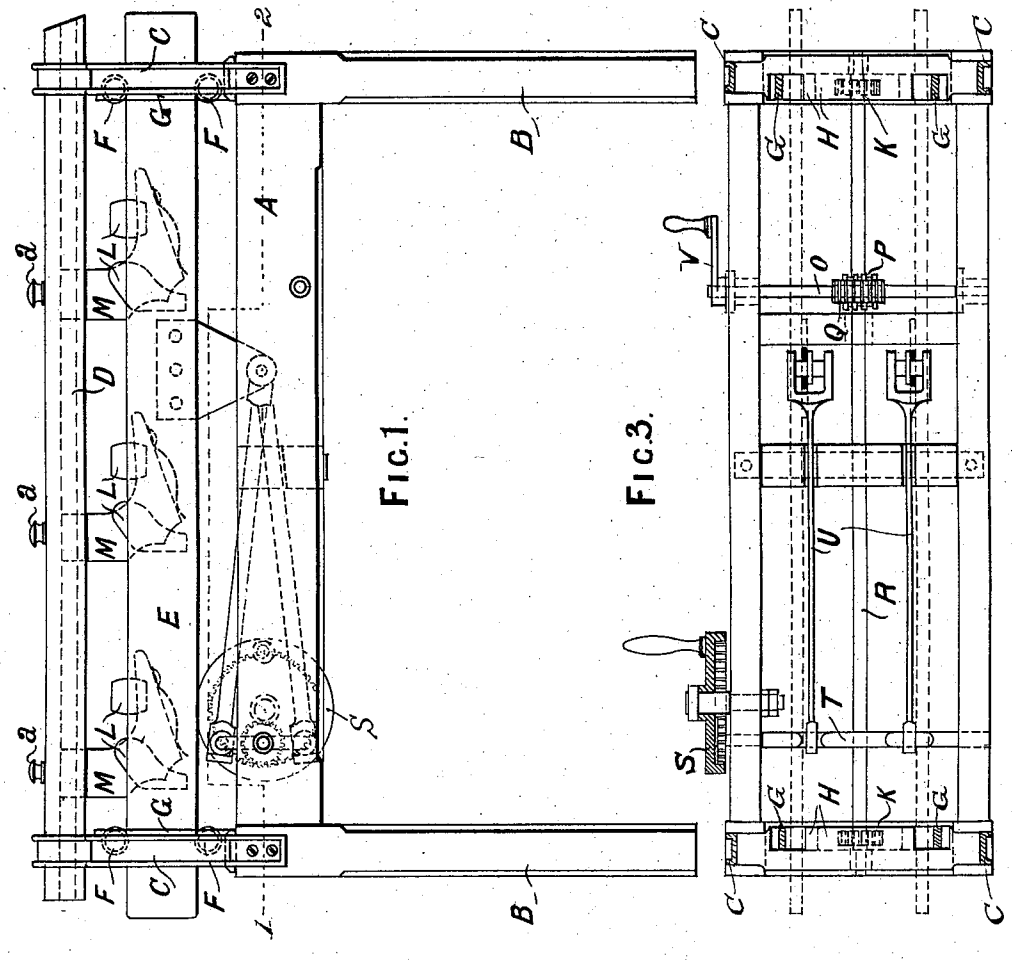
(No Model.)

H. SOUTHEY.

BOOT CLEANING MACHINE.

No. 564,115. Patented July 14, 1896.





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UNITED STATES PATENT OFFICE.

HENRY SOUTHEY, OF WORTHING, ENGLAND.

BOOT-CLEANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 564,115, dated July 14, 1896.

Application filed November 4, 1895. Serial No. 567,896. (No model.) Patented in England January 2, 1895, No. 134; in France February 6, 1895, No. 244,915, and in Belgium February 11, 1895, No. 114,238.

To all whom it may concern:

Be it known that I, HENRY SOUTHEY, a subject of Her Majesty Queen Victoria, and a resident of Wellington House, Chapel Road, Worthing, in the county of Sussex, England, have invented a new and useful Improved Boot-Cleaning Machine, (for which I have obtained Letters Patent in Great Britain, No. 134, bearing date January 2, 1895; in France, No. 244,915, dated February 6, 1895, and in Belgium No. 114,238, dated February 11, 1895,) of which the following is a specification.

My invention relates to an improved boot-cleaning machine for cleaning and polishing several boots by simultaneous operations performed at separate positions, whereby considerable economy of time and labor is effected in completing such operations. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 represents a side elevation of my improved boot-cleaning machine, Fig. 2 being an end elevation of same; Fig. 3, a plan through line 1 2 of Fig. 1; Fig. 4, side and front views of a heel-brush holder, and Fig. 5 front and side views of a toe-brush holder.

Similar letters refer to similar parts throughout the several views.

A machine constructed according to my invention for cleaning a single row of boots, as illustrated on Figs. 1, 2, and 3, consists of a horizontal frame A supported upon suitable legs B. Upon the upper side of the frame A and at each end thereof is a bridge-piece C, connected together at the top by means of a longitudinal guide-bar D; and a pair of reciprocating slide-bars E are arranged in parallel positions upon the upper surface of the horizontal frame A, adapted to travel between guides or rollers F formed upon or supported by vertical bars G, arranged beneath the bridge-pieces C at each end of the horizontal frame A.

To the lower end of each of the vertical bars G is rigidly attached a separate rail or cross-bar H in parallel position one above the other, furnished with teeth on the under and the upper side, respectively, with which pinions K are arranged to engage for the purpose of operating the cross-bars H and vertical bars G at each end in either direction transversely to the frame of the machine, and to permit this movement the upper end of each vertical bar G is free to travel within a slot I, formed in the upper portion of the bridge-piece C.

Upon the inner faces of the slide-bars E are secured brushes L of special construction arranged in sets at convenient intervals and in suitable positions for performing, respectively, the successive operations of removing mud and dust, applying blacking, and polishing, which operations are effected simultaneously upon separate boots, and consecutively upon the boots placed by the operator in succeeding positions in the machine.

Within the longitudinal guide-bar D and directly over the center of the space between the brushes L are adjustably secured by means of screws or spring-studs *a*, or equivalents, lasts M for the purpose of holding the boots in the requisite positions between the individual sets of brushes. Preferably, the lasts M are arranged at such an inclination as to hold the heels of the boots in a lower position than the toes, as shown on Fig. 1, whereby they may be more effectually operated upon by the brushes. An elastic or yielding pressure is given to the brushes in action by securing them upon the slide-bars E by means of pivoted or hinged plates N furnished with springs, and to insure thorough cleaning and polishing of all parts of the boots the brushes may be made to correspond approximately in form therewith, opposite brushes of each set being similar.

For adjusting the slide-bars E carrying the brushes L at the requisite distances apart to accommodate different sizes of boots, a transverse shaft O, provided at its extremity with a hand wheel or crank V, is arranged to turn in suitable bearings secured below the horizontal frame A at or about its center, as shown on Figs. 1 and 3. Upon this shaft O a suitable worm P is arranged to engage with a worm-wheel Q, secured upon a longitudinal shaft R, the extremities of which are directly under the bridge-pieces C, where it is furnished with toothed pinions K, gearing with the racks upon the upper and lower cross-bars H, carrying the vertical bars G, by which arrangement the slide-bars E can be caused to advance toward or to recede from each

other according as the hand-crank V is turned to the right or left.

Each set of brushes is constructed specially for its particular function of cleaning, blacking, or polishing, respectively, and with each set separate brushes are provided for operating on the heels or back parts of the boots. Preferably I arrange three sets of brushes on a pair of slide-bars, as shown on Fig. 1, one for each operation, and I may form the backing of the brushes in one or several parts either of red fiber, wood, metal, or other suitable material.

The brush-holders for attaching the brushes to the slide-bars E are constructed as shown on Figs. 4 and 5 for the heel and toe brushes respectively.

For carrying the heel-brushes I provide a flat metal plate N, of a form adapted to receive the back of the brush and having slots at its upper and lower edges for admitting screws or equivalent devices for securing the brush to the plate. This plate N is pivoted at one side on the upper and lower ends of a vertical stem turning in bearings formed in or upon a fixed hinge-plate screwed or otherwise secured upon the inner face of each slide-bar E in a suitable position for operating on the heels of the boots, and normally sustained in a projecting or nearly rectangular position to the fixed plate by means of a coil or other spring arranged upon the vertical stem.

For holding the toe-brushes, I provide a bent metal plate N′, furnished on its upper edge with slots for receiving screws or equivalent devices for securing the brush to the plate, and having a central projection on its convex surface or back, hinged or pivoted to a fixed plate secured on the slide-bar, the upper part of which fixed plate is bent away from the face of the slide-bar E and terminates in a hinge or pivot, as shown on Fig. 5. To maintain the pivoted plate N′ at the required angle for effectual work, and to allow of its angular adjustment, I provide on the upper part of the back thereof a spring bearing upon a back-plate secured upon and behind the bent part of the fixed plate and extending upwardly beyond the pivoted end thereof. The adjustment or regulating device consists of a rod or bolt passing through the slide-bar and through a hole in the fixed plates directly opposite the lower part of the hinged or pivoted plate N′, and bearing against the back thereof, the outer extremity of the rod or bolt being screwed, whereby it can be secured in the required position to regulate the angular inclination of the pivoted plate. Corresponding plates similarly attached in opposite positions are secured upon each slide-bar E of the machine.

The separate parts of the machine may either be constructed entirely of metal or partly of wood and partly of metal, as desired.

For driving purposes I may employ a treadle, a hand-wheel, or other motive power, communicating motion by means of a band and pulley or spur-gearing S to a transverse shaft T, mounted in bearings in or under the horizontal frame A. This transverse shaft T carries two cranks, arranged to operate the reciprocating slide-bars E by means of suitable connecting-rods U.

In operation a boot having been placed upon the last M at the feed end of the machine, and the last secured in the longitudinal guide-bar D by means of the screws or spring-catches *a* in such a position as to be held immediately between the first set of brushes for removing dust and mud, the toes being presented forward at an upward inclination, the machine is set in motion and kept at work for a sufficient time to effect the first operation. Blacking having been supplied by the attendant to the second set of brushes, the last carrying the boot is moved forward to the second set of brushes or second position on the guide-bar to undergo the operation of blacking, while another boot is fitted on a last placed in the first position and the machine is again set in motion. On the completion of the second operation the two boots and lasts are advanced to the third and second positions, respectively, a third last and boot being in turn introduced at the first position, and the machine is once more set in action. At the end of the third operation the boot first introduced is taken off the machine at the delivery end and the last is ready to receive the next boot to be operated upon.

I may construct my machine to operate upon two or more rows of boots simultaneously, in which case I arrange two or more pairs of slide-bars in parallel positions on a horizontal frame, and provide a corresponding number of cranks upon the transverse shaft with connecting-rods for operating the machine. Each pair of slide-bars will have independent mechanism for adjusting their distances apart, as required.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. A boot-cleaning machine comprising a suitable support, reciprocating slides arranged parallel and provided with brushes, and laterally-adjustable sustaining devices for the slides.

2. A boot-cleaning machine comprising a suitable support, reciprocating slide-bars arranged parallel, laterally-adjustable sustaining devices for the slide-bars, and hinged or pivoted spring-brushes secured to the slides.

3. A boot-cleaning machine comprising a suitable support, reciprocating slide-bars arranged parallel, laterally-adjustable sustaining devices for the slide-bars, boot, cleaning, blacking and polishing brushes secured to facing sides of the slides, and removable lasts adjustably secured between the slide-bars and brushes.

4. In a boot-cleaning machine the combina-

tion of reciprocating slide-bars, laterally-adjustable supports for said slide-bars, hinged or pivoted brushes secured to the slide-bars, a longitudinal guide-bar, and removable lasts and means for securing the same to the longitudinal bar, whereby the lasts are held in operative position between the slide-bars and brushes.

5. A boot-cleaning machine comprising reciprocating slide-bars arranged parallel and provided with hinged or pivoted brushes, removable lasts arranged and supported between the pair or pairs of slide-bars, adjustable supports for each pair of slide-bars, whereby they may be moved toward or away from each other in accordance with the work, and means for imparting reciprocating motion to the slide-bars.

6. In a boot-cleaning machine the combination with a suitable support, of reciprocating slide-bars, laterally-movable vertical bars carrying the slide-bars, means for adjusting the vertical bars and slide-bars toward or away from each other to suit the work, hinged or pivoted brushes upon the slide-bars, a central longitudinal guide-bar, and removable lasts adapted to be secured to the guide-bar in operative position between the slide-bars and brushes carried thereby.

7. In a boot-blacking machine the combination with the laterally-adjustable vertical bars having lateral extensions provided with racks, of the pinions K engaging said racks, a means for rotating said pinions to move the vertical bars toward or away from each other, slide-bars carried in the vertical bars and parallel with each other and provided with brushes upon their facing sides, and means for imparting reciprocating motion to the slide-bars.

8. In a boot-cleaning machine a heel-brush comprising a metal plate adapted to be secured to the back of the brush, a vertical pivot secured to the edge of the plate, a support for said pivot and a spring coiled about said pivot and engaging the brush-holding plate and the support.

9. In a boot-blacking machine a toe-brush comprising a curved metal plate adapted to be secured to a suitable brush, a fixed support, a hinged connection between the fixed support and the plate, a spring between the fixed support and one part of the brush-holding plate, and an adjusting-screw connected with the fixed support and engaging an opposite part of the plate.

10. The combination in a boot-cleaning machine, of the reciprocating slides E carrying spring-hinged brushes L and having longitudinal central guide-bar D, for supporting the lasts M with the racks H, and pinions K, all substantially as set forth.

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