A. D. WASHINGTON.

SHOE POLISHING MACHINE.

APPLICATION FILED NOV. 4, 1910.

1,020,587.

Patented Mar. 19, 1912.

4 SHEETS—SHEET 1.

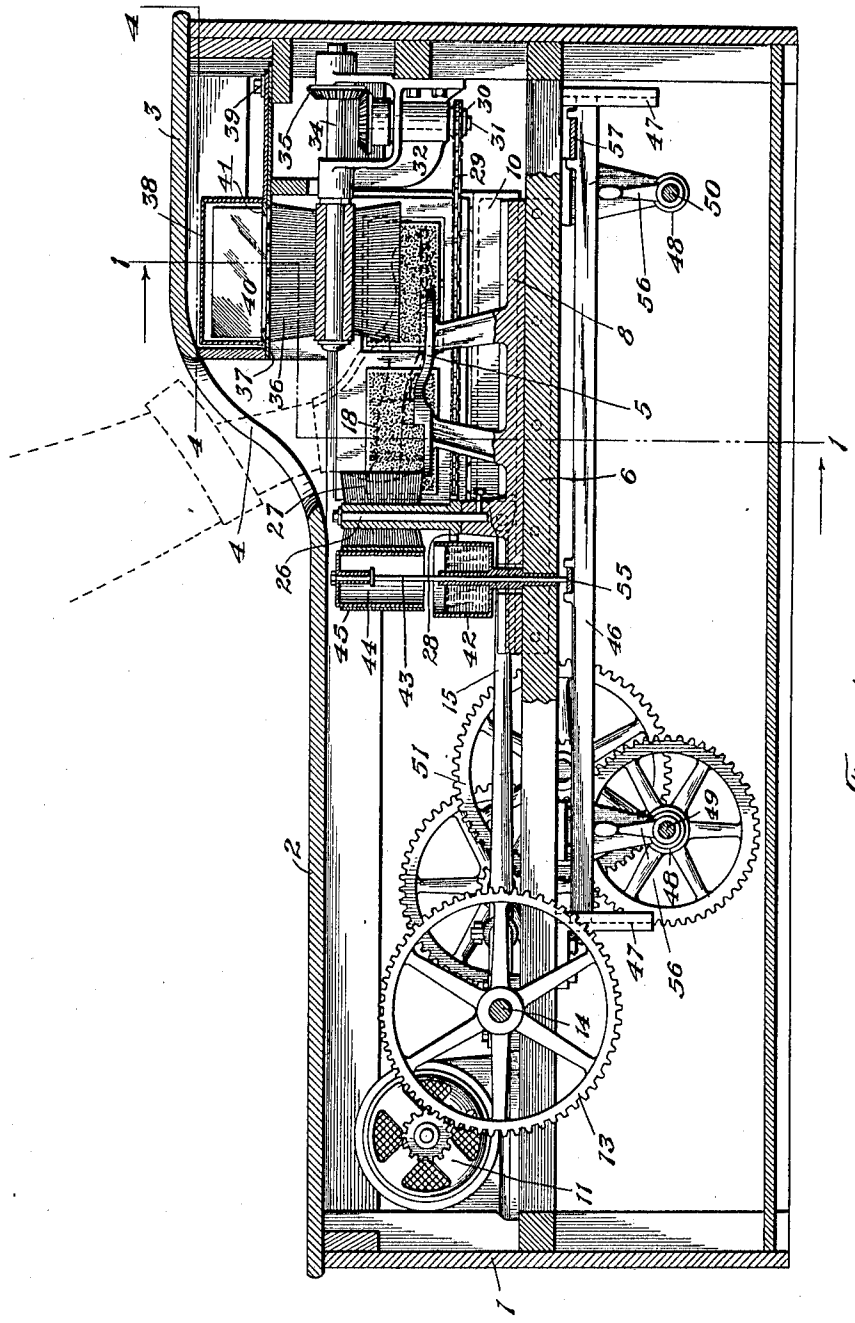

Fig. 1.

Witnesses

Chas. W. Stauffiger

A. M. Dorr

Inventor

ALFRED D. WASHINGTON.

By Dowell & Dowell

Attorneys

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

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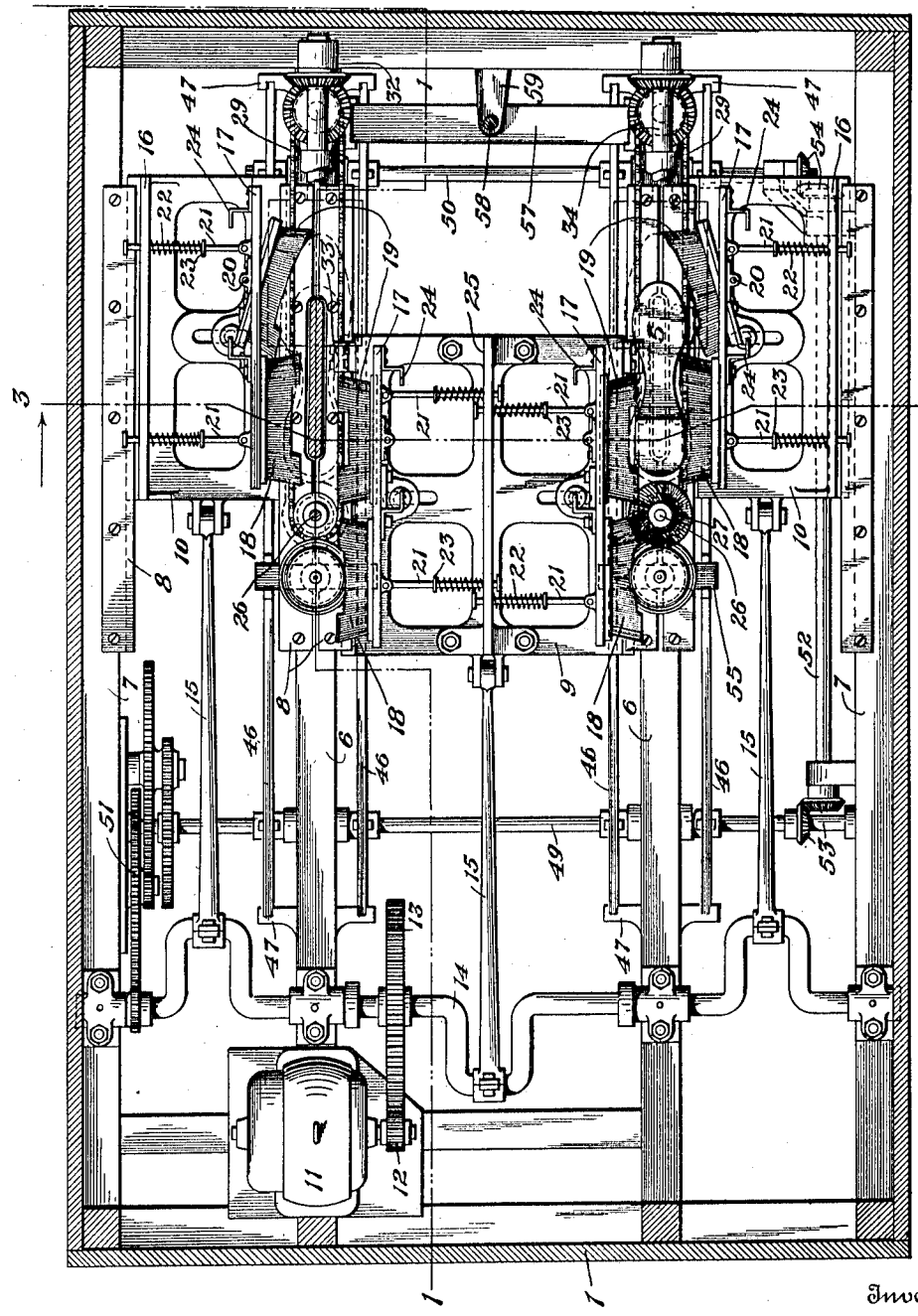

Fig. 2.

Witnesses

Chas. W. Stauffiger

A. M. Dour

Inventor

ALFRED D. WASHINGTON

By

Attorneys

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

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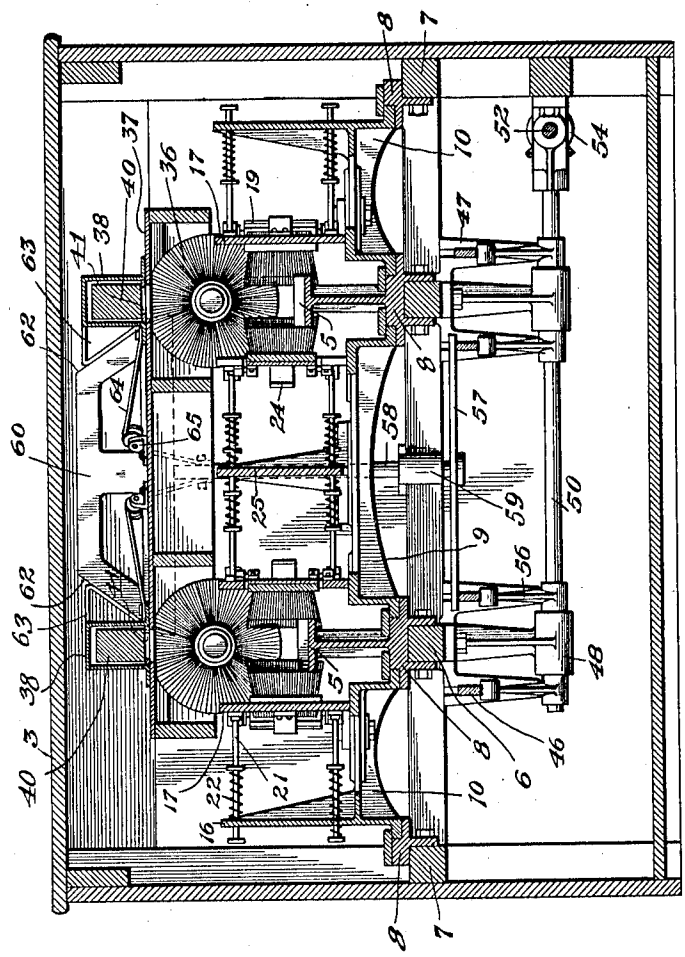

Fig. 3.

Witnesses

Chas. W. Stauffiger

A. M Dorr

Inventor

ALFRED D. WASHINGTON

By

Attorneys

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

A. D. WASHINGTON.

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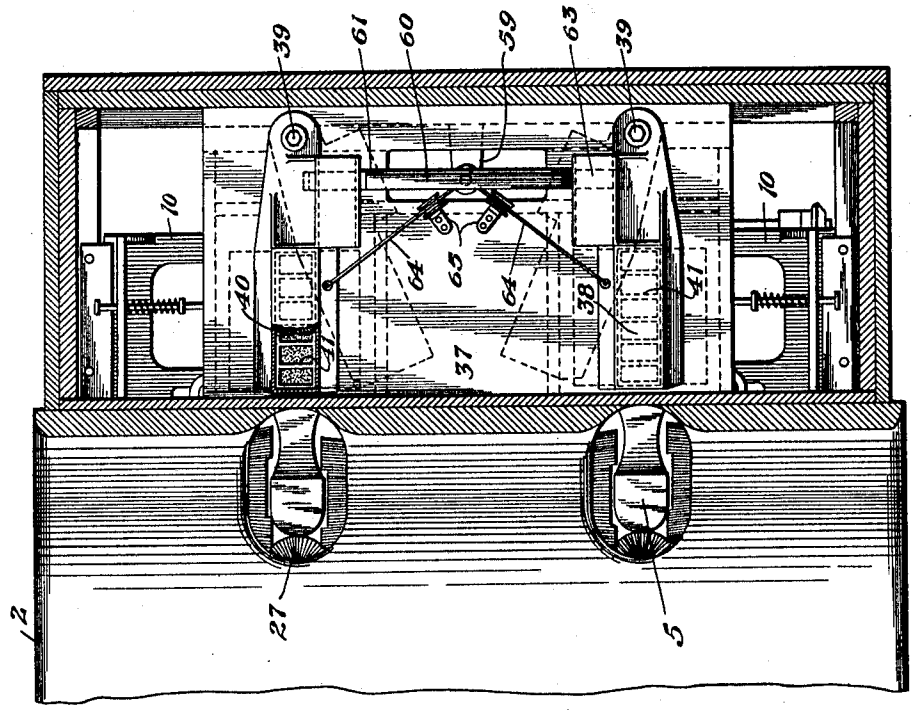
4 SHEETS—SHEET 4.

Fig. 4.



Witnesses

Chas. W. Stauffiger

A M Dorr

Inventor.

ALFRED. D. WASHINGTON.

By Bartholomew & Brown

Attorneys

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ALFRED D. WASHINGTON, OF DETROIT, MICHIGAN.

SHOE-POLISHING MACHINE.

1,020,587. Specification of Letters Patent. Patented Mar. 19, 1912.

Application filed November 4, 1910. Serial No. 590,624.

To all whom it may concern:

Be it known that I, ALFRED D. WASHINGTON, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Shoe-Polishing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a shoe polishing machine and its object is to provide a simple and efficient device for the purpose having means for automatically brushing a shoe, applying blacking and polishing the surface.

To this end the invention consists in certain new and useful features in the construction and arrangement of parts, all as hereinafter more fully described and particularly pointed out in the claims reference being had to the accompanying drawings in which,

Figure 1 is a longitudinal vertical section on the line 1—1 of Fig. 2 of a machine embodying the invention; Fig. 2 is a plan view of the same with the casing in section and parts removed to show the construction; Fig. 3 is a transverse vertical section on the line 3—3 of Fig. 2; and Fig. 4 is a section on the line 4—4 of Fig. 1 showing a portion of the casing in plan view.

As shown in the drawings 1 is a suitable rectangular casing provided with a top or cover 2 forming a platform upon which a chair may be placed for the user of the machine. At the forward end of the platform is a raised portion 3 having two oblong openings 4 through which the user may insert his feet and place them upon suitable shoe stands or supports 5 secured in place upon longitudinal sills 6 beneath the openings. Secured upon the sills or longitudinal supporting members 6 and also upon similar parallel members 7 at each side of the casing are guide-ways 8 for reciprocable frames or carriages 9 and 10. At the extreme rear end of the machine within the casing is an electric motor 11 provided with a pinion 12 on its shaft engaging a large gear 13 on a crank shaft 14 mounted in bearings upon the sills 6 and 7 and extending across the machine. This crank shaft is provided with three cranks to which connecting rods 15 are attached, the opposite ends of said rods being pivotally attached to the rear ends of the carriages 9 and 10. The center carriage 9 is arranged to reciprocate in its guideways longitudinally of the frame between the shoe stands and the two side carriages 10 are reciprocated longitudinally of the frame adjacent to the outersides of the two shoe stands. Upon each carriage 10 is a vertically extending supporting wall 16 along its outer edge and a similar parallel wall 17 along its inner edge at a short distance from the shoe stand. Secured to the wall 17 near its rear end is a stationary brush 18 and mounted in an opening in the wall just forward of the brush 18 is a brush 19 pivotally attached to the wall to turn upon a vertical axis within the opening, said pivots 20 for the brush being located intermediate its ends. The supporting wall 17 is secured to the carriage to slide thereon toward and from the fixed wall 16 and four supporting rods 21 are attached at one end to the wall 17 and extend horizontally therefrom through openings in the wall 16. Coiled springs 22 are sleeved upon the rods 21 between collars 23 on the rods and the wall 16 to normally hold the wall 17 pressed laterally of the carriage toward the shoe stand to bring the brushes 18 and 19 into yielding contact with a shoe on the stand. The pivoted brush 19 has a limited swinging movement within its opening in the wall, said movement being limited by suitable stops 24 on the outer side of the wall to engage the ends of the brush.

The carriage 9 is provided with a movable wall 17 at each side, said walls carrying brushes 18 and 19 mounted in the manner described and the rods 21 for holding these walls 17 are supported and guided by a central fixed wall 25 on the carriage. The crank to which the double carriage 9 is attached is set oppositely to the cranks to which the single carriages 10 are attached, and the carriage 9 is therefore reciprocated in a direction opposite that in which the side carriages are simultaneously moved. Each shoe is engaged along each side and brushed by the reciprocating brushes carried by the carriages, the pivoted brushes 19 engaging the toe portion of the shoe and turning upon their pivot to follow the curve of the shoe.

Mounted to turn freely upon a vertically extending fixed shaft 26 located adjacent to the rear end of the heel of each shoe stand, is a rotatable brush 27 having a sprocket

wheel 28 secured to its lower end engaged by a sprocket chain 29 which extends forwardly over a sprocket 30 on a vertical shaft 31 mounted in a bracket 32 secured to the casing frame. These sprocket chains 29 are attached at 33 to the sides of the carriage 9 so that when the carriage is reciprocated the chains are moved and the brushes 27 revolved thereby. The shafts 31 are also turned by the sprocket chains and motion is transmitted from these shafts to rearwardly extending horizontal shafts 34 mounted in bearings on the brackets 32, by beveled gears 35. The shafts 34 extend rearwardly from their brackets over the toe portion of each shoe stand and secured upon this projecting portion of each shaft is a circular brush 36 to engage and brush the toe portion of the shoes upon the stands. The direction in which the brushes 27 and 36 are revolved is changed with the change in the direction of movement of the carriage 9 and the reciprocating brushes 18 and 19 for brushing the sides of the shoe are arranged to engage the revoluble brushes 27 and 36 as they pass the same, the brushes 18 engaging the brush 27 and the brushes 19 engaging the brush 36. A suitable table or plate 37 extends over the brushes 36 and is provided with an opening directly over each brush. Receptacles 38 are pivoted at one end to the plate 37 by pivot bolts 39 to rest upon the surface of the plate and slide thereon, turning upon their pivots inward from over the openings in the plate. These receptacles are open at their lower side and are adapted to contain suitable cakes 40 of blacking, the cakes being held in the receptacles by open frame 41 fitting in the bottom of the receptacle and sliding upon the surface of the plate 37. When these receptacles are turned to bring them into alinement with the openings in the plate 37, the brushes will engage the cakes of blacking through the openings in the retaining frames 41 and taking the blacking therefrom will deposit it upon the toe of the shoe. These brushes will also deposit blacking upon the reciprocating brushes 19 which in turn will deposit it upon the sides of the shoe at the toe portion.

Located adjacent to the rear side of the brushes 27 and below the same, are receptacles 42 for liquid blacking, and extending upward in the axis of each of these receptacles is a boss having a bore in which a rod 43 is adapted to slide longitudinally. Secured upon the upper end of each of these rods 43 is a dauber 44 consisting of a cylindrical body provided with an exterior covering of felt or wicking 45. The daubers are each free to revolve upon its rod 43 and when in raised position is in engagement with the brush 27. When in lowered position the daubers are immersed in the liquid blacking in the receptacles 42 and their exterior coverings take up a quantity of the blacking which, when the daubers are raised is deposited upon the bristles of the brushes 27. These brushes deposit the blacking upon the heel of the shoe and also upon the reciprocable brushes 18 which in turn deposit it upon the sides of the shoe at the heel portion.

The daubers 44 are automatically raised and lowered by means of longitudinally extending bars 46 slidable at their ends in suitable guides 47 extending downward from the sills 6. There are four of these bars 46, one at each side of each of said sills and mounted in suitable hangers 48 extending downward from these sills are cross shafts 49 and 50. Motion is transmitted from the crank shaft 14 to the shaft 49 by means of a train of gears 51, said gears being arranged to reduce the speed so that the shaft 49 will be turned at a very slow speed relative to the crank shaft, preferably at the rate of sixty revolutions of the crank shaft to one revolution of the cross shaft. Motion is transmitted from the shaft 49 to the shaft 50 by means of a longitudinal shaft 52 and beveled gears 53 and 54 on the cross shafts and longitudinal shaft. Carried by the bars 46 is a cross member or plate 55 in a position to engage the lower ends of the rods 43 upon which the daubers 44 are mounted and upon the cross shafts 49 and 50 are arms 56 adapted to engage the lower edges of the bars 46 when the shafts are turned and raise said bars vertically in their guides 47. The raising of the bars 46 brings the cross plate 55 into engagement with the lower end of the rods 43 and raises the daubers out of the receptacles 42 into engagement with the brushes 27. A cross plate 57 similar to the plate 55 rests upon the bars 46 adjacent to the forward ends of said bars and secured to this plate 57 is a vertically extending rod 58 which slides freely through a guide bearing 59 on a cross member of the supporting frame. Secured to the upper end of the rod 58 is a cam frame 60 slidable vertically through a guide opening 61 in the plate 37. The ends of the cam frame 60 are formed with slanting or inclined surfaces 62 to engage cam projections 63 having similarly inclined faces, upon the receptacles 38.

When the bars 46 are raised by the engagement of the arms 56 therewith, the plate 57 carried by said bars will also be raised and carry the rod 58 to the upper end of which the cam frame 60 is secured, vertically upward. The inclined ends of the frame are thus brought into engagement with the cam members 63 on the receptacles 38 and said receptacles will be swung outwardly upon their pivots 39 into alinement with the openings in the plate 37 directly over the brushes 36. The cam members on

the receptacles are held in engagement with the ends of the cam frame 60 by cables 64 which are attached at one end to the receptacles 38 and passing over pulleys 65, extend downward and are attached at their lower ends to the rod 58 or other member moving vertically with the cam frame.

The parts being in the position shown in Fig. 1, the operator inserts his feet through the openings 4 placing his shoes firmly upon the shoe stands beneath. The motor then being started, the brushes 18 and 19 at each side of each shoe will be rapidly reciprocated, the brushes 18 taking up blacking from the rotatable brushes 27 which are in engagement with the daubers 44. The forward brushes 19 receive blacking from the brushes 36 which are being rapidly revolved in contact with the cakes of blacking in the receptacles 38. The blacking is thus deposited evenly over the sides of the shoes by the brushes 18 and 19 and upon the top of the toe portion of the shoes by the brushes 36 and upon the heels of the shoes by the brushes 27. As the shafts 49 and 50 turn carrying the arms 56 downward the daubers 44 gradually fall and the receptacles 38 are turned inward from over the openings above the brushes 36 by the cables 64. Through the medium of the sprocket chains 29 the brushes 27 and 36 are revolved in one direction upon rearward movement of the carriage 9 and in the opposite direction upon the forward movement of said carriage thus causing these brushes to contact with the shoe evenly and it will be noted that the brush 36 when in contact with the brush 19 at one side is revolved toward said brush 19, that is, its upper side is turning downward toward the reciprocating brush and will operate to brush the blacking from the reciprocating brush directly upon the shoe and the bristles of the reciprocable brush will be combed and straightened out by the revoluble brush. During one-half of the revolution of the shafts 49 and 50, the blacking devices are inoperative, that is, the receptacles 38 are turned out of engagement with the brushes 36 and the daubers 44 are in lowered position. The side brushes are rapidly reciprocated and after depositing the blacking upon the shoes they effectually polish the sides and after the devices which supply the blacking to the brushes 27 and 36 are moved out of engagement therewith, said brushes will, by being continuously revolved in contact with the shoes, effectually polish the toe and heel portions.

What I claim is:—

1. In a polishing machine, the combination of a shoe support, reciprocable brushes at each side of said support, means for reciprocating said brushes, a horizontally disposed rotatable brush supported above the toe portion of said support to engage the upper side of a toe of a shoe and to engage the reciprocable brushes, and means for depositing blacking upon said rotatable brush.

2. In a polishing machine, the combination of a shoe support, reciprocable brushes at each side of said support, means for reciprocating said brushes in opposite directions, a brush rotatable upon a horizontal axis and adapted to be engaged by said reciprocable brushes at one end of their movement, and means for rotating said brush and reversing the direction of its rotation in timed relation to the movement of said reciprocating brushes.

3. In a polishing machine, the combination of a shoe support, reciprocable brushes at each side of said support, means for reciprocating said brushes, means for supplying blacking to said brushes, and means for automatically moving the supplying means into and out of operative position in timed relation to the movement of the brushes.

4. In a shoe polishing machine, the combination of a shoe support, reciprocable brushes at each side of said support, means for reciprocating said brushes, a horizontally disposed rotatable brush supported in the path of the reciprocable brushes to engage the same, means for rotating said brush, means for supplying blacking to the rotatable brush, and means for automatically moving said blacking supplying means into and out of operative position in timed relation to the movements of the brushes.

5. In a polishing machine, the combination of a shoe support, reciprocable brushes, means for reciprocating said brushes, a brush rotatable upon a vertical axis adapted to be engaged by the reciprocable brushes, means for rotating said brush actuated by the reciprocation of the brushes and operating to reverse the direction of rotation thereof in timed relation to the movement of the reciprocable brushes, a member for supplying blacking to the rotatable brush movable into and out of operative relation thereto, and means for automatically moving said member in timed relation to the actuation of the brushes.

6. In a polishing machine, the combination of a shoe support, a carriage reciprocable adjacent to said support, brushes on said carriage, a horizontally disposed rotatable brush in the path of said brushes to engage the same, and means for transmitting motion from the carriage to rotate the brush and alternately change the direction of its rotation with the change in the direction of movement of the reciprocable carriage.

7. In a polishing machine the combination of a shoe support, a reciprocable carriage adjacent to said support, means for reciprocating the carriage, a brush mounted upon the carriage, a rotatable brush supported in a horizontal position to extend longitudi-

nally of the support and engage the other brush, and means for transmitting motion from the carriage to the rotatable brush comprising a sprocket chain attached to the carriage.

8. In a polishing machine, the combination of a shoe support, reciprocable brushes ateach side of said support, means for reciprocating said brushes, a rotatable brush adjacent to said support in the path of the reciprocable brushes, a plate adjacent to the periphery of the rotatable brush having an opening, a receptacle for blacking movable upon said plate into and out of alinement with said opening, and means for automatically moving said receptacle in timed relation to the movement of the brushes.

9. In a polishing machine, the combination of a shoe support, reciprocable brushes at each side of said support, means for reciprocating said brushes, a brush rotatable upon a horizontal axis adjacent to said support to engage the reciprocable brushes, means for rotating said brush actuated by the reciprocation of the reciprocable brushes, a plate extending over said rotatable brush and provided with an opening opposite the brush, a receptacle for blacking pivotally attached to said plate to swing into and out of alinement with said opening, and means for swinging the receptacle in timed relation to the actuation of the brushes.

10. In a polishing machine, the combination of a shoe support, reciprocable brushes at each side of said support, means for reciprocating said brushes, a brush rotatable upon a horizontal axis to engage the reciprocable brushes, means for rotating said brush and reversing the direction of its rotation in timed relation to the actuation of the reciprocating brushes, a receptacle for blacking movable in a horizontal plane into and out of engagement with said rotatable brush, and means for moving said receptacle in timed relation to the actuation of the brushes.

11. In a polishing machine, the combination of a shoe support, a reciprocable carriage at each side of the shoe support, brushes mounted upon said carriages, means for reciprocating the carriages, a brush adjacent to the heel portion of the shoe support rotatable upon an upwardly extending axis, a brush adjacent to and above the toe portion of the shoe support rotatable upon a horizontal axis, means for supplying blacking to each of the rotatable brushes, and means for actuating the rotatable brushes comprising vertical shafts, sprocket wheels on said shafts, and a sprocket chain engaging said sprocket wheels and attached intermediate its ends to one of said carriages.

In testimony whereof I affix my signature in presence of two witnesses.

ALFRED D. WASHINGTON.

Witnesses:
LEWIS E. FLANDERS,
ANNA M. DORR.