No. 794,540. PATENTED JULY 11, 1905.

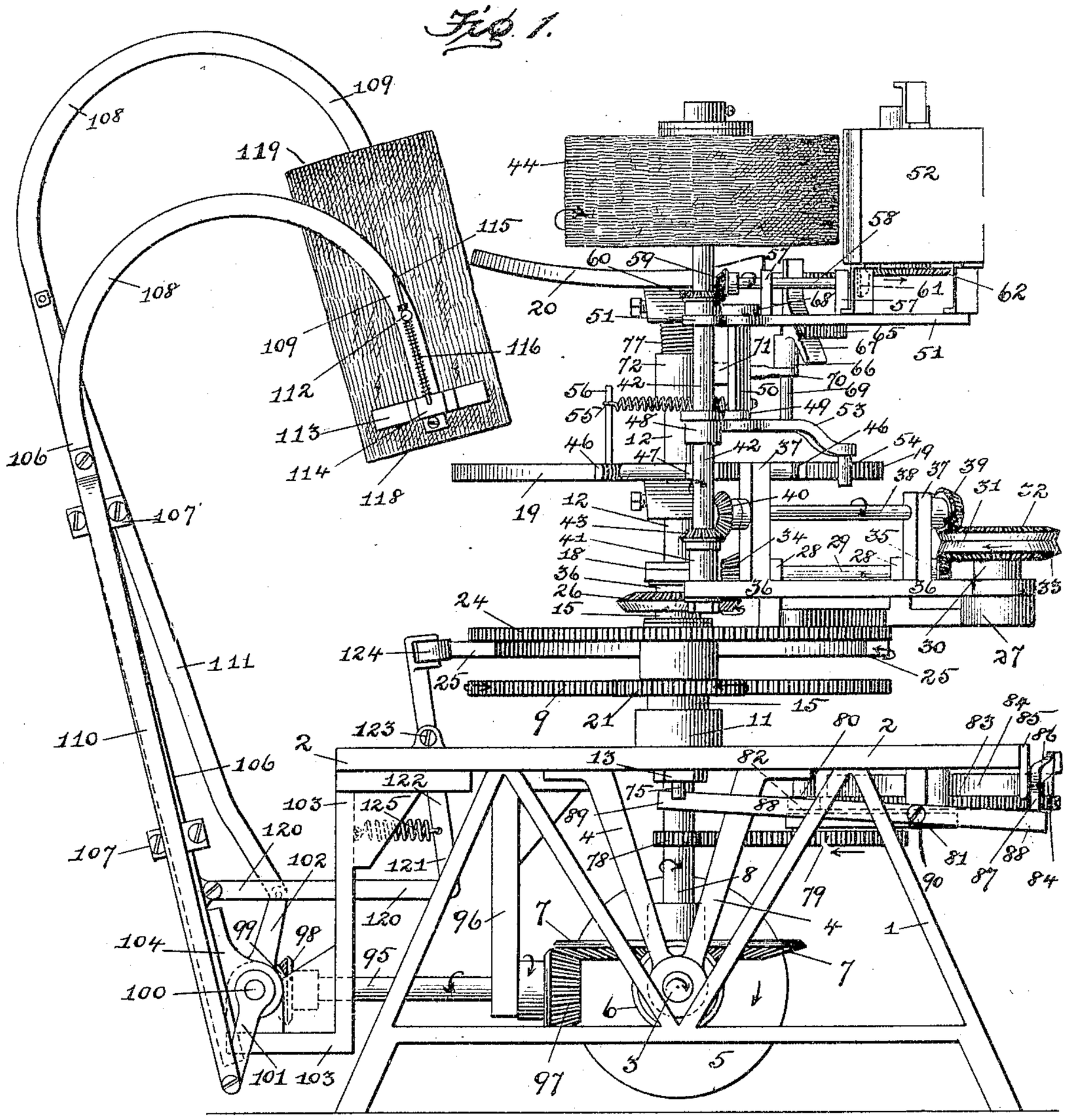
# H. R. OLIVER & G. P. OHLGART.

# MACHINE FOR POLISHING BOOTS OR SHOES.

APPLICATION FILED AUG. 12, 1904.

4 SHEETS—SHEET 1.

Fig. 1.




Witnesses
Edwin L. Bradford
G. Ferdinand Vogt.

Inventors:
Herbert R. Oliver
George P. Ohlgart
By Mann & Co.,
Attorneys

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4 SHEETS—SHEET 2.

Fig. 2.

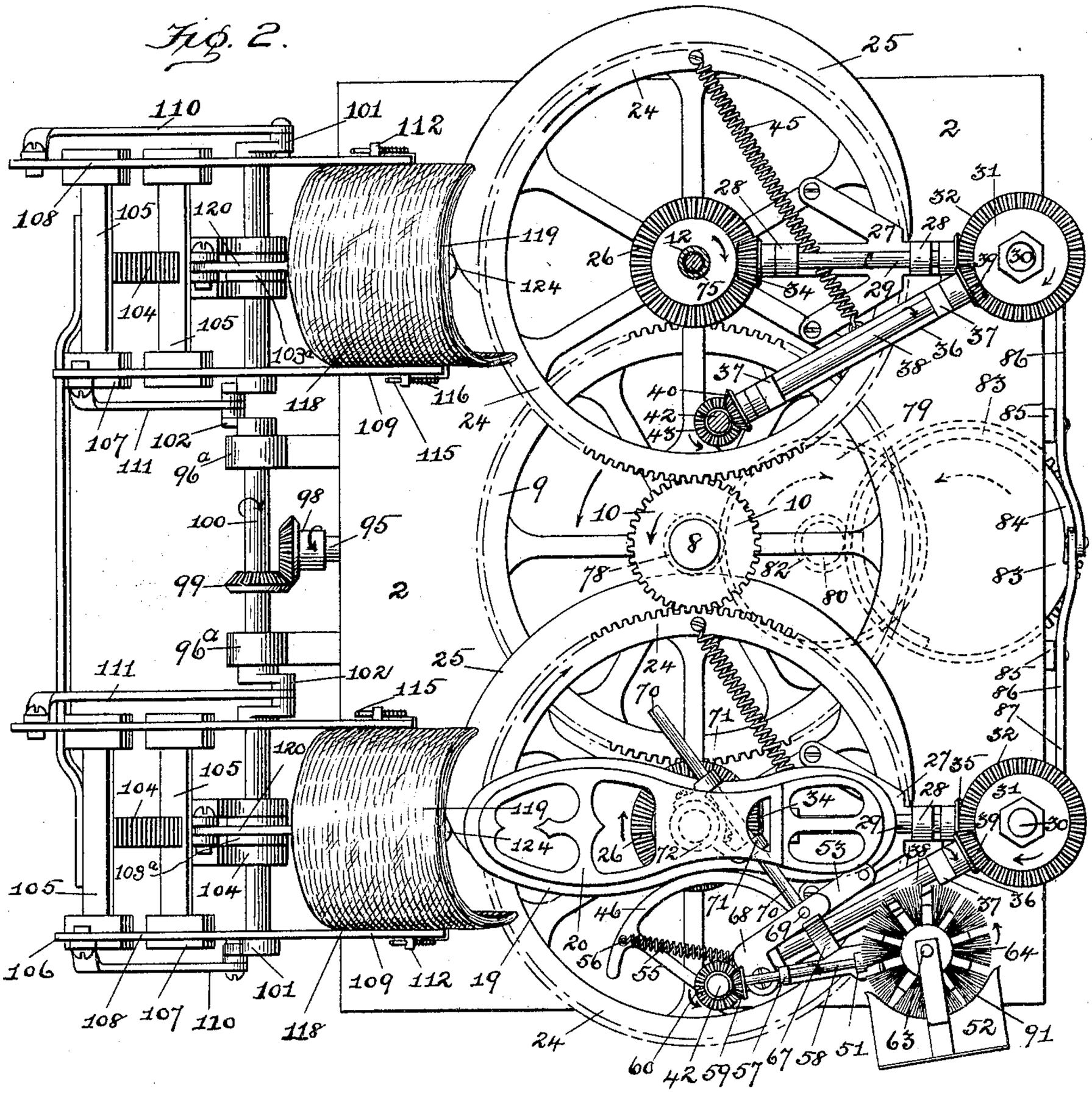
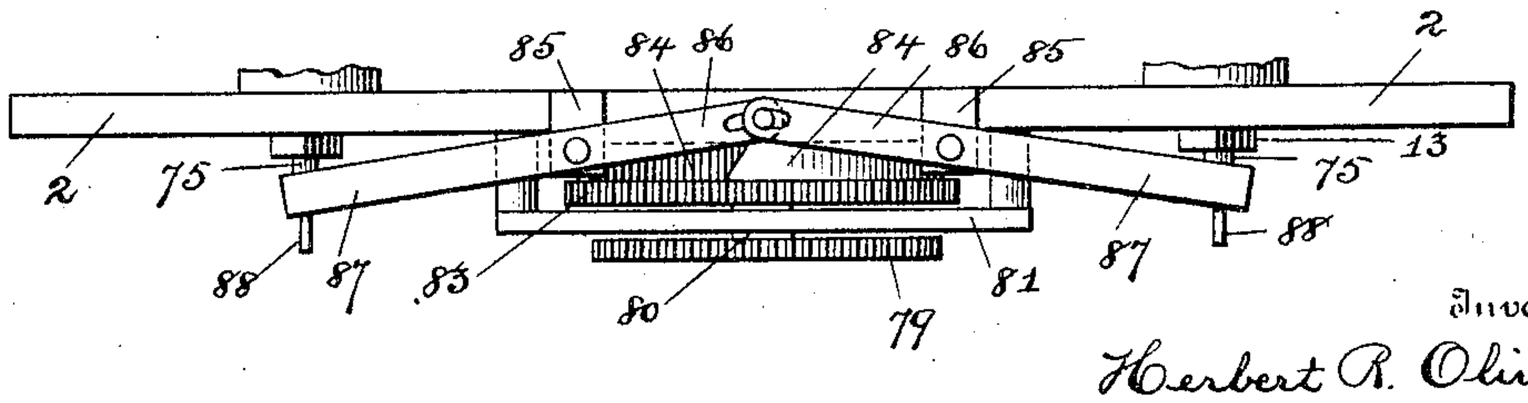



Fig. 3.

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4 SHEETS—SHEET 3.

Fig. 4.

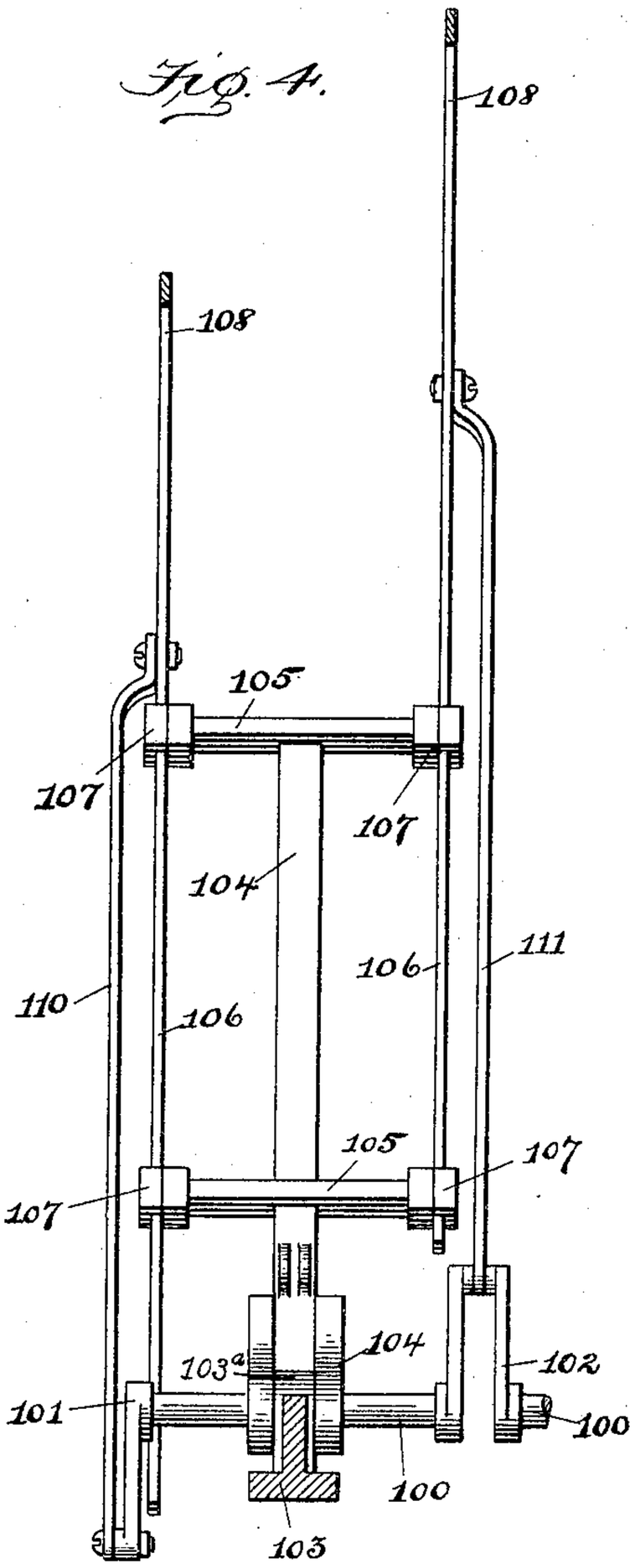



Fig. 5.

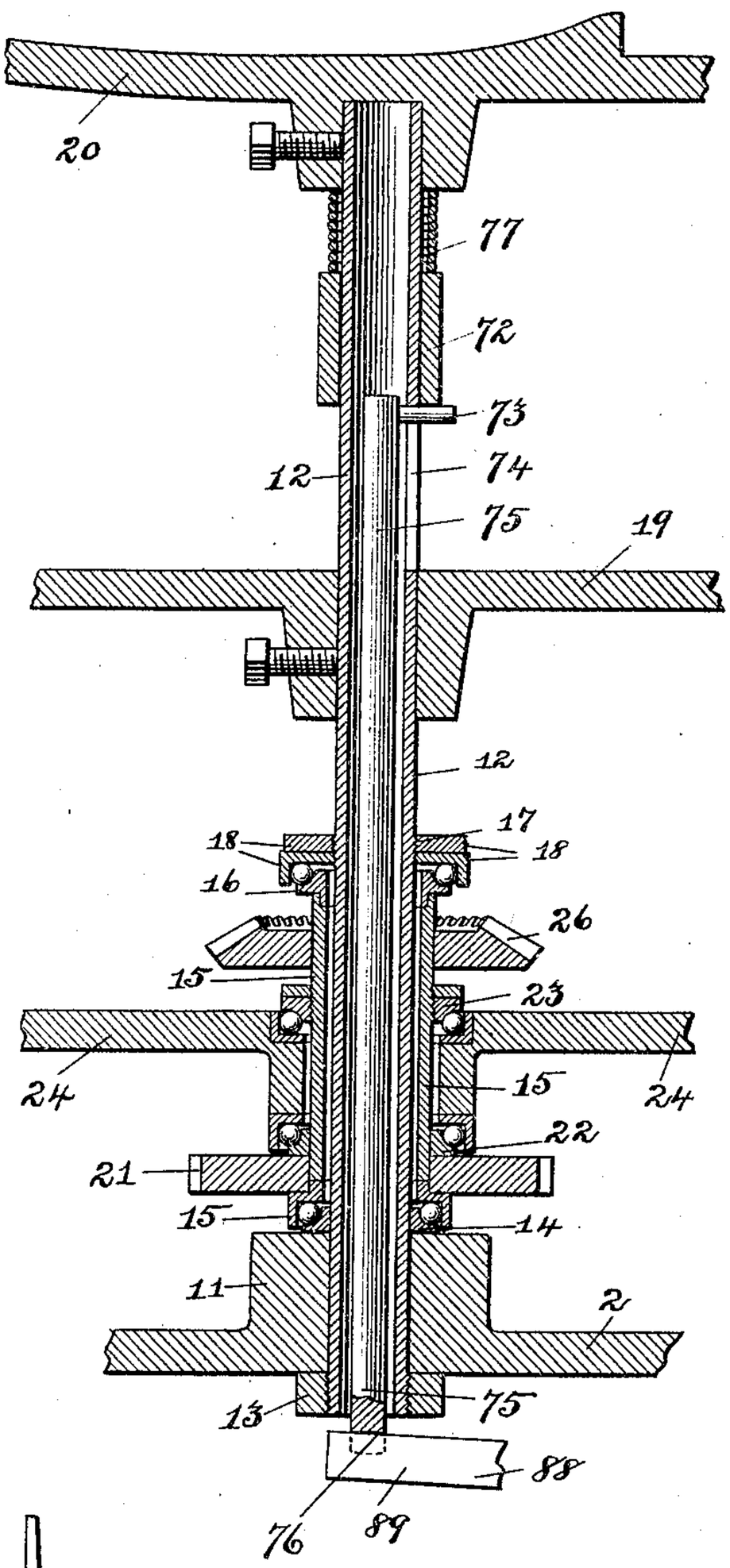
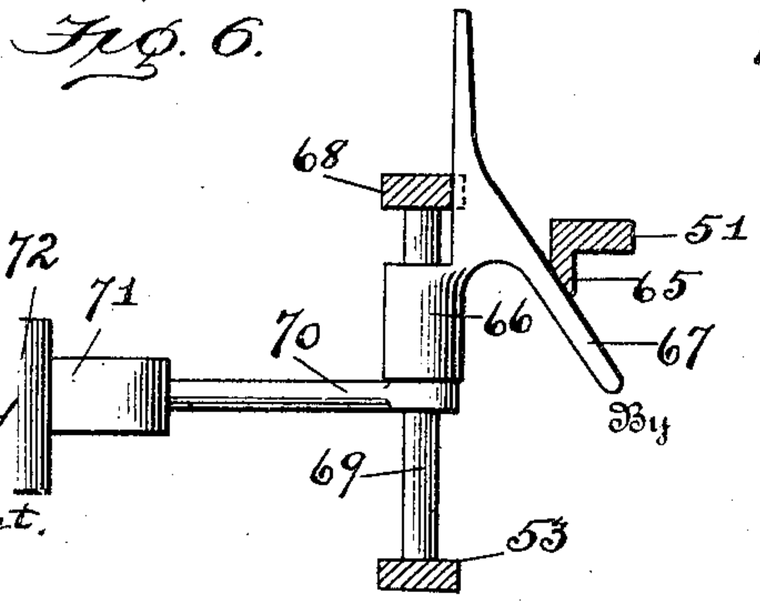



Fig. 6.

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4 SHEETS—SHEET 4.

Fig. 7.

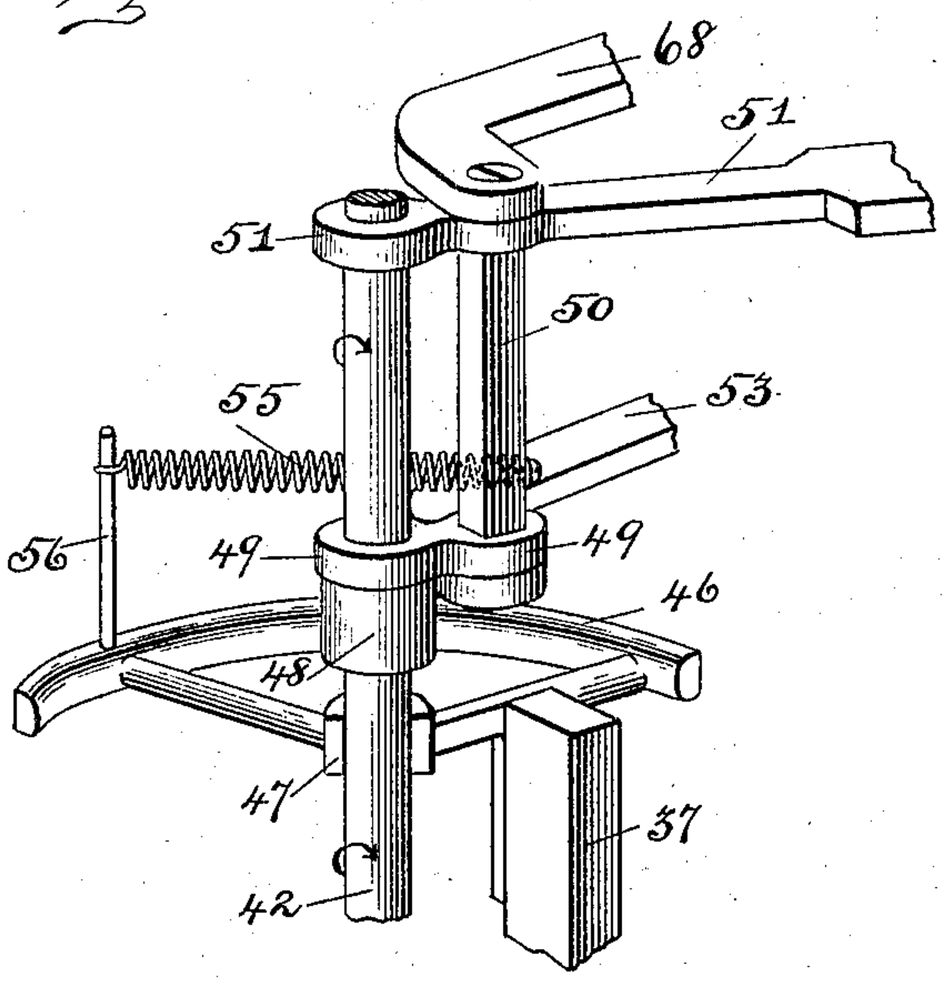



Fig. 8.

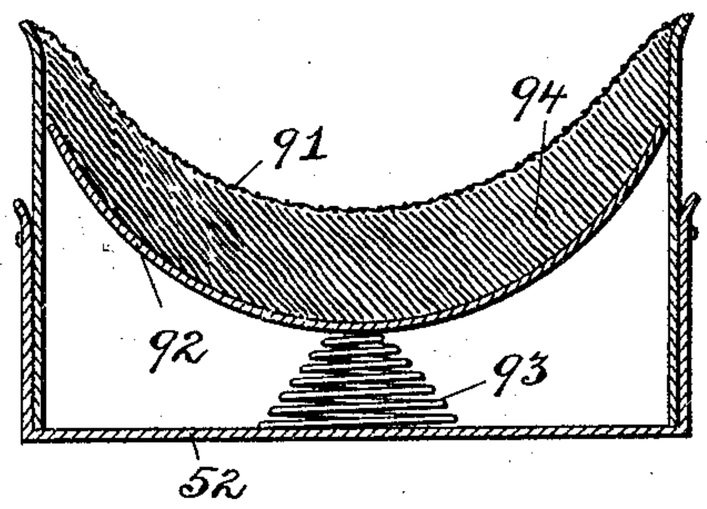



Fig. 9.

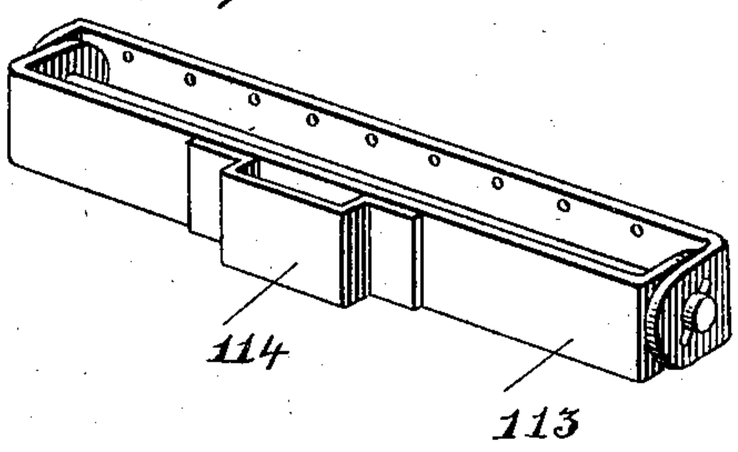
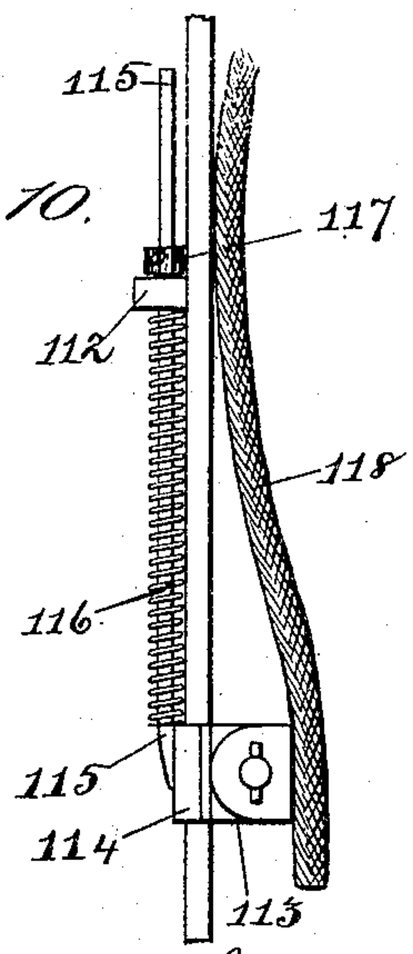



Fig. 10.

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Edwin L. Bradford

G. Ferdinand Vogt.

Inventors:

Herbert R. Oliver

George P. Ohlgart

By Munn & Co,

Attorneys

No. 794,540. Patented July 11, 1905.

# UNITED STATES PATENT OFFICE.

HERBERT R. OLIVER AND GEORGE P. OHLGART, OF BALTIMORE, MARYLAND; SAID OHLGART ASSIGNOR TO SAID OLIVER.

## MACHINE FOR POLISHING BOOTS OR SHOES.

SPECIFICATION forming part of Letters Patent No. 794,540, dated July 11, 1905.

Application filed August 12, 1904. Serial No. 220,458.

*To all whom it may concern:*

Be it known that we, HERBERT R. OLIVER and GEORGE P. OHLGART, citizens of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Machines for Polishing Boots or Shoes, of which the following is a specification.

This invention relates to a machine for polishing boots or shoes, and has among its objects to improve the construction and operation of such machines and make them more rapid and successful in their cleaning and polishing operation.

Another object of the invention is to combine in a single machine a rotary brush or buffer device, which during the cleaning or polishing operation may be made to move in a path around the shoe to operate on the vertical surfaces, and a reciprocating device which will operate on the toe to polish the latter by a rubbing action.

With these and other objects in view the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the machine; Fig. 2, a plan view; Fig. 3, a rear elevation of a portion of the mechanism for shifting the polish-applying mechanism; Fig. 4, an elevation of the mechanism for reciprocating the toe-polisher; Fig. 5, a vertical sectional elevation of the tubular support and parts sustained thereby; Fig. 6, a diagrammatical view of parts of the polish-applying mechanism; Fig. 7, a detail perspective view of portions of the mechanism for guiding the rotary polisher and polish-applying devices around the shoe. Fig. 8 shows a sectional detail of the polish-receptacle; Fig. 9, a perspective detail of the head for holding the toe-polishing pad, and Fig. 10 a detail of the toe-pad-adjustment device.

Referring to the drawings by numerals, 1 designates a vertical frame of any suitable construction for supporting a horizontal bed-plate 2, by means of which the various operating parts are supported, as will hereinafter more fully appear. A horizontal shaft 3 has position beneath the bed-plate 2 and is preferably sustained by suitable brackets 4, which are secured to and depend from the bottom of the bed-plate. One end of this shaft 3 is provided with a pulley 5, by means of which it is revolved or turned over in a direction toward the rear of the bed-plate, as indicated by a dart in Fig. 1. A bevel-gear 6 is carried on the horizontal shaft 3 and revolves in a vertical plane, and said gear meshes with a bevel-gear 7 on the lower end of a vertical shaft 8 and transmits rotary motion to the latter. This shaft 8 extends up through the bed-plate 2 and has substantially a central position with respect to the latter, as clearly seen in Fig. 2. The upper end of the vertical shaft 8 carries a large gear 9, which latter revolves in a horizontal plane just above the bed-plate 2. Immediately above the large gear 9 and also on the shaft 8 is a pinion 10, which revolves in the same direction as the gear 9.

It will be seen that power is transmitted from the horizontal shaft 3 below the bed-plate to the gear 9 and pinion 10, which are centrally located above the bed-plate.

It is deemed advisable to here state that duplicate mechanism is provided above the bed-plate for cleaning and polishing the boots or shoes and that in Fig. 2 one of these mechanisms is fully shown, except the rotary polisher has been removed, while a portion only of the other mechanism is shown in order that those parts which are indistinct in one of said mechanisms may be clearly read in the other. Referring more particularly to Figs. 1, 2, and 5, one of these polishing mechanisms will now be described.

Projecting above the base-plate 2 and cast integral therewith (see Fig. 5) is a boss 11, which has position on the top surface of said plate. A stationary tube 12 has its lower end projecting down through said boss and also below the bottom surface of said plate, and a nut 13 on the end of said tube serves to prevent the tube from being withdrawn upwardly. A collar 14 surrounds the tube and rests on the upper surface of the boss, and said collar forms a cone-bearing for the reception of antifriction-balls on which the lower end of the sleeve 15 bears. This sleeve 15 surrounds the tube

12, and its upper end supports another cone-bearing collar 16, which is also provided with antifriction-balls. Adjacent this latter collar the tube 12 is provided with circumferential threads 17, to which bearing-plates 18, also surrounding the tube, are engaged. By means of these bearing-plates 18, sleeve 15, and collar 14 the tube 12 is retained in position above the bed-plate, and by adjusting the bearing-plates on the tube the wear on the antifriction-bearings may be taken up. It is to be understood that the tube 12 does not revolve, but is stationary and merely serves as a support. Above the plates 18 and rigidly secured to the stationary tube is a cam-plate 19, the outer edge of which has a shape approximating that of a shoe. At the extreme upper end the tube 12 supports a foot-rest plate 20, on which the shoe to be cleansed and polished is placed. Attached in any suitable manner to the lower end of the sleeve 15 is a pinion 21, which has position in the same horizontal plane as the central large gear 9. This pinion meshes with and is driven by said gear 9, and the revoluble motion imparted to the pinion causes the sleeve to be revolved around the tubular support 12. Just above the pinion 21 the sleeve is provided with cone-bearings 22 and 23, between which a gear 24 is supported, so as to be revolved around the sleeve and independently of the latter. This gear 24 is not attached to or revolved by the sleeve, but overlaps the large center gear 9 and meshes with and is driven by the pinion 10 on the end of the central vertical shaft 8. This gear 24 is provided at one side with a cam-surface 25, which projects laterally from the gear at a point below the teeth, and this cam-surface extends substantially half-way around the circumference of the gear and moves in a horizontal plane therewith, but passes beneath the pinion 10. The function of this gear 24 and cam 25 is to impart a swinging motion to the toe-polisher to bring the latter up over the toe and then permit it to swing away from the toe to permit the rotary polisher to pass and to also cause the polisher to move around the shoe. This feature will be presently more fully described in connection with the toe-polishing mechanism. A bevel-gear 26 is rigidly carried on the sleeve 15 and revolves therewith in a horizontal plane, and the revolution of this bevel-gear is utilized to revolve the brush or polisher, as will now be described.

A bracket 27 is secured rigidly on top of the gear 24, (see Figs. 1 and 2,) and this bracket is provided with two upwardly-projecting arms 28, which serve as bearings for a horizontal shaft 29. The outer end of the bracket 27 projects beyond the periphery of the gear 24 and is provided with a vertical stem 30, which supports a double-faced bevel-gear 31, having upper and lower beveled teeth 32 and 33, respectively. The inner end of the shaft 29 carries a beveled pinion 34, which meshes with the beveled gear 26, and the outer end of said shaft carries a beveled pinion 35, which meshes with the beveled teeth 33 on the lower surface of the double-faced gear 31 at the outer end of the bracket. An arm 36 is pivotally mounted on the stem 30 of the bracket 27 and is free to swing in a horizontal plane around said stem, and said arm is also provided with vertically-projecting bearings 37, which support a horizontal shaft 38. One end of this shaft 38 is provided with a beveled pinion 39, which meshes with the teeth 32 on the upper surface of the gear 31, while the other end of said shaft 38 is provided with a bevel-gear 40. The outer free end of the arm 36 carries a vertical bearing 41, in which the lower end of a vertical shaft 42 is mounted. This latter shaft is designed to support the polishing devices and brackets for securing the same, as will now be described. Just above the bearing 41 the shaft 42 is provided with a bevel-gear 43, which meshes with the gear 40 on the end of the shaft 38 and by means of which the vertical shaft is rapidly revolved. The upper end of this shaft 42 carries a polisher 44, preferably of some soft material, which will act as a burnisher and have all the good qualities of a brush, but which will not scratch, as brushes often do. A spiral spring 45 is connected at one end to the gear 24, and the other end of said spring is attached to the arm 36, which moves with the gear, and said spring serves to keep said arm drawn inwardly in a direction toward the cam-plate 19, and a segment-shoe 46, rigidly secured to the upper end of the bearing 37, (see Fig. 7,) contacts with the rim edge of said cam-plate and limits the inward movement of said arm. This segment-shoe 46 is provided with a semicircular hub 47, which partly surrounds the vertical shaft 42 and serves to steady said shaft as it moves in a path around the cam-plate. As the gear 24 revolves and imparts a rotary swinging motion to the bracket 27 the pivoted arm 36 and vertical shaft 42 are caused to move in a horizontal plane continuously around the tubular support 12; but by means of the spring 45, segment-shoe 46, and cam-plate 19 said arm and shaft are made to move through an irregular path that shall be parallel with the outline of the shoe, so that the polisher will always be in contact with an equal pressure against the shoe at all points.

In the operation of the machine it is proposed to first cause the polisher to travel around the shoe to wipe off the dust, then to apply the polish by means of a revolving brush or distributer by causing the latter to travel around the shoe while in contact therewith, then to remove or withdraw the polish-applying device and permit the polisher to continue its movement around the shoe to complete the polishing. The mechanism now to be described relates to a construction for

bringing the polish-applying device against the shoe and then withdrawing it to permit the polisher to complete the polishing operation. The number of circuits made by the polisher alone around the shoe and those made by the polisher and polish-applying device together is immaterial and may be varied; but a machine constructed in accordance with this invention and now in operation provides for eighteen circuits of the polisher around the shoe, one of which is made before the polish-applying device is brought into operation, four of which are made simultaneously with the polish-applying device in contact, and thirteen of which are made after the polish-applying device has been withdrawn.

Supported on the vertical shaft 42 just above the hub 47 of the segment-shoe is a collar 48, and an arm 49 is carried loosely on said shaft and rests on said collar, and said arm projects laterally beyond said collar and carries a vertical support 50, which extends upwardly in a direction parallel with and at the side of said vertical shaft 42. A bar 51 is also carried loosely by said shaft 42 and is secured to the upper end of the support 50, so that the arm 49, support 50, and bar 51 are all connected and may be moved together in a horizontal plane by turning on the shaft 42. The bar 51 projects laterally and toward the rear of the shaft 42 and is to be trailed, as it were, behind said shaft when the latter makes a circuit around the shoe during the polishing operation. The projecting or free end of this bar 51 carries a receptacle 52 for the polish or paste-blacking, as will presently be fully described. In the operation of the machine, as has heretofore been explained, the polish-applying device is only in the operative position to apply the polish for a limited period and not during the entire operation of polishing. It therefore becomes necessary to provide mechanism to shift the polish-applying device into and out of the operative position and also to guide it through a path parallel with the outline of the shoe as it follows the rotary polisher around the shoe. The mechanism for accomplishing these operations will now be described.

Projecting laterally from the arm 49 and rigidly secured thereto is a cam-rod 53, the end of which is provided with a downwardly-projecting pin 54, which contacts with the vertical edge of the cam-plate 19. It will be seen that as the cam-rod 53 is attached to the arm 49 any horizontal movement imparted to the pin 54 will impart a similar movement to the arm 49 and also to the bar 51 and polish-receptacle 52, and as the cam-rod is dragged behind the shaft 42 it will be moved outwardly by contact with the cam-plate 19 and will be kept in contact with said cam-plate by the spring 55, which is connected to the support 50, and a pin 56, projecting from the segment-shoe 46.

Projecting vertically from the bar 51 are two supports 57, which serve as bearings for a horizontal shaft 58. One end of this shaft 58 confronts the vertical shaft 42 and is provided with a bevel-gear 59, which meshes with a similar gear 60 on said shaft 42. The other end of said horizontal shaft 58 is also provided with a bevel-pinion 61, as seen in broken lines in Fig. 1, which meshes with a bevel-gear 62 on the lower end of a shaft 63, which carries the paste-applying brush 64. It will therefore be seen that the horizontal shaft 58 is revolved by the shaft 42 and revolution transmitted therefrom to the paste-applying brush 64.

It will be understood that the cam-rod 53 does not serve to entirely withdraw the brush 64 from contact with the shoe, but merely aids in guiding it around the shoe and in a direction parallel with the shoe.

The mechanism therefor for entirely withdrawing the paste or polish applying brush from contact with the shoe will now be described.

By reference to Figs. 1 and 6 it will be seen that the bar 51 is provided at one side with an incline-flange 65, which projects downwardly, and that at the side of said bar and flange is a head 66, provided with an inclined arm 67, which extends beneath the flange 65. It will therefore be seen that by vertically moving the head and arm 67 the bar 51 will be moved horizontally, so that if the arm 67 is raised the bar 51 and polish-brush 64 will be moved outwardly. This is accomplished through mechanism arranged in the following manner: A bar 68 is secured at one end to the support 50 and extends above, but substantially parallel with, the cam-rod 53, (see Fig. 7,) and a stem 69 extends vertically between said bar and cam-rod and rigidly connects the same. The head 66 is mounted on the stem 69 between the bar 68 and cam-rod 53 and beneath said head, and also working on the stem 69 is a rod 70. This rod extends in a horizontal direction from the stem 69 toward the tubular support 12, and the inner end of said rod passes freely through two arms 71, which project from a collar 72, carried on the tubular support 12, as best seen in broken lines in Fig. 2. It will also be noted by reference to said Fig. 2 that the rod 70 extends entirely through the arms 71 and beyond the latter. The necessity of providing a rod of this length arises from the fact that the distance between the bar 51, which carries the polish-receptacle, and the collar 72 on the tubular support 12 varies almost constantly during the sweep of the polish-receptacle around the shoe, and especially is this true as it passes around the toe or heel of the cam-plate 19. For this reason the rod 70 must be long enough to permit the head 66 to sweep around the ends of the cam-plate without withdrawing from the bearing-arms 71, which support it.

By referring to Fig. 5 it will be clearly seen that the collar 72 is movable vertically on the tubular support 12 and that, as shown, it is supported in the extreme elevated position by a pin 73, projecting through a slot 74 in the tubular support 12, and that the pin is carried on a vertical rod 75, which extends up through the tubular shaft, but is long enough to project slightly below the bed-plate 2 when in the elevated position. The lower projecting end of the rod 75 is provided with a cross-slot 76. A spiral spring 77 surrounds the tubular support 12 above the collar 72, and when the collar is raised said spring is compressed between it and the boss on the bottom of the foot-rest plate 20. By means of this spring 77 the collar 72, rod 70, and head 66 are all lowered and the bar 51 permitted to move inwardly to allow the polish-applying brush to contact with the shoe. It will be understood that Fig. 6 illustrates the devices in position to keep the polish-brush away from the shoe.

Referring now to Figs. 1, 2, 3, and 5, it will be explained how the rod 75 in the tubular support is raised and held in the elevated position until it is desired to apply the polish-brush. Below the bed-plate 2 and carried on the central vertical shaft 8 is a pinion 78, which meshes with and revolves a gear 79, which is mounted on the lower end of a short vertical shaft 80, which latter passes through a plate 81, secured below the bed-plate. On the upper end of the shaft 80 and above the plate 81 is a pinion 82, which meshes with a gear 83, also mounted to revolve above the plate 81. The gear 83 is provided on its top surface and around its rim edge with a vertically-projecting cam 84. It will be noted that this cam 84 extends about three-fourths of the way around the circumferential edge of the gear 83, and in the practical operation the movement of this gear and cam is very slow as compared with the speed or revolution of the gears 24 and shafts 42. This slow-moving gear 83 and cam 84 determine the period or time in which the polishing-brush is to contact with the shoe, as will now be described, it being remembered that as there are two polishing devices the mechanism now to be described is duplicated.

At the rear of the bed-plate 2 and depending therefrom is a block 85, to which a lever 86 is pivoted. One end of this lever projects over the top surface of the gear 83 and terminates at a point where it will contact or be in the path of the cam 84. The other end, 87, of said lever projects laterally and downwardly in an inclined direction and rests on the end of a lever 88, which extends beneath the bed-plate, with its inner end 89 (see Fig. 1) extending through the slot 76 in the lower end of the rod 75. The lever 88 is pivoted at 90 near its outer end, so that when the end 87 of lever 86 is depressed by the cam 84 passing beneath the end 83 the rod 75 will be raised against the action of the spring 77 and the polishing-brush 64 moved away from the shoe and held in the removed position as long as the cam 84 is passing beneath the end of the lever 86. When the cam has passed, the spring 77 will push the rod 75 down and permit the polishing-brush to move toward the shoe to apply the polish.

The receptacle to contain the polishing medium will now be described, it being understood, however, that while we prefer to employ a special form of device which is particularly useful when the polishing medium employed is of the well-known paste form it is to be understood that the invention is not to be restricted in this particular and other forms of polish-receptacles may be employed.

The receptacle 52, as has heretofore been described, is carried at the outer or free end of the bar 51 and is movable with the bar in a direction toward or away from the foot-rest plate 20 and also trails behind the vertical shaft 42 and rotary polisher 44 when they make a circuit around the shoe. This receptacle is provided at one side with a perforated concave surface 91, preferably formed of fine wire mesh, and on the interior said receptacle is provided with a plate 92, which is movable therein and which is designed to be continually pressed toward the inner side of the perforated concave surface. In the present instance a conical spring 93 serves to press the plate toward the concave surface, and as the polishing medium 94 is placed in the receptacle between the concave surface and plate 92 the continuous pressure of the plate will keep the polishing medium fed up against the perforated plate. The brush 64, as seen in Fig. 2, revolves with its circumferential surface in contact with the concave surface of the receptacle, and in sweeping over the wire mesh gathers the polish and applies it to the shoe.

The mechanism now to be described relates to the toe-polishing devices, which in practical operation are caused to automatically swing up over the toe and reciprocate an arched pad or band over the toe to rub and polish the latter. This band is also operated and timed so as to move away from the toe to permit the rotary polishing devices to pass when making a circuit around the shoe. A horizontal shaft 95 is supported by a suitable center bracket 96 below the bed-plate 2, and the inner end of said shaft carries a bevel-gear 97, which meshes with and is revolved by the gear 7 on the end of the vertical shaft 8. The outer end of said horizontal shaft 95 carries a bevel-gear 98, which meshes with a similar gear 99 on a crank-shaft 100. This crank-shaft extends through suitable bracket-bearings 96[a] and in a horizontal direction at the front of the machine and is provided with two cranks 101 and 102 for each toe-polishing

device. A bracket 103 is secured to the bottom of the bed-plate 2 and depends therefrom, and at its lower end said bracket is provided with a bearing 103ª, through which the crank-shaft 100 extends and by means of which said shaft is supported in a horizontal plane below the bed-plate. An arm 104 is provided at its lower end with a bearing, which is pivotally mounted on the crank-shaft adjacent the bracket-bearing 103ª, and said arm is capable of swinging on the crank-shaft through a vertical plane and in a direction toward or away from the bed-plate. This arm extends upwardly from said shaft and carries two cross-arms 105, one above the other, which latter, together with the arm 104, serves as a swinging or reciprocating frame for a purpose now to be described. Two bars 106 are supported one at each side of the swinging frame, and said bars extend through vertical slots in the end plates, which form bearings 107 at the ends of the cross-arms 105. The upper end 108 of each bar is curved inwardly and then downwardly, as at 109. A connecting-rod 110 connects one of the bars 106 with the crank 101, while another connecting-rod 111 connects the other bar with the crank 102. It will be noted, particularly by reference to Figs. 1 and 4, that the cranks 101 and 102 are arranged to project from the shaft 100 in diametrically opposite directions, so that when the crank-shaft revolves one connecting-rod 110 will move in one direction, while the other connecting-rod 111 will move in the opposite direction, so that the two bars 108 will be reciprocated simultaneously, but in opposite directions, with respect to each other. The upper curved ends 109 of these bars 106 project over the bed-plate 2 and are spaced from each other, so that when moved inward, as will presently be described, they will have positions with one at each side of the foot-rest plate 20. A lug 112 projects from the outer side of the end 109 of said bar, and beneath the lug said bar carries a head 113 with a loop-plate 114. A stem 115 is connected at its lower end to said loop-plate and projects upwardly at the side of the end 109 of the bar and through the lug 112, and a spiral spring 116 surrounds the stem 115 and has position with one end bearing on the loop-plate and its other end pressing up against the lug 112. This spring permits the head 113 to slide vertically on the bar, but serves to keep it normally pressed down with the collar 117 resting on the lug 112. A pad or band 118 is secured at one end to the sliding head 113 on one bar and then extends upwardly to form a loop 119 between the two bars, and the other end of the band then projects downwardly and is secured to the head on the other bar. It will thus be seen that the two coacting bars serve to support the looped band, and when the bars are reciprocated the band will be drawn down first at one side and then at the other, and if the toe of the shoe projects from the plate 20 and beneath the arch or loop of the band the reciprocating movement of the bars will cause the band or pad to be reciprocated over the toe by being drawn down alternately on opposite sides. It will be noted that while this toe-polishing operation is taking place the rotary polisher is making one circuit after another around the shoe, and in order to permit the rotary polisher to pass around the toe the toe-polisher must be momentarily tilted forward away from the toe. This is accomplished as follows: A lever 120 is pivotally connected to the pivoted arm 104 and extends inwardly beneath the bed-plate 2, and its inner end is connected to the lower end 121 of a lever 122, which passes through a slot and is pivoted at 123 on the top of the bed-plate. The upper end of this lever 122 carries a roller 124, which is arranged to freely revolve in substantially a horizontal plane, and this roller has position in the path of the cam 25 on the bottom of the gear 24. As shown in the drawings, the roller is just leaving the cam. (See Fig. 2.) The pressure of the cam 25 on the roller rocks the lever 122, draws the lever 120 inwardly beneath the bed-plate, and swings the toe-polisher over the foot-rest plate 20. A spring 125 serves to move the parts in the reverse direction when the roller 124 is free of the cam 25.

From the foregoing description it will be understood that the polisher and polish-applying brush are rotated on their own axes and are also given an orbital movement around the shoe-support and that simultaneously with the orbital movement the toe-polisher is in polishing contact with the shoe, but is moved out of the path of the polisher to permit the latter to pass between it and the toe of the shoe and is then moved back again to continue its reciprocating rubbing operation over the toe.

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

1. A shoe-polishing machine provided with means for polishing the sides of the shoe, in combination with means for moving said side-polishing means in a circuit around the shoe; a toe-polisher; means for operating the toe-polisher simultaneously with the side polisher, and means for moving the toe-polisher out of the path of the side-polisher to permit the latter to pass around the toe.

2. A shoe-polishing machine provided with means for polishing the sides of the shoe, in combination with means for moving said side-polishing means around the end of the shoe; a toe-polisher; means for reciprocating the toe-polisher in a direction crosswise of the shoe, and means for moving the toe-polisher in a direction lengthwise of the shoe.

3. A shoe-polishing machine provided with means for polishing the sides of the shoe, in

combination with means for moving said side-polishing means in a circuit around the shoe; a toe-polisher; means for simultaneously operating the side and toe polishers; means for momentarily moving the toe-polisher out of polishing contact to permit the side-polisher to pass around the toe, and means for returning the toe-polisher in polishing contact after the side-polisher has passed.

4. A shoe-polishing-machine provided with a support for the shoe, in combination with a polisher adjacent said shoe-support; means for rotating said polisher; means for giving the polisher an orbital movement about said support; a toe-polisher, and means for operating the toe-polisher simultaneously with the first-named polisher.

5. A shoe-polishing machine provided with a support for the shoe, in combination with a polisher adjacent said shoe-support; means for rotating said polisher about its axis; means for giving said polisher an orbital movement about the shoe-support continuously; a toe-polisher, and means for intermittently moving the toe-polisher out of the path of the first-named polisher to permit the latter to pass between the toe-polisher and the shoe-support while making its orbital movement.

6. A shoe-polishing machine provided with a support for the shoe, in combination with a polisher adjacent said shoe-support; means for rotating said polisher about its axis; means for giving said polisher a continuous orbital movement about the shoe-support; a toe-polisher; means for intermittently moving the toe-polisher out of the path of the rotary polisher, and means for reciprocating the toe-polisher while in contact with the shoe.

7. A shoe-polishing machine provided with a support for the shoe, in combination with a shaft adjacent said support; means for rotating said shaft; a polisher carried on said rotating shaft; a polish-applying device also sustained by said rotating shaft; means for giving the shaft an orbital movement about said shoe-support, and means for transmitting the rotary motion of the polish-carrying shaft to the polish-applying device.

8. A shoe-polishing machine provided with a shoe-support, in combination with a single shaft at the side of said support; a polisher carried on said shaft; a polish-applying brush sustained by said shaft; means for rotating said shaft and polisher; means for transmitting the rotary motion of said shaft to the polish-applying brush; means for giving the shaft, polisher and polish-applying brush an orbital movement around the shoe-support and a toe-polisher operating simultaneously with the said rotary shaft.

9. The combination in a shoe-polishing machine, of a shoe-support; a shaft at the side of said support; a polisher carried by said shaft; a polish-applying device; means for rotating said polisher and polish-applying device; means for giving the polisher an orbital movement about the support; a toe-polisher adjacent the end of said support; means for moving the toe-polisher toward said support; means for reciprocating said toe-polisher while in contact with the shoe; means for momentarily retracting the toe-polisher to permit the rotary polisher to pass between it and the support, and means for withdrawing the polish-applying device without interfering with the rotary and toe polishers.

10. The combination in a shoe-polishing machine, of a shoe-support; a shaft at the side of said support; a polisher carried by said shaft; a polish-applying brush sustained by said shaft but movable in a horizontal plane independently of said shaft; means for revolving said shaft, polisher and polish-applying brush; means for giving said shaft, polisher and polish-applying brush an orbital movement around said support; a cam device for moving the polish-applying brush away from the shoe-support; a toe-polisher; means for reciprocating said toe-polisher while in polishing contact, and cam mechanism for moving the toe-polisher away from the shoe-support to permit the polisher to pass when making its orbital movement.

11. A shoe-polishing machine provided with a shoe-support, in combination with a rotary polisher for the sides of the shoe; a shaft provided with cranks; bars adjacent said shoe-support and connected to said cranks; a toe-polisher sustained by said bars, and means for revolving said shaft to reciprocate said bars and toe-polisher while the latter is in contact with the shoe.

12. A shoe-polishing machine provided with a shoe-support, in combination with rotary means for polishing the sides of the shoe; a crank-shaft; bars connected with said shaft and reciprocated in a vertical plane; a toe-polisher sustained by said bars and moving therewith; means for giving the rotary polisher an orbital movement around said support, and means for swinging said toe-polisher and reciprocating bars away from the support to permit the rotary polisher to pass.

13. The combination in a shoe-polishing machine, of a bed; a tubular support sustained by said bed; a shoe-support carried by said tubular support; a shaft adjacent said shoe-support; a polisher carried by said shaft; a polish-applying device also carried by said shaft; means for rotating the shaft, polisher and polish-applying device; means for giving the shaft, polisher, and polish-applying device an orbital movement about the tubular support; a cam device for moving the polish-applying device away from the tubular support, and means extending through the tubular support for operating said cam device.

14. In a shoe-polishing machine the combination with a shoe-support, of a polisher adjacent said shoe-support; means for rotating

said polisher; means for giving the polisher an orbital movement around said support; a toe-polisher pivotally sustained in front of the shoe-support; means for continuously reciprocating the toe-polisher in a direction crosswise of the shoe-support, and means for swinging the reciprocating toe-polisher away from the shoe-support each time the rotary polisher nears the toe in making its circuit around the support.

15. In a shoe-polishing machine the combination with a shoe-support, of a polisher adjacent said shoe-support; means for rotating said polisher; means for giving the polisher an orbital movement around said support; a frame pivotally sustained in front of the shoe-support; bars sustained by said frame; a toe-polisher carried by said bars; means for reciprocating said bars independently of said frame to move the toe-polisher through a vertical plane and means for swinging said frame, bars and toe-polisher toward and away from said shoe-support while the rotary polisher is in operation.

16. A shoe-polishing machine provided with two shoe-supports, of a rotary polisher adjacent each of said supports; a driving mechanism interposed between the two supports for revolving said polishers and giving them an orbital movement around the shoe-supports; a toe-polisher for each of said supports, and means also operated by said driving mechanism for swinging said toe-polishers away from the supports to permit the rotary polishers to pass around the toe.

17. A shoe-polishing machine provided with a support for the shoe in combination with a polisher adjacent said shoe-support; means for giving the polisher an orbital movement around the support; a bar, 51, pivotally sustained at the side of the support; a polish-applying device carried by said bar and moving with said polisher around the shoe-support; an arm, 67, at the side of said bar, and means for moving said arm vertically to swing the polish-applying device in a horizontal direction.

18. A shoe-polishing machine provided with a shoe-support in combination with a vertically-sustained shaft adjacent the support; a polisher carried by said vertical shaft; means for revolving said shaft and polisher continuously; means for giving the shaft and polisher an orbital movement about the support; a bar pivotally mounted on said vertical shaft and movable independently thereof in a horizontal plane; a polish-applying brush sustained by said bar; means for transmitting the rotary motion of said polisher-shaft to the polish-applying brush and means for swinging said bar and polish-applying brush on the vertical shaft to move the applying-brush toward or away from said support.

19. A shoe-polishing machine provided with a base in combination with a tube extending vertically therefrom and sustaining a shoe-support; a rotary polisher adjacent said support; a polish-applying device also adjacent said support; means for giving the polisher and polish-applying device an orbital movement about said tube; a rod in said vertical tube; means coacting between said rod and the polish-applying device to move the latter in a horizontal plane, and means for operating the rod to impart a horizontal movement to said polish-applying device.

20. A shoe-polishing machine provided with a base, in combination with a tube extending vertically above the base and sustaining a shoe-support; a rotary polisher adjacent said support; a polish-applying device also adjacent said support; means for giving the polisher and polish-applying device an orbital movement about said tube and support; a rod in said tube; means coacting between said rod and the polish-applying device to move the latter horizontally when the rod is moved; means for moving said rod vertically within the tube and means for holding the rod in one position to keep the polish-applying device away from the support while it continues its orbital movement.

21. A shoe-polishing machine provided with a base, in combination with a tube extending vertically above the base and sustaining a shoe-support; a shaft extending in a direction parallel with said tube; a polisher carried by said shaft; a bar pivotally supported on said shaft and movable independently thereof; a polish-applying device carried by said bar; a collar, 72, movable on said vertical tube; devices coacting with the collar and the polish-applying device whereby to move the latter horizontally; a rod in said vertical tube and operatively connected to the collar and means for moving the rod vertically to cause the polish-applying device to be moved horizontally.

22. A shoe-polishing machine provided with a base, in combination with a tube extending vertically from said base and sustaining a shoe-support; a shoe-shaped cam sustained by said tube below the support; a shaft sustained in a vertical position adjacent said tube; a polisher carried by said shaft; a segment-shoe carried on said vertical shaft and contacting with the shoe-shaped cam on the tube, and means for giving the shaft and polisher an orbital movement around the shoe-support.

23. A shoe-polishing machine provided with a base, in combination with a tube extending vertically from said base and sustaining a shoe-support; a shoe-shaped cam sustained by said tube; a shaft sustained in a vertical position adjacent said tube; a polisher carried by said shaft; a segment-shoe carried by said vertical shaft and contacting with the shoe-shaped cam

on the tube; a polish-applying device also sustained by said shaft and movable in a horizontal plane independently of said shaft; means for moving the polisher and polish-applying device in a circuit around the shoe-support, and means coacting with the polish-applying device and the shoe-shaped cam for guiding the applying device while making said circuit.

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

HERBERT R. OLIVER.
GEORGE P. OHLGART.

Witnesses:
CLIFTON E. KREBR,
WILLIAM OHLGART, Jr.