No. 740,601. PATENTED OCT. 6, 1903.

C. F. STACKPOLE.

SOLE EDGE BURNISHING MACHINE.

APPLICATION FILED MAR. 28, 1902.

NO MODEL. 4 SHEETS—SHEET 1.

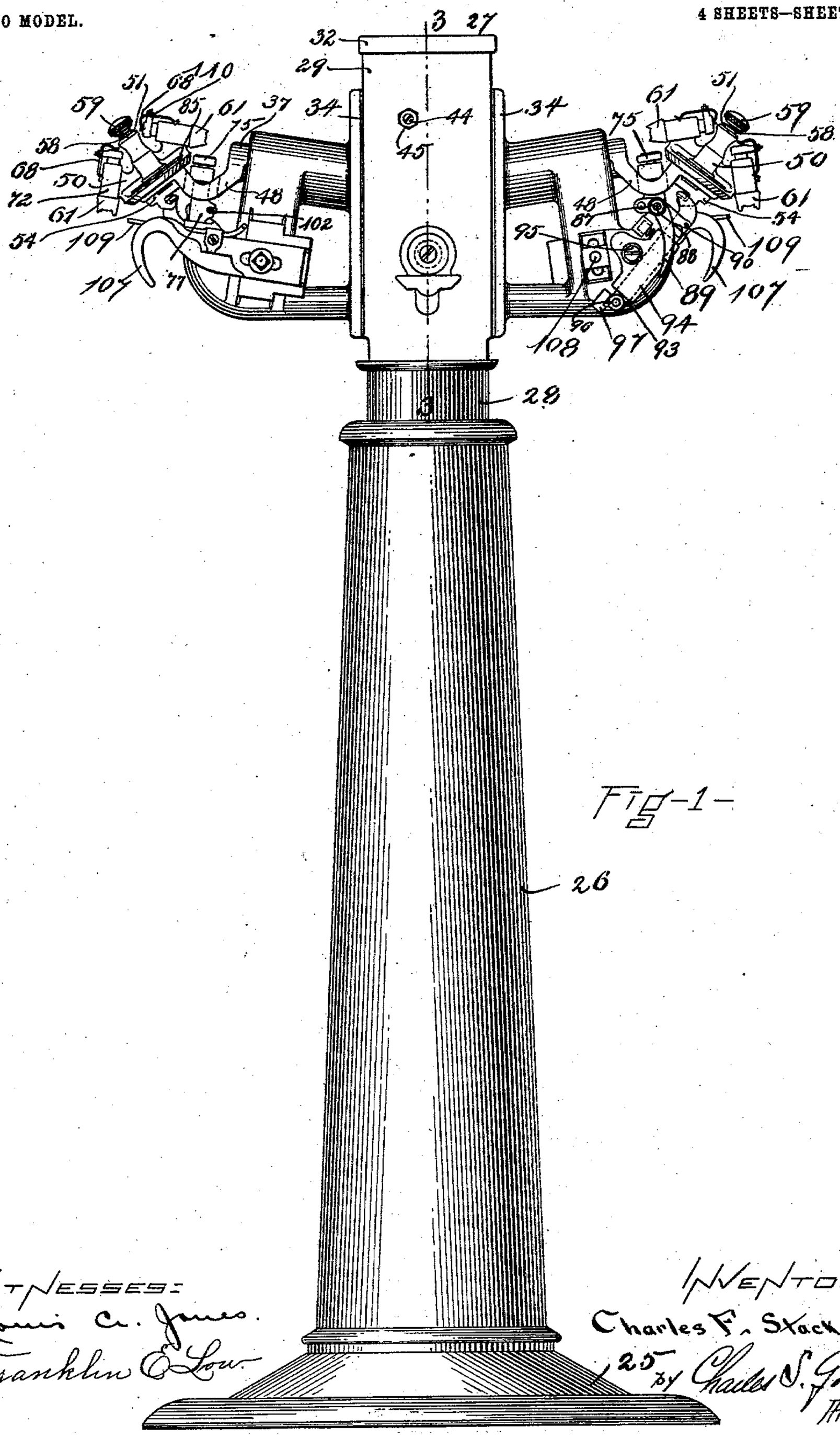

Fig-1-

WITNESSES:
Louis A. Jones.
Franklin & Low.

INVENTOR:
Charles F. Stackpole
25 by Charles S. Gooding.
Attorney.

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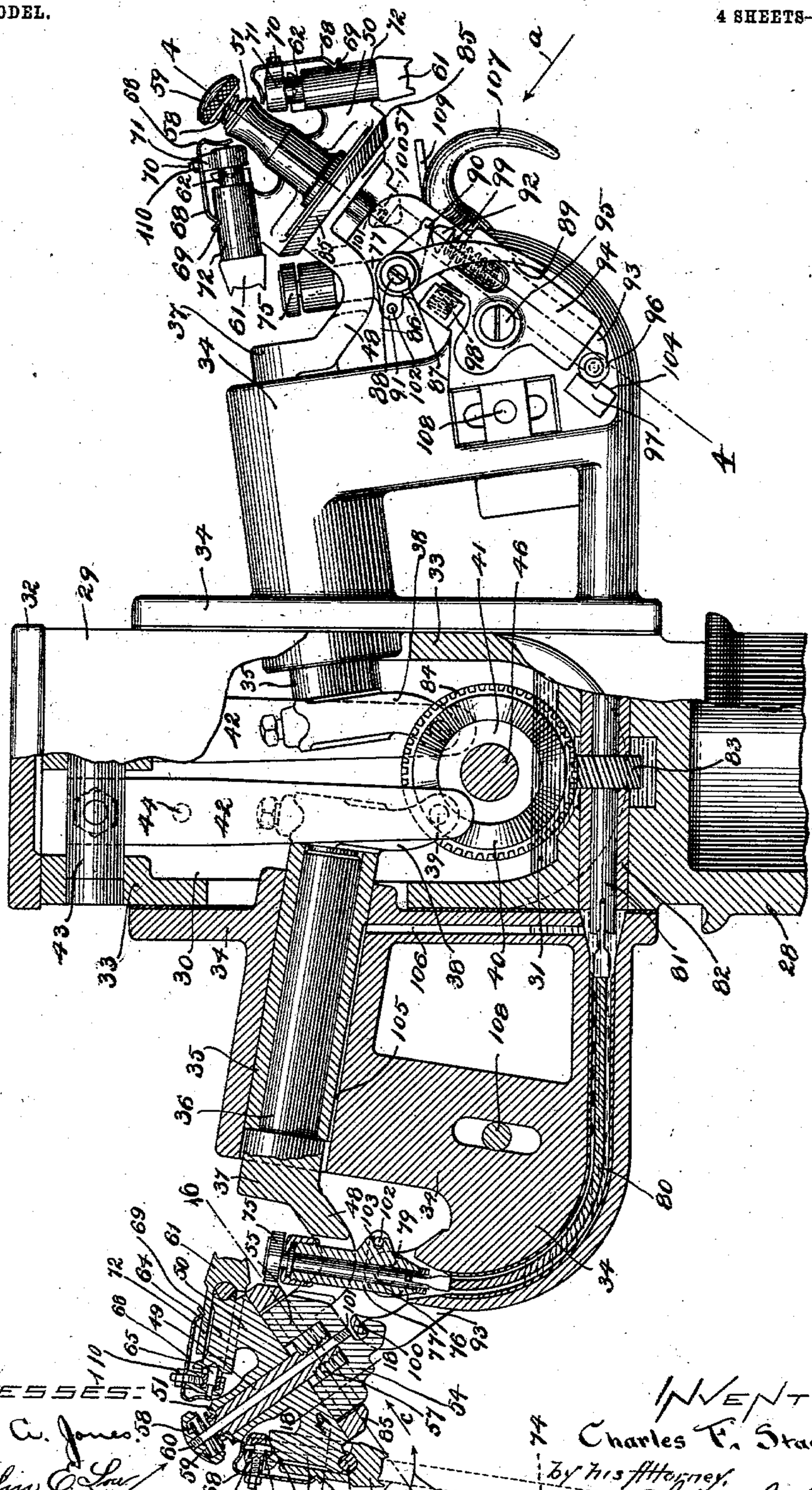

FIG. 2.

WITNESSES:

Louis A. Jones.

Franklin E. Low.

INVENTOR:

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by his Attorney.

Charles S. Goodwin.

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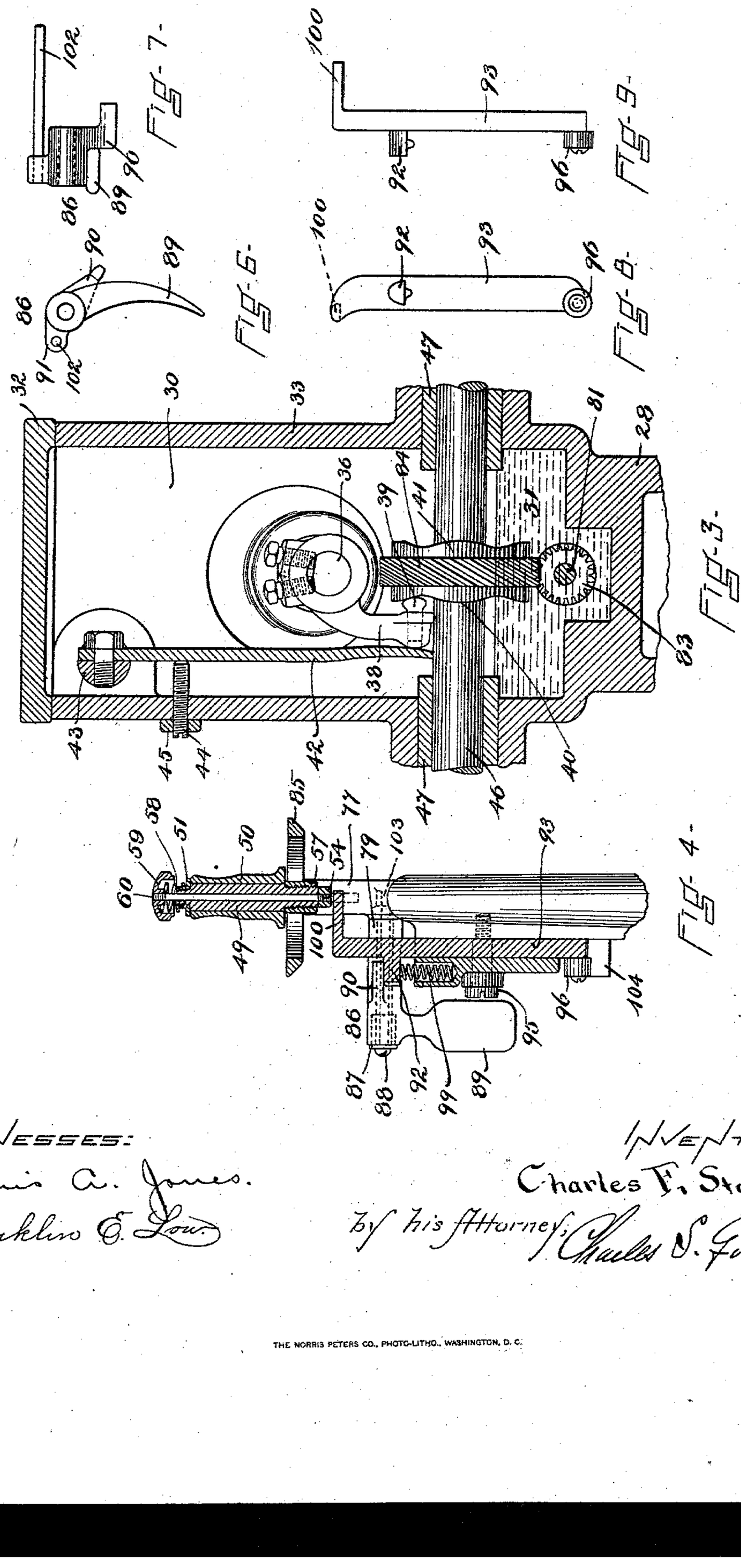
NO MODEL. 4 SHEETS—SHEET 3.



WITNESSES:

Louis A. Jones.

Franklin E. Low.

INVENTOR:

Charles F. Stackpole.

by his Attorneys, Charles S. Fooding.

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NO MODEL. 4 SHEETS—SHEET 4.

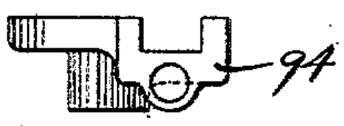

Fig. 11.

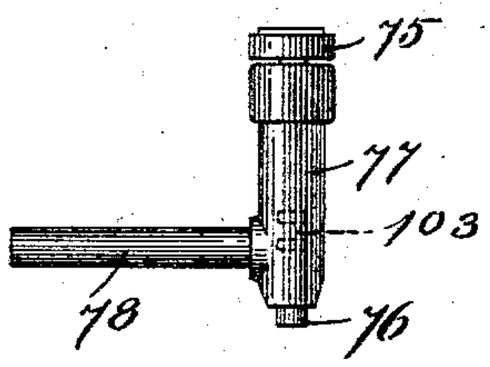

Fig. 12.

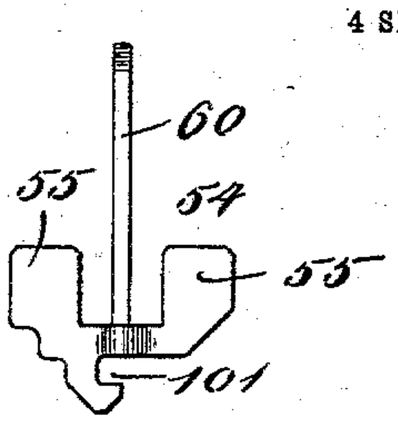

Fig. 13.

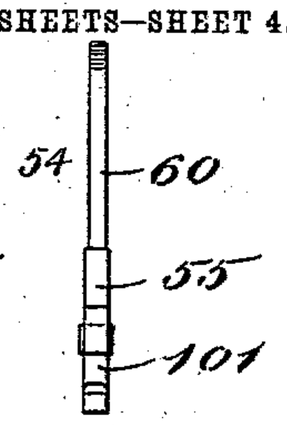

Fig. 14.

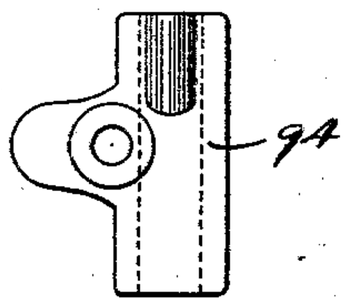

Fig. 10.

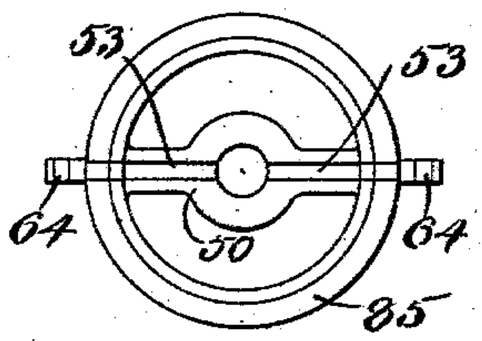

Fig. 15.

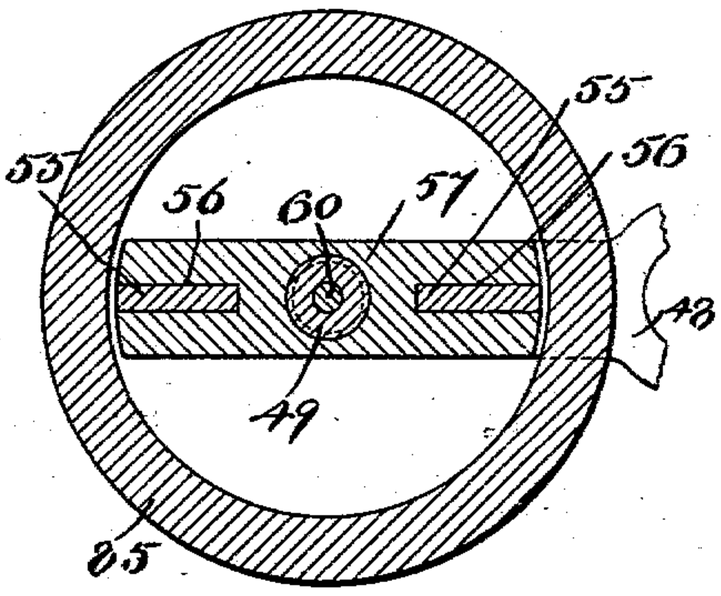

Fig. 16.

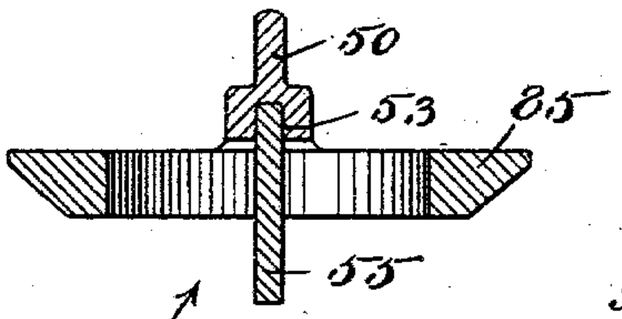

Fig. 17.

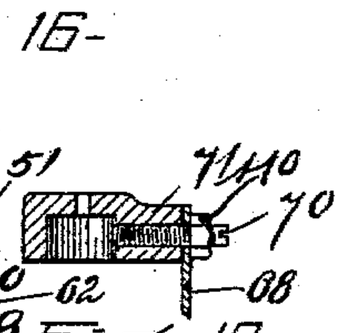

Fig. 18.

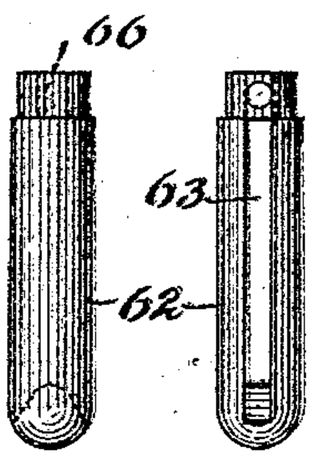

Fig. 20.

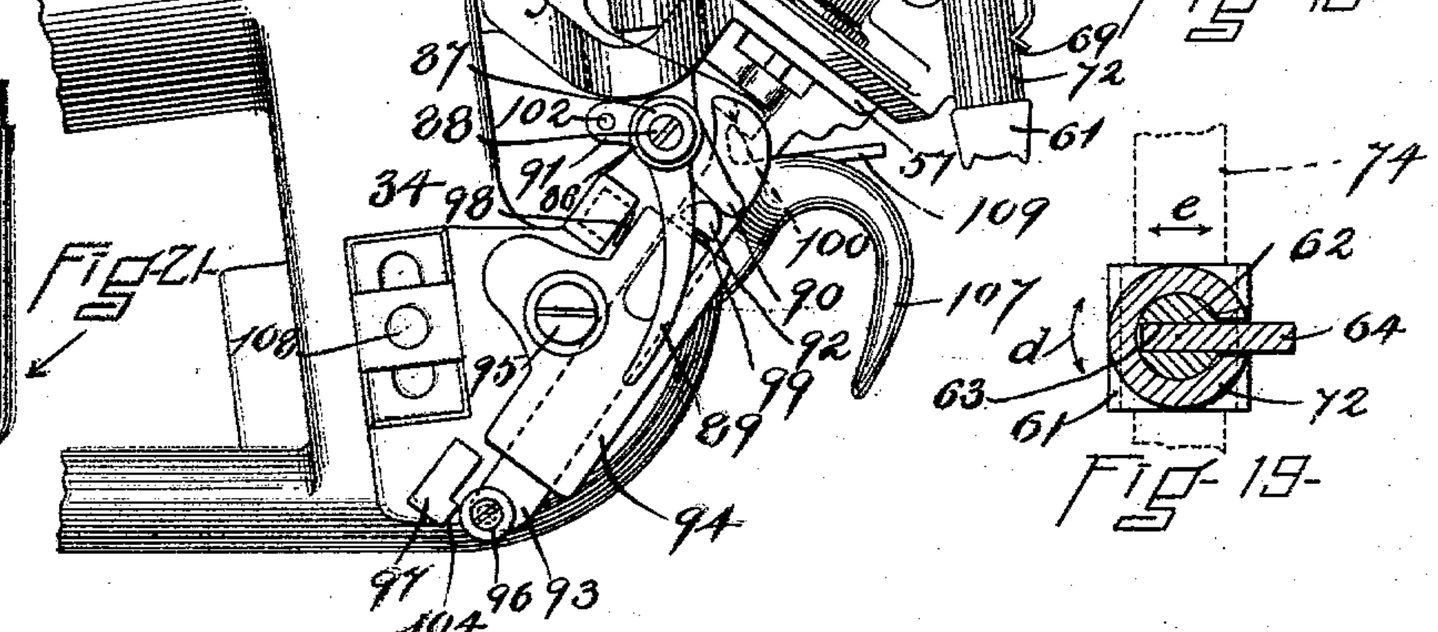

Fig. 5.

Fig. 19.

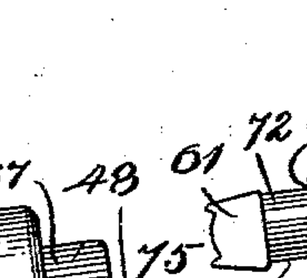

Fig. 22.

Witnesses:
Louis A. Jones
Franklin & Low

Inventor:
Charles F. Stackpole
by his Attorney
Charles V. Grodin.

No. 740,601. Patented October 6, 1903.

UNITED STATES PATENT OFFICE.

CHARLES F. STACKPOLE, OF LYNN, MASSACHUSETTS.

SOLE-EDGE-BURNISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 740,601, dated October 6, 1903.

Application filed March 28, 1902. Serial No. 100,395. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. STACKPOLE, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented new and useful Improvements in Sole-Edge-Burnishing Machines, (Case A,) of which the following is a specification.

This invention relates to machines for burnishing the edges of the soles of boots and shoes.

The object of the invention is to provide a compact, durable, quick-running, and easily-operated machine of the character described; and, further, the object of the invention is to provide a twin sole-edge-burnishing machine in which the burnishing mechanism of each head of the machine is operated from a common driving-shaft, said driving-shaft being located, preferably, in a closed chamber containing a body of oil which keeps the principal working parts thoroughly lubricated and overcomes any tendency to heating or friction due to the high speed of said working parts.

The object of the invention is again to provide a certain improved construction whereby the fore-part and shank burnishing iron may be used upon the same head and one substituted in place of the other at the working point with great ease and rapidity by power-driven mechanism which is so constructed that it may be thrown into operation to accomplish the substitution of one of said burnishing-irons in place of the other by a slight motion of the thumb or finger of one hand of the operator, the work being held firmly at all times by both hands of the operator.

The invention consists, in a machine of the character described, of a rocker-frame, a rotary tool-carrier journaled thereon, and mechanism to rotate said tool-carrier.

The invention again consists in the instrumentalities hereinbefore set forth in combination with means to lock said tool-carrier to said rocker-frame.

The invention again consists in a rocker-frame, a rotary tool-carrier journaled thereon, a clutch to lock said tool-carrier to said rocker-frame, mechanism to rotate said tool-carrier, and means to move said clutch into and out of connection with said tool-carrier; and, again, the invention consists in a rocker-frame, a rotary tool-carrier journaled thereon, a clutch to lock said tool-carrier to said rocker-frame, mechanism to rotate said tool-carrier, and means to throw said mechanism into connection with said tool-carrier and at the same time move said clutch out of connection therewith.

The invention again consists in an improved construction of a casing provided with a chamber adapted to contain a body of oil and having bearings in its walls in combination with two rocker-frames journaled in two bearings and extending outwardly from said chamber, each provided with a burnishing-tool carrier and a driving-shaft journaled in another of said bearings and operatively connected to impart a rocking movement to either or both of said rocker-frames.

The invention finally consists in the combination and arrangement of parts set forth in the following specification and particularly pointed out in the claims thereof.

Referring to the drawings, Figure 1 is a front elevation of my improved twin sole-edge-burnishing machine. Fig. 2 is an enlarged front view of the head of the machine with the mechanism thereon, the left-hand portion thereof being shown as a longitudinal vertical central section and the right-hand portion being shown in elevation. Fig. 3 is a transverse section taken on line 3 3 of Fig. 1, the bearings being broken away to save space in the drawings. Fig. 4 is a detail sectional elevation taken on line 4 4 of Fig. 2 viewed in the direction of the arrow *a*. Fig. 5 is a front view of the right-hand side of the machine, showing the clutch by which the rotary tool-carrier is locked to the rocker-frame withdrawn and the mechanism by which said rotary tool-carrier is rotated thrown into contact therewith. Fig. 6 is a detail side elevation of the clutch-lever. Fig. 7 is a plan view of the clutch-lever. Fig. 8 is a front elevation in detail of the clutch-slide. Fig. 9 is a right-hand side elevation of the same as viewed from the right of Fig. 8. Fig. 10 is a front elevation of the rocking clutch-slide carrier. Fig. 11 is an end elevation of said rocking clutch-slide lever. Fig.

12 is a side elevation of the pivotal bearing for the friction-roll which imparts rotary movement to the tool-carrier as viewed from the left of Fig. 2. Fig. 13 is a detail front elevation of the clutch. Fig. 14 is a side elevation of the same as viewed from the right of Fig. 13. Fig. 15 is an underneath plan of the rotary tool-carrier. Fig. 16 is a detail section through the rotary tool-carrier and clutch, taken on line 16 16 of Fig. 2 viewed in the direction of the arrow *b*. Fig. 17 is a transverse section through the tool carrier and clutch, taken on line 18 18 of Fig. 2 viewed in the direction of the arrow *c* in said figure. Fig. 18 is an enlarged central section of the pintle-cap with spring-cap attached thereto. Fig. 19 is an enlarged transverse section through one of the burnishing-irons and the pintle and rotary tool-carrier upon which said iron is supported, taken on line 19 19 of Fig. 2. Fig. 20 is a front elevation of the burnishing-iron-supporting pintle viewed in the same direction as in Fig. 2 at the left-hand side of said figure. Fig. 21 is an end elevation viewed from the right of Fig. 20 of said burnishing-iron-supporting pintle. Fig. 22 is a perspective view of one of the burnishing-irons.

Like numerals refer to like parts throughout the several views of the drawings.

In the drawings, 25 is the base, and 26 the column, of my improved sole-edge-burnishing machine. The head 27 consists of a hollow standard 28, formed to fit in the interior of the hollow column 26, and a casing 29, integral with said standard. The casing 29 is rectangular in shape and is provided with a chamber 30, adapted to contain a body of oil 31, said chamber being closed at the top by a plate 32. The right and left hand side walls 33 33 of the casing 29, Fig. 2, have plates 34 rigidly fastened thereto and constitute, in fact, a portion of the walls of said casing, each of said plates 34 being provided with a bearing-sleeve 35, in which is journaled the cylindrical shank 36 of the rocker-frame 37.

The rocker-frame 37 has an arm 38 fast to one end of the cylindrical shank 36, said arm 38 being provided with a hardened pin 39, arranged to bear against the cam-face 40, formed upon the cam 41, said pin being held in contact with said cam-face by a spring 42, fastened to a stationary cross-shaft 43 upon the casing 29. The spring 42 may be adjusted to press with more or less force against the pin 39 by means of the screw 44, screw-threaded in the casing 29 and locked thereto by a lock-nut 45. The cam 41 is fast to a main driving-shaft 46, journaled to rotate in bearings 47, provided in the walls of the casing 29. Rotary motion is imparted to the shaft 46 by a belt and pulley (not shown in the drawings) or in any desirable manner. The cam-face 40 is of curvilinear outline, adapted to impart several oscillations to the arm 38 during one rotation of the driving-shaft 46. In the present case I have illustrated the throws of the cam-face 40 as four in number; but this number may be increased or diminished, if desirable.

The rocker-frame 37 is provided at the end opposite to that at which the arm 38 is fastened with a curved arm 48, integral with the cylindrical shank 36 and having fastened thereto by screw-threaded engagement a post 49, upon which is journaled a rotary tool-carrier 50. The tool-carrier 50 is held against motion lengthwise of the post 49 by a collar 51, screw-threaded against a shoulder upon the upper end of said post 49. The under face of the tool-carrier 50 is provided with a transverse slot 53 to receive the clutch 54, said clutch being provided with two arms 55 55, arranged to slide in slots 56 56 upon opposite sides of a cross-bar 57, formed upon the outer end of the arm 48 of the rocker-frame 37. The arms 55 of the clutch 54 are normally held in the slot 53, thus locking the tool-carrier to the rocker-frame by a spiral spring 58, one end of which bears against the collar 51, the other end against a cap 59, screwed to the outer end of a rod 60, said rod extending from said cap downwardly through the post 49 and having its lower end screwed into the clutch 54.

Upon the tool-carrier 50 are rotatably mounted two edge-burnishing irons or tools 61 61, one of said tools being formed to burnish the edge of the shank portion of a shoe-sole and the other to burnish the edge of the fore part of a shoe-sole. Each of the tools is mounted upon a pintle 62, Figs. 2, 19, and 20. Said pintle is cylindrical in cross-section and has a slot 63 extending lengthwise thereof to receive a rectangular bearing-plate 64, formed upon the tool-carrier 50. The pintle 62 is held upon the plate 64 by a pin 65, Fig. 2, arranged to slide in a hole 66, formed in the upper end of the pintle 62, the lower end of said pin being held in the depression 67 by a spring 68, one end of which bears against the upper end of said pin, the other against a depression 69, formed in the front face of the burnishing-iron 61. The cap 71 is held upon the upper end of the pintle 62 by a screw 70, and the spring 68 is held against said cap by a lock-nut 110, Fig. 18.

The iron 61 is provided with a hollow cylindrical shank 72, which is rotatably mounted upon the pintle 62 and is slotted lengthwise thereof at 73 to allow the iron to rock upon the pintle 62 to a limited extent without coming in contact with the plate 64 upon the tool-carrier 50. It will therefore be seen that the burnishing-tool 61 can rotate upon the pintle 62 to a limited extent in the direction of the arrow *d*, Fig. 19, and also that said tool can rock in a plane transverse to the edge of the shoe-sole 74 in the direction of the arrow *e*, the latter rocking motion being rendered possible by the slot 63 in the pintle 62 being rounded at its lower end, Fig. 20, so that said pintle can rock upon the plate 64, together with the tool 61, the spring 68 allowing the

pin 65 to yield slightly in order to accommodate the rocking of the pintle 62 upon the tool-carrier. If desirable, the spring-pin 65 may be replaced by a pin or screw held rigidly in the pintle, so that the rocking motion transversely of the shoe-sole in the direction of the arrow *e*, as hereinbefore set forth, would be eliminated. It will be seen by the construction hereinbefore set forth that the pintle and the iron thereon cannot rock lengthwise of the edge of the shoe-sole except as they are rocked bodily by the rocking motion of the frame 37.

In Fig. 2 the shoe-sole 74 is indicated in dotted lines in the proper relation to the burnishing-tool 61, the other burnishing-tool 61 being thrown out of use by the rotation of the tool-carrier, as hereinbefore described, and while out of use being located, as will be seen by reference to Fig. 2, at a point but slightly removed from the axial center of the rocker-frame, the object of this location of the tool when not in operation being to reduce the momentum of the parts which are rocked by the frame 37. The tool-carrier 50 is rotated to bring the different burnishing-tools into and out of operation by a rotary friction-disk 75, fast to a shaft 76, arranged to rotate in a bearing 77, said bearing in turn being provided with a shaft 78, arranged to rock in a bearing 79, provided in the plate 34. Rotary motion is imparted to the shaft 76 and disk 75 by a flexible rotary shaft 80, operatively connected thereto and to a shaft 81, arranged to rotate in bearings 82 in the casing 29. Said shaft 81 has a spiral gear 83 fast thereto and meshing into a spiral gear 84, formed upon the cam-blank 41.

Normally the mechanism for rotating the tool-carrier and the clutch are in the positions shown in Figs. 1 and 2; but when it is desired to reverse the positions of the irons 61, so as to bring a shank-burnishing iron into operation where formerly the fore-part-burnishing iron was in operation, the rotary disk 75 is brought to bear against the conical annular friction-ring 85, fast to the tool-carrier 50, and simultaneously with the contact of said friction-disk 75 with the annular ring 85 the clutch 54 is withdrawn from the slot 53 in the tool-carrier, and said tool-carrier is then free to be rotated upon the post 49 for for a half-rotation, when the clutch 54, being released, springs into the slot 53 and locks the tool-carrier with the shank-iron in the position formerly occupied by the fore-part-burnishing iron. To accomplish this rotation of the tool-carrier and of the tools mounted thereon, as hereinbefore described, a clutch-lever 86 is provided, which is loosely mounted to rock upon the shaft 78 and is held thereon by a washer 87 and screw 88. Said lever is rocked by means of the arm 89 thereon and is provided with two arms 90 and 91, the arm 90 operating to withdraw the clutch 54 from the tool-carrier and the arm 91 operating to throw the friction-disk 75 into contact with the conical ring 85 for the purpose of rotating the tool-carrier and the tools thereon, as hereinbefore described. This operation is performed by pushing the clutch-lever 86 toward the left from the position shown at the right of Fig. 2 to the position shown in Fig. 5. The arm 90 bears against a lug 92, formed upon the clutch-slide 93. The clutch-slide 93 slides in a rocking carrier 94, pivoted at 95 to the frame-plate 34. The lower end of the slide 93 has a friction-roll 96 journaled thereon and bearing against a cam-plate 97, fast to the frame-plate 34. A spiral spring 98 holds the friction-roll 96 against the face of the cam-plate 97, and a spiral spring 99 holds the lug 92 against the arm 90. The upper end of the clutch-slide 93 has a laterally-extended arm 100 integral therewith, Fig. 9, and engaging a notch 101, Fig. 13, formed upon the clutch 54. The friction-disk 75 is brought into contact with the conical ring 85 by tipping the pivotal bearing 77 upon the shaft 78 from the position shown in Fig. 2 to that shown in Fig. 5, this tipping motion being accomplished by a spring-pin 102, one end fast to the arm 91 of the clutch-lever and the other end projecting into a slot 103, Fig. 2, formed in the pivotal bearing 77.

The operation of the clutch-releasing and tool-carrier-rotating mechanism hereinbefore described is as follows: The operator pushes the lever 86 from the position at the right of Fig. 2 to that shown in Fig. 5 by means of the arm 89 upon the clutch-lever 86, thus carrying the clutch-slide downwardly from the position shown in Fig. 2 to that shown in Fig. 5, the first effect of this downward motion being to withdraw the clutch 54 from the slot 53 in the tool-carrier 50, as shown in Fig. 5, and simultaneously with this withdrawal of the clutch the friction-disk 75 is thrown into contact with the ring 85 by the arm 91 and spring-pin 102, said spring-pin tipping the bearing 77 upon its pivotal shaft 78 and bringing the disk 75 into contact with the conical ring 85, as shown in Fig. 5. As soon as the disk 75 contacts with the ring 85 (it being kept in mind that the clutch has been withdrawn from the slot 53 in the tool-carrier) said tool-carrier will be immediately rotated, bringing one iron into the position formerly occupied by the other. The last part of the downward motion of the slide 93 brings the friction-roll 96 up onto the elevated portion 104 of the cam-face 97 and rocks the carrier 94 upon its pivot 95, disengaging the arm 100 upon the slide 93 from the notch 101 upon the clutch 54. Said clutch being thus released is carried upwardly by the spiral spring 58 from the position shown in Fig. 5 to that shown in Fig. 2, thus locking the tool-carrier in its new position to the rocker-frame 37.

The tool-carrier 50 at the right of the machine, Fig. 2, is rotated by means of the shaft

81 through a flexible shaft, (not shown,) exactly as in the mechanism illustrated in section at the left of said Fig. 2.

The cylindrical shank 36, the cams 40, gears 83 and 84, shaft 82, and flexible shafts 80 are all kept thoroughly lubricated from the body of oil 31 contained in the closed chamber 30, said oil being partly suspended in the form of vapor within said chamber and being carried by the arms 38 along the cylindrical shanks 36 in the bearing-sleeves 35 and returning through a passage 105, provided upon the under side of the sleeve 35 and leading into a vertical passage 106, formed in the frame-plate 34 and emptying into the chamber 30. A finger-piece 107 is provided at each end of the machine by means of which the operator guides and steadies the shoe in the operation of burnishing, said finger-piece being adjustably fastened by means of a bolt 108 to the frame-plate 34.

The operation of the machine is as follows: The operator holds the shoe in the position shown in dotted lines, Fig. 2, the edge of the sole 74 being held against the lower face of the burnishing-tool 61. After burnishing the edge of the fore part of the sole the operator touches the arm 89 of the clutch-lever 86, pushing the same from the position shown in Fig. 2 to that shown in Fig. 5 and carrying the shank-burnishing iron into the position formerly occupied by the fore-part-burnishing iron, as hereinbefore described. This action of the substitution of one iron for the other takes place almost instantaneously, so that the operator loses no time in changing from the use of one iron to the other.

It will be seen that the pintle 62 and the iron thereon tip in the direction of the arrow *e*, transversely of the shoe, upon a center near the lower end of said pintle, and as this rocking point is in the full-sized machine near the edge of the iron it will be seen that said rocking motion will be very sensitive and that the iron will adapt itself very quickly to any slight change in the position of the edge of the sole of the shoe or in the shape of said edge transversely thereof.

The burnishing-irons are heated by a gas-jet through the burner 109 in a manner well known to those skilled in the art.

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

1. In a sole-edge-burnishing machine, a rocker-frame, a rotary tool-carrier journaled thereon, mechanism to rotate said tool-carrier, and means to throw said mechanism into and out of connection with said tool-carrier.

2. In a sole-edge-burnishing machine, a rocker-frame, a rotary tool-carrier journaled thereon, a clutch to lock said tool-carrier to said rocker-frame, mechanism to rotate said tool-carrier, and means to throw said mechanism into and out of connection with said tool-carrier.

3. In a sole-edge-burnishing machine, a rocker-frame, a rotary tool-carrier journaled thereon, and a rotary friction-roll adapted to engage and rotate said tool-carrier.

4. In a sole-edge-burnishing machine, a rocker-frame, a rotary tool-carrier journaled thereon, a friction-ring fast to said tool-carrier, and a rotary friction-roll adapted to engage said friction-ring and rotate said tool-carrier.

5. In a sole-edge-burnishing machine, a rocker-frame, a rotary tool-carrier journaled thereon, a rotary friction-roll adapted to engage and rotate said tool-carrier, and means to move said roll into and out of contact with said tool-carrier.

6. In a sole-edge-burnishing machine, a rocker-frame, a rotary tool-carrier journaled thereon, a rotary friction-roll, a pivotally-supported bearing for said friction-roll, and means to rock said bearing and move said roll into and out of contact with said tool-carrier.

7. In a sole-edge-burnishing machine, a rocker-frame, a rotary tool-carrier journaled thereon, a clutch to lock said tool-carrier to said rocker-frame, mechanism to rotate said tool-carrier, and means to simultaneously move said mechanism into connection with said tool-carrier and to move said clutch out of connection with said tool-carrier.

8. In a sole-edge-burnishing machine, a rocker-frame, a rotary tool-carrier journaled thereon, a clutch to lock said tool-carrier to said rocker-frame, mechanism to rotate said tool-carrier, and means to simultaneously move said mechanism out of connection with said tool-carrier and to move said clutch into connection with said tool-carrier.

9. In a sole-edge-burnishing machine, a casing provided with a chamber adapted to contain a body of oil and having bearings in its walls, a rocker-frame journaled in one of said bearings, a rotary tool-carrier journaled upon said rocker-frame, a driving-shaft journaled in another of said bearings and connections to rock said rocker-arm and rotate said tool-carrier.

10. In a sole-edge-burnishing machine, a rocker-frame, a rotary tool-carrier journaled thereon, a rotary friction-roll adapted to engage and rotate said tool-carrier, a flexible shaft connected to said rotary friction-roll, and a driving-shaft operatively connected to rock said rocker-frame and rotate said flexible shaft.

11. In a machine for burnishing the edges of soles for boots and shoes, a tool-carrier, a cylindrical pintle pivotally mounted thereon to rock in a plane transverse to the edge of said shoe-sole, and an edge-burnishing tool rotatably mounted upon said pintle, substantially as described for the purpose specified.

12. In a machine for burnishing the edges of soles for boots and shoes, a tool-carrier, a cylindrical pintle pivotally mounted thereon to rock in a plane transverse to the edge of said shoe-sole, an edge-burnishing tool rotata-

bly mounted upon said pintle, and means to lock said pintle to said tool-carrier.

13. In a machine for burnishing the edges of soles for boots and shoes, a tool-carrier, a cylindrical pintle provided with a slot extending lengthwise thereof and adapted to receive a portion of said tool-carrier, upon which portion said pintle is pivotally supported, an edge-burnishing tool rotatably mounted upon said pintle, and means to lock said pintle to said tool-carrier.

14. In a machine for burnishing the edges of soles for boots and shoes, a tool-carrier, a cylindrical pintle provided with a slot extending lengthwise thereof and adapted to receive a portion of said tool-carrier, upon which portion said pintle is pivotally supported, and an edge-burnishing tool rotatably mounted upon said pintle.

15. In a sole-edge-burnishing machine, a rocker-frame, mechanism to impart a rocking movement thereto, a rotary tool-carrier journaled upon said rocker-frame, a clutch to lock said tool-carrier to said rocker-frame, mechanism to rotate said tool-carrier, and means to move said last-named mechanism out of operative connection with said tool-carrier.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CHARLES F. STACKPOLE.

Witnesses:

CHARLES S. GOODING,

WILLIAM CLAUS.