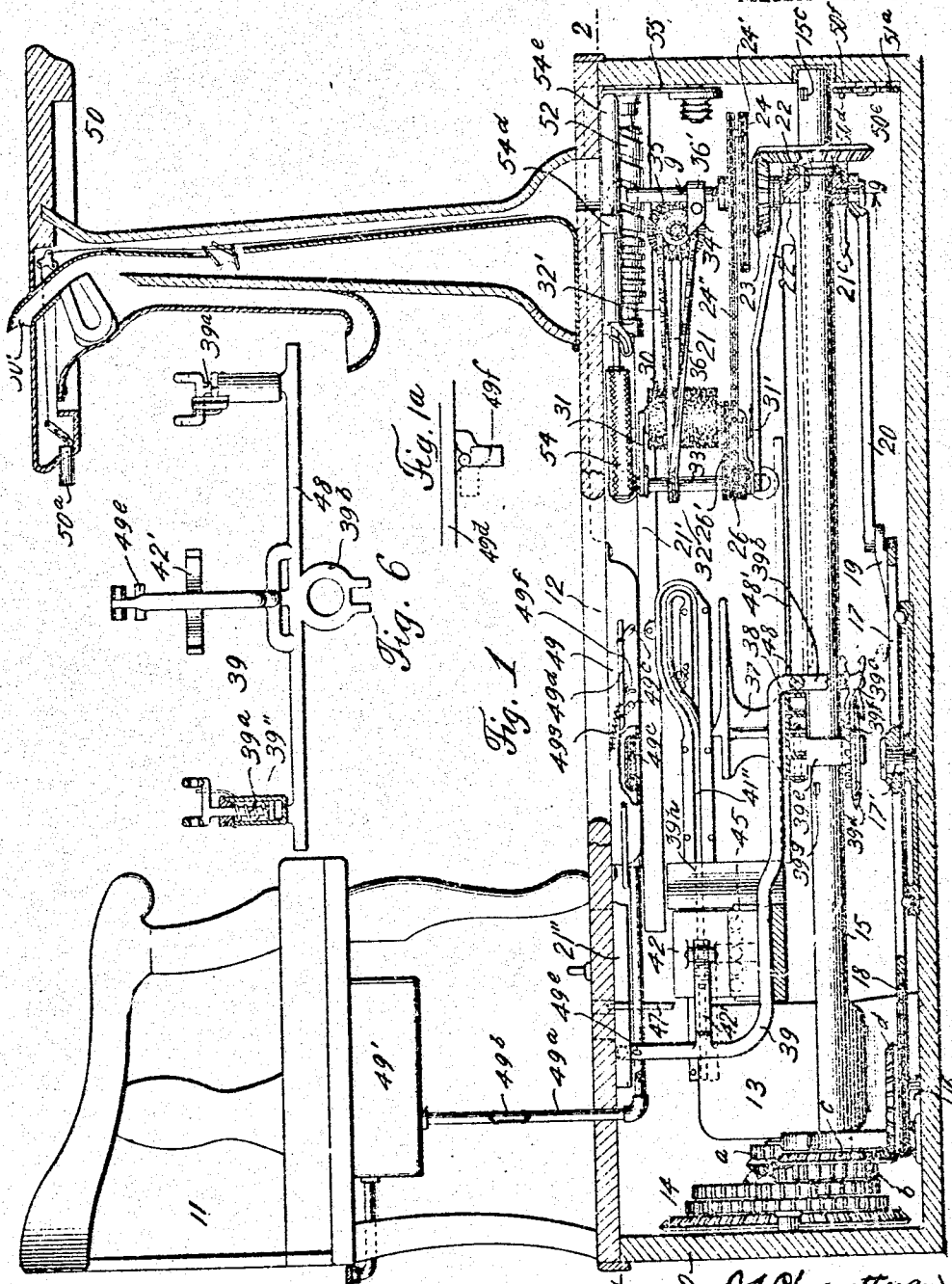


J. A. CHOQUETTE & J. C. DALLAS.
 BOOT AND SHOE POLISHING MACHINE.
 APPLICATION FILED FEB. 19, 1910.

968,540.

Patented Aug. 30, 1910.

4 SHEETS—SHEET 1.



Witnesses
E. Larson
M. J. Taylor

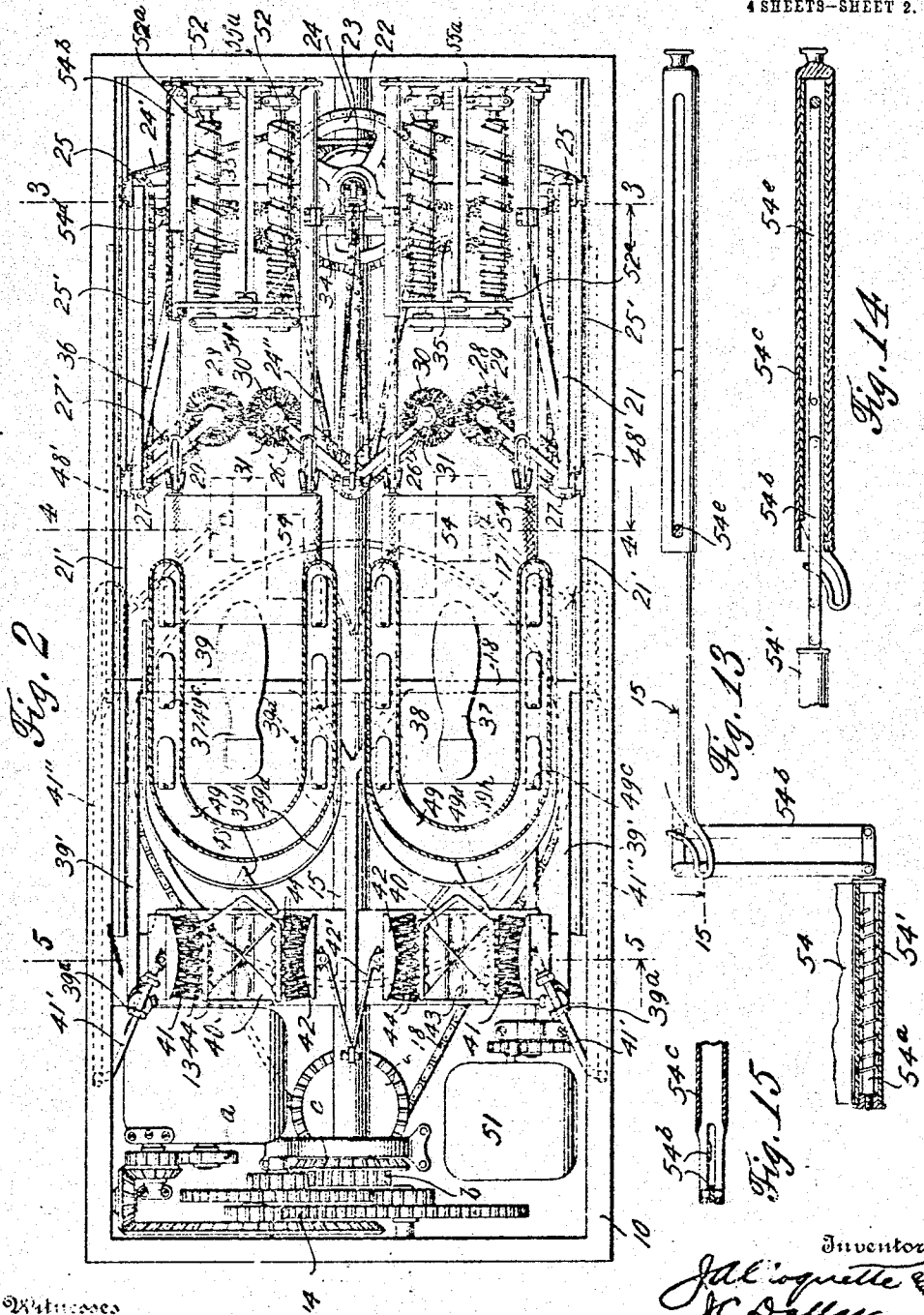
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 Attorney

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4 SHEETS-SHEET 2.



Witnesses

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4 SHEETS—SHEET 3.

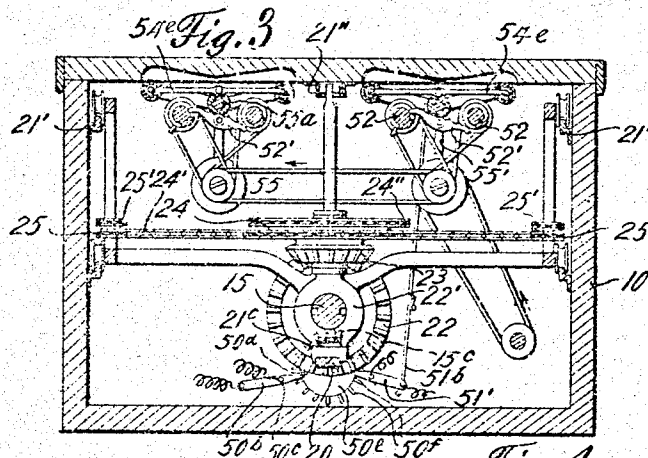


Fig. 10

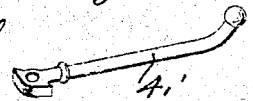


Fig. 11

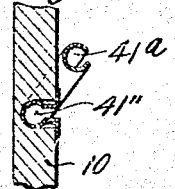


Fig. 12

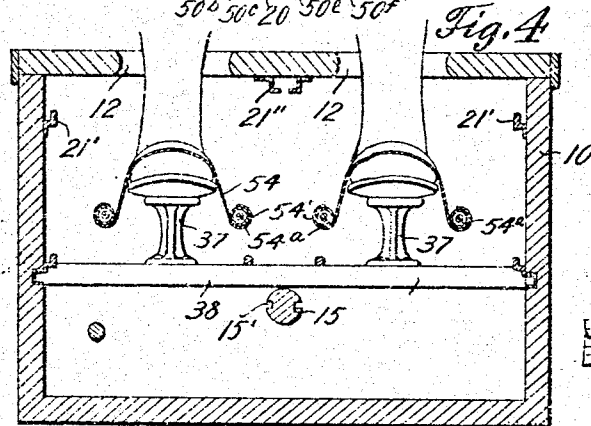
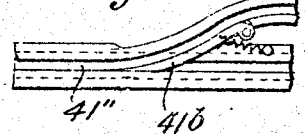
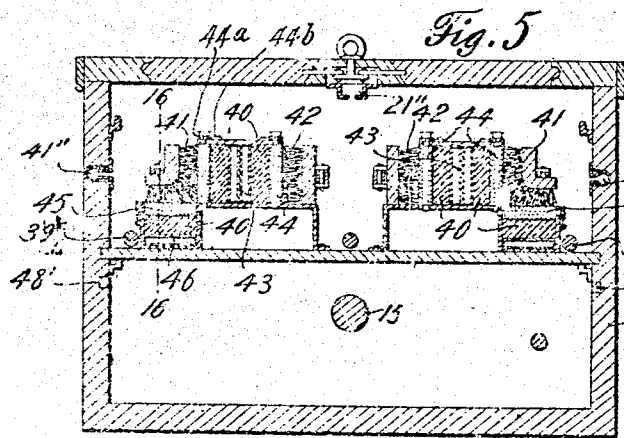


Fig. 4



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4 SHEETS—SHEET 4.

Fig. 7

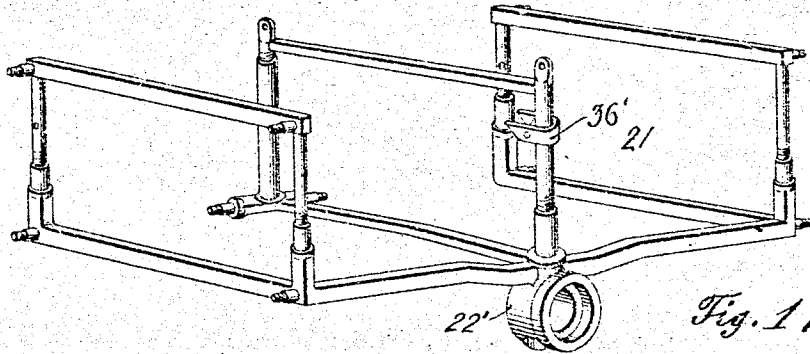


Fig. 17

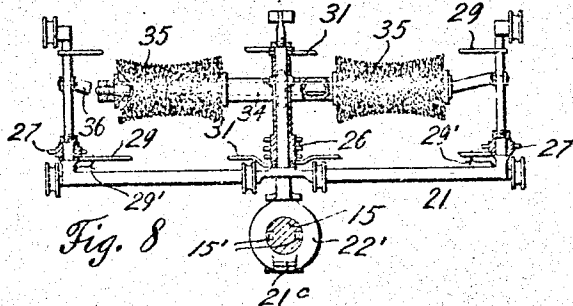
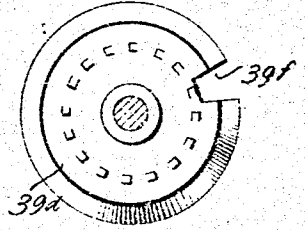


Fig. 8

Fig. 9

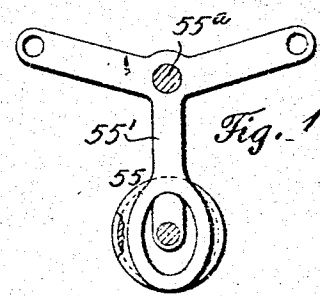
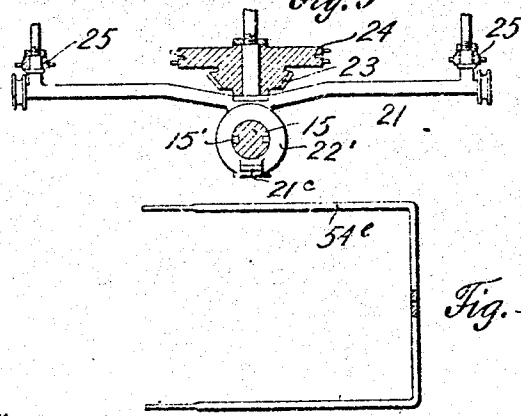


Fig. 18

Fig. 19

Witnesses
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UNITED STATES PATENT OFFICE.

JOSEPH ARTHUR CHOQUETTE AND JACK CONSTANTINE DALLAS, OF BOSTON,
MASSACHUSETTS.

BOOT AND SHOE POLISHING MACHINE.

968,540.

Specification of Letters Patent. Patented Aug. 30, 1910.

Application filed February 19, 1910. Serial No. 544,768.

To all whom it may concern:

Be it known that we, JOSEPH ARTHUR CHOQUETTE and JACK CONSTANTINE DALLAS, subjects of the King of England and King of Greece, respectively, and both residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Boot and Shoe Polishing Machines, of which the following is a specification.

This invention relates to automatic boot and shoe polishing machines, and has for its objects to economize the space required for a machine of this type, to provide devices whereby the complete cycle of operations may be performed in the shortest period of time, to provide for a better polish than has heretofore been obtainable in automatic machines, and generally to improve such machines in other minor respects, all as will be hereinafter fully described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a substantially central vertical longitudinal section; Fig. 1^a is a detail of certain valve operating devices hereinafter described; Fig. 2 is a horizontal section substantially on the line 2—2 of Fig. 1; Fig. 3 is a transverse section on the line 3—3 of Fig. 2; Fig. 4 is a similar section on the line 4—4 of Fig. 2; Fig. 5 is another transverse section on the line 5—5 of Fig. 2; Fig. 6 is a rear elevation of the paste applying carriage; Fig. 7 is a perspective view of the brush carriage; Fig. 8 is a rear elevation, partly in section, of the same carriage; Fig. 9 is a detail section on the line 9—9 of Fig. 1; Fig. 10 is a perspective view of one of the side paste applying brush arms; Fig. 11 is a sectional detail of the guide for said arm; Fig. 12 is an inside elevation of said track or guideway; Fig. 13 is an elevation of the burnishing operating device; Fig. 14 is a view of the same, partly broken away, and with certain parts in another position; Fig. 15 is a sectional detail on the line 15—15 of Fig. 13; Fig. 16 is a vertical section on the line 16—16 of Fig. 5, the brush being omitted; Fig. 17 is a plan view of the clutch disk; Fig. 18 is an elevation of the mechanism for operating the burnishing cloth; Fig. 19 is a plan view of one of the yokes for projecting the burnishing cloth.

Throughout the following description and on the several figures of the drawings simi-

lar parts are referred to by like reference characters.

The machine comprises a casing 10 adapted to rest at its bottom upon any suitable support, the casing being substantially rectangular. Upon one end of the casing is provided a seat 11, in front of which the top of the casing is provided with foot openings 12, it being the purpose to polish simultaneously the two shoes of the person seated upon the seat 11.

Within the casing are the mechanical devices for successively operating upon the shoes as by brushing the dust therefrom, then applying the paste and liquid dressing, and then subsequently brushing the shoes by a series of brushes and finishing them by the application of a flexible fabric or pad.

Any suitable power means may be employed for operating the machine, but at 13 is shown a conventional form of electric motor, whereby by virtue of any suitable intermediate reduction gearing 14, a main shaft 15 may be operated while the motor 13 is running. The gearing referred to is illustrated in one form in Fig. 2 and includes a spur gear *a* on the motor shaft at one end of the series and a spur gear *b* connected to the said shaft at the other end of the series. While the motor is operated at high speed the shaft will be operated at a comparatively slow speed, and the number of rotations of the shaft will be determined definitely for the several steps to be performed in the full cycle of operations of the machine. It has been found in practice that sixteen rotations of the shaft are a suitable number for the above purposes, at the end of which the motor 13 will be thrown out of operation.

The purpose of the motor just mentioned is to operate the brushes employed for initially dusting the shoes and polishing them and to operate the mechanism for applying paste. These mechanisms are driven from the shaft 15 in any suitable manner. The means illustrated includes a bevel gear *c* connected to the shaft and meshing with a similar gear *d* mounted upon a stationary support 16 extending upwardly from the bottom of the casing. The gear *d* is of double nature, including a sprocket member which drives a large master gear 17 by means of a sprocket chain 18. The sizes of the gear members just mentioned are so

proportioned that while the shaft 15 turns say sixteen times the master gear 17 will be rotated four times. The master gear is mounted upon a stationary pivot 17' on the bottom of the casing and secured to the master gear is a crank 19 to which is connected a pitman 20, the opposite or forward end of which pitman is connected to a carriage 21 which rolls backward and forward within the casing supported and guided in such movements by track rails and anti-friction rollers, two of said rails 21' being upon or near the sides of the casing and another of the rails 21'' being connected centrally to the under surface of the top of the casing. By the means just described it will be understood that the carriage 21 will be drawn back and forth once for each complete rotation of the master gear, and since the operation of the crank 19 and pitman 20 constitutes a harmonic movement the starting and stopping of the carriage in its reciprocations will be easy.

Operating upon the front end of the shaft 15 is a bevel gear 22, said gear being journaled in a hub extension 22' of the carriage. The gear just mentioned is connected to the shaft by means of keys or splines which slide along one or more grooves 15' of the shaft, whereby the gear will be rotated in unison with the shaft. Meshing with the gear 22 is a gear 23 connected to which or integral therewith is a double sprocket wheel 24. This latter element is journaled for rotation on a central vertical post of the carriage. The double sprocket member 24 operates one sprocket chain 24' which leads laterally on both sides to a pair of sprocket wheels 25 journaled upon the front corner posts of the carriage 21, and another sprocket chain 24'' which leads to and drives a three-part sprocket wheel 26 journaled on the rear center post of the carriage.

The wheels 25 are connected by sprocket chains 25' to gears 27 journaled upon the rear corner posts of the carriage, which wheels in turn drive a pair of side brushes 28 through sprocket chains 27', the brushes being journaled on frames 29 adapted to swing within certain limits around said rear corner posts against the tension of any suitable form of springs 29'. The sprocket member 26 driven from the chain 24'' drives a pair of chains 26' connected respectively to a pair of inner rotary brushes 30 carried by frames 31 which swing within certain limits around the rear central post of the carriage against the tension of springs 31'. Another sprocket wheel 32 connected to the quill 33 on which the gear member 26 is mounted and driven from the chain 24'' has connected to it a chain 32' which extends forwardly and drives a shaft 34 to which are connected a pair of horizontal brushes 35, said shaft being supported upon a frame 36

pivoted at or near the rear corner posts of the carriage 21 and supported in operative position at its front end by any suitable means, as by a bracket 36' shown in Fig. 7. Each pair of brushes 28 and 30 operates upon the sides of the shoe and each brush 35 operates upon the front and upper portion of the shoe, said operation being performed while the carriage is being drawn back and forth by means of the master gear and pitman. The springs used in connection with the brushes 28 and 30 will be strong enough merely to hold the brushes in easy contact with the shoes so as not to injure the feet and yet not permit any portion of the shoes, usually polished, to go untouched.

A pair of foot rests 37 are stationarily supported beneath the casing openings 12 upon one or more bars 38 extending across the entire casing and supported upon the side walls thereof just above the shaft 15.

A dauber carriage 39 is located normally in the rear upper portion of the casing and carries a series of dauber brushes which receive a charge of blacking or paste from cakes thereof shown at 40, a plurality of cakes being held in proximity to the brushes for each side of the machine. One brush 41 of each set is adapted to apply the paste to the outside and front of the shoe, such brush having an inwardly and a downwardly projecting portion. The other brush 42 of each set is adapted to apply paste to the inner side only of the shoe. A pair of springs 43 serve to force the paste into engagement with the series of vertically disposed rollers 44, so arranged as to be rotated in one direction only by the force of the brushes when the latter move rearwardly therefrom, but since the rollers are held from rotation by the brushes when the latter move forwardly the brushes will scrape or remove the paste from the rollers in the latter operation. As shown in Fig. 5 the rollers 44 are provided with ratchets 44^a and thus prevented from rotation in the one direction by pawls 44^b. When the rollers rotate in the manner just described they will become charged with paste from the cakes 40 ready to deliver the same to the brushes subsequently. The brushes 41 will be charged with the paste from below in a manner similar to that just described in connection with the vertical rollers 44, by means of horizontal rollers 45. A follower 46 has associated therewith an index or indicating device 47 adapted to be projected through the top of the casing to indicate to the operator that the paste is becoming exhausted.

The carriage 39 is mounted to roll centrally upon the central rib or track 21''. The front portion of the dauber carriage comprises a transverse rail 48, guided at its ends in grooves or trackways 48' in the side walls of the casing. The brushes 42 are car-

ried by flexible arms 42' connected to the rear portion of the carriage at its center and upon said arms the brushes may oscillate slightly on vertical pivots. The brushes 41 are peculiarly mounted (as set forth below) upon arms 41', having vertical pivotal connection with the brushes similar to that of the brushes 42 but whose outer ends are guided in track-ways 41'' in or secured to the side walls of the casing, whereby the brushes 41 will be caused to not only apply the paste to the sides of the shoes but to the top or front portions thereof. The arms 41' are supported substantially horizontally in a fork or pair of eyes at the upper end of a telescopic arm 39^a carried at the rear ends of carriage arms 39'. The arm or post 39^a is provided with a light spring 39'' to assist in maintaining the arm 41' substantially horizontal. Each of the track-ways 41'' curves upwardly and inwardly toward its front end as indicated at 41^a in Fig. 11, thence curves downwardly in alinement with the main straight portion thereof. A movable switch point 41^b, indicated in Fig. 12, is so arranged as to direct the arm 41' in its forward movement upward and inward along the portion 41^a, but permits the arm to pass rearwardly along the straight track without obstruction. The post 39^a is adapted to move vertically with respect to the main arm 39' and also to rotate slightly therein by virtue of the spring 39''. Said post 39^a maintains the arm 41', which is slidable longitudinally therein, in a substantially horizontal position throughout the movements of the arm 41' along the track-way 41. By virtue of the construction just referred to each of the brushes 41 is caused to slide along the outside of the shoe, thence across the top of the shoe, thence downwardly over the toe and thence rearwardly along the side of the shoe. The brush 42 for the same shoe will simply apply the paste along the inside of the foot in both the forward and rearward movements of the carriage. Guides 39^b direct the brushes 41 and 42 onto the paste rollers on the return movement of the carriage 39.

The dauber carriage is adapted to be operated from the aforesaid carriage 21 by direct connection therewith in any suitable manner. The carriage for this purpose is shown as being provided with a forwardly and downwardly extending tongue 39^b, which may embrace or surround the main power shaft 15 and to which is connected a clutch 39^c which includes a pair of jaws pivoted together and provided with a spring tending to hold the two jaws closed. When the carriage 39 is in its normal stationary position the two jaws of the clutch 39^c are adapted to be held apart by means of a disk 39^d pivoted on a vertical pivot upon a yoke 39^e which extends down from the main supporting frame 38. The disk 39^d is provided with

a notch or opening 39^f which at a certain predetermined period will admit the rear ends of the arms of the clutch and permit the spring to cause the jaws to engage and hold upon a headed projection 21^c of the main carriage. The disk 39^d is provided with a circular series of teeth which project upwardly toward the shaft 15 and which are operated upon step by step by means of a single tooth 39^g on the shaft. The arrangement and timing of the disk and clutch will be such that the notch of the disk will permit the clutch to operate when the headed projection 21^c of the main carriage arrives in proximity to the dauber carriage on its first trip. The two carriages will therefore be clutched together during the first return or forward movement of the carriage 21 and during the second rearward movement thereof, so that the dauber carriage will be operated positively forwardly and backwardly and then since the rear ends of the clutch arms will be by this movement brought into engagement with the unnotched portion of the disk 39^d the clutch will be thrown off of the headed extension 21^c during the subsequent movements of the main carriage 21.

As intimated above the complete cycle of operations including the operations of all the brushes presupposes that the master gear 17 shall be rotated four times, with the result that the carriage 21 will be reciprocated four times in each direction. The first double reciprocation of the carriage 21 will cause the rotary brushes to clean the shoes, and the paste will be applied immediately thereafter as above described. After the paste has been applied the rotary brushes will operate to distribute the paste and polish the shoes with respect to the paste during the remaining reciprocations of the carriage 21.

At or near the end of the forward reciprocation of the dauber carriage 39, that is to say at the middle of the period when the paste is being applied, it is desirable to apply a spray of liquid to moisten the paste and to facilitate the even distribution thereof on the shoes. This may be accomplished in any convenient manner, but as illustrated there is shown at 49 a U-shaped tank or distributing head around the edge of each openings 12. The said head may be kept supplied with liquid from any suitable source, as from a tank 49' through a pipe 49^a, and a sight glass 49^b may be located at any convenient point in order to see that the head and pipe are supplied with liquid. By elevating the tank as high as possible, as for instance adjacent the seat 11, considerable force may be provided whereby the liquid will be sprayed upon the shoes without the necessity for any special mechanical forcing devices. Each

of the heads 49 will be provided with as many valved ports 49^c as may be necessary, all of which may be connected by a bail 49^d whereby they will all be operated simultaneously as for instance when acted upon by the carriage 39. For this purpose the rear end of the carriage may be provided with lugs or finger 49^e which will engage corresponding lugs 49^f on the bails of the two liquid heads. The placing of said lugs will be such as to cause the carriage to swing the bails upwardly and forwardly a suitable distance at the completion of the forward reciprocation of the carriage 39 against the tension of a spring 49^g, which will restore the valves to the normal position, the lugs 49^f being jointed to prevent operation by the carriage 39 on the return.

A stand or table 50 may be located on the front end of the casing upon which may be various advertising matter or which may be employed for a support for a newspaper or the like. One of the primary functions of the table however is to carry the devices for starting the operation of the motor 13. A coin slot 50^h is suitably located to receive a coin of a denomination intended to provide service for a single customer of the machine. The coin may operate through any suitable coin controlled devices, the same not constituting *per se* any part of the present invention. After depositing the coin a push button 50ⁱ may be pushed to cause a switch blade 50^j pivoted at 50^k to complete a circuit through the motor 13.

From the foregoing description it will be understood that the operation of the motor will cause rotation of the shaft 15 until the motor is stopped by breaking the circuit therethrough. The switch blade may be provided with a projection on the opposite side of its pivot adapted to be engaged by a stud 50^l carried on the face of a wheel 50^m mounted upon a stud on the end of the casing. The wheel 50^m will be provided with as many teeth 50ⁿ as will correspond to the number of rotations of the shaft 15 desired for a complete cycle of operations, and said projections will be operated step by step one space for each rotation of the shaft 15 by means of a single tooth 15^o carried by said shaft. At the end of the intended operation of the motor 13 the wheel 50^m will throw the switch 50^j to break the circuit, stopping said motor.

An independent motor 51, which may be and preferably is of a considerably less power than the primary motor 13, will be started to operate the finishing and polishing devices. The switch blade 51^p may be so arranged as to be thrown to complete the circuit through the motor 51, by operation of the wheel 50^m simultaneously with the throwing out of the blade 50^j, the wheel for such purpose being provided with a stud 51^q

on the opposite side from the aforesaid switch operating stud. The switch blade 51^p will have connected to it any suitable means whereby it may cause breaking of the circuit through the motor 51 at the end of the intended cycle of operations of the finishing devices. To this end a wire 51^r is shown as connected to the switch blade, the other end of the wire to be acted upon in a manner hereinafter set forth.

The auxiliary motor 51 is connected in any suitable manner by reduction gearing to pairs of screws 52 journaled longitudinally below the top of the casing in any suitable stationary bearings, one pair being provided for the mechanism for each side of the machine. Each of the screws 52 is formed with a thread having a quick pitch throughout the greater portion of its length, the thread terminating at the rear end in a slow pitch, and the screw at each end of the threaded portion being reduced in diameter in order to permit the shifting dog 52^s to swing past the screws successively for the purpose of causing the screws to reverse the direction of the cloth carriage 53, to which the dog 52^s is pivoted. One of the screws through the dog 52^s will cause the carriage 53 to be operated in one direction and a finger 52^t connected to the end of the other screw will then cause the dog to be shifted to the screw having said finger, whereby the carriage 53 will be caused to move in the opposite direction. A polishing cloth 54 is intended to be reciprocated transversely over the front part of the shoe and for this purpose the ends of the cloth are connected to a pair of rollers 54^u and the rollers are provided with springs to maintain the cloth in proper tension and thereby equalize pressure or strain thereon throughout its length. Said rollers are carried by a pair of arms 54^v which normally lie close below the top of the casing when the device is in its forward inoperative position, but which are caused by certain levers and links 54^w having a parallel movement to be brought down upon the shoes when the carriage 53 is drawn rearwardly by operation of the screws. The arms 54^v and the parts which support them are given an up and down reciprocatory movement in alternation so as to operate the cloth in a manner similar to ordinary hand operation. A pair of tubular levers 54^x are suspended from the top of the casing by hangers 54^y and links 54^z and their connecting bars 54^{aa} slide longitudinally through said tubular members 54^x, the forward ends of said connecting bars being connected by a cross member carried by the carriage 53 aforesaid.

The mechanism which operates the screws may be so arranged as by an eccentric and slot connection 55 to oscillate a rock arm 55^{ab}

journaled on the forward end of a stationary guide member 55^a whereby the tubular members 54^a and parts carried thereby will be vibrated simultaneously with the feeding movement of the screws. The initial operation of the screws will be to extend the cloth 54 quickly and readily over the shoes and the slow threaded portions of the screws will then serve to give the proper finishing polish to the shoes at a slower feeding movement and after this the quick portions of the screws will restore the cloth and parts which carry it to its normal inoperative position. When the cloth operating devices are thus restored to the housed or inoperative position the switch wire 51^b will be operated to throw the switch 51^c to break the circuit through the auxiliary motor, and the entire cycle of operations will be completed.

The several parts of the mechanism may be made of any suitable materials and the relative sizes and proportions, as well as various details of construction, may be modified to a considerable extent within the scope of the claims hereinafter made.

We claim:

1. In a machine of the class described, the combination of a motor, means to start said motor, a main power shaft driven from the motor, a carriage movable lengthwise on said shaft, a series of brushes carried by said carriage, means mounted upon and operated by said shaft for operating said brushes while the carriage is moving, and means operated from said shaft for moving the carriage, substantially as set forth.

2. In a device of the character set forth, the combination of a motor, a main power shaft, means to drive the power shaft from the motor at a reduced speed, a carriage movable lengthwise of the shaft, a plurality of brushes carried by the carriage, means mounted upon and slidable along said shaft for operating the brushes, and means operated from said shaft for reciprocating the carriage, said means including a master wheel, a crank on said wheel, and a pitman connected to said crank and said carriage.

3. In a shoe polishing machine, the combination with a motor and a series of rotary brushes operated from the motor, of means to reciprocate said series of brushes, paste applying devices including a series of brushes, and means to connect the paste applying devices to the means for reciprocating the first mentioned brushes for the automatic application of paste to the shoes during only certain reciprocations of the rotary brushes.

4. In a shoe polishing machine, the combination of a carriage, a plurality of rotary brushes carried thereby, means to reciprocate said carriage, a reciprocating dauber carriage, paste applying devices carried by the latter carriage, and an intermittent clutch

serving to connect said carriages for simultaneous reciprocation during certain reciprocations of the first mentioned carriage.

5. In a shoe polishing machine, the combination of driving devices including a main power shaft, a carriage movable to and fro parallel to said shaft, a series of rotary brushes carried by the carriage, means to drive said brushes from the shaft, a dauber carriage movable to and fro parallel to the shaft, clutch mechanism to temporarily connect the two carriages together for simultaneous reciprocation, and means associated with said shaft and operated therefrom for determining the clutching connection between the carriages.

6. In a shoe polishing machine, a carriage, means including a main power shaft and connections therefrom to reciprocate said carriage, a dauber carriage, a clutch whereby the said carriages are intermittently connected for simultaneous reciprocation, and means controlling the operation of said clutch, said means including a mutilated disk, and means to rotate the disk step by step from said shaft.

7. In a shoe polishing machine, means to apply paste to the shoes and means to apply liquid dressing during the application of the paste, said latter means including a liquid containing head, a series of valves therefor, and means operated by the paste applying means to control the application of liquid.

8. In a shoe polishing machine, the combination of paste applying devices and means to apply liquid dressing during the application of the paste, the latter means including a liquid containing head having a series of valves normally closed, an elevated tank, a tube leading from the tank to the head, and devices connected to said valves, said devices being adapted to be actuated by contact to operate the valves during the operation of the paste applying devices.

9. In a shoe polishing machine, dauber mechanism comprising a carriage, means to reciprocate said carriage, a pair of brushes carried by the carriage for operation upon opposite sides of a shoe, and means to cause one of said brushes to apply paste along one side of the shoe and to pass thence laterally across the top and toe of the shoe to apply paste thereto.

10. In a machine of the class described, finishing polisher devices including a pair of feed screws having threads of varying pitch at different portions thereof, a carriage slidable longitudinally by said screws, reversing mechanism connected to the carriage and adapted to engage and be operated by the said screws successively, means to rotate the screws, a pair of arms movable with said carriage and extending substantially

parallel to the screws, a burnishing cloth connected to said arms for reciprocation thereby, and means to oscillate said arms simultaneously with the rotation of the screws.

- 5 11. In a burnishing device for a shoe polishing machine, the combination of a pair of arms, a pair of spring rollers connected thereto, a cloth connected at its ends to said rollers, means to project the cloth over a
10 shoe quickly, means to oscillate said arms to reciprocate the cloth across the shoe, the arms and cloth being projected longitudi-

nally of the shoe at a comparatively slow speed during such reciprocation thereof across the shoe, and means to drive the 15 aforesaid devices.

In testimony whereof we affix our signatures in presence of two witnesses.

JOSEPH ARTHUR CHOQUETTE.
JACK CONSTANTINE DALLAS.

Witnesses:

GEO. L. BEELER,
FRANCIS S. MAGUIRE.