No. 708,768. Patented Sept. 9, 1902.

# J. HORMBY.

## BUTTON POLISHING MACHINE.

(Application filed Apr. 4, 1902.)

(No Model.) 5 Sheets—Sheet 1.

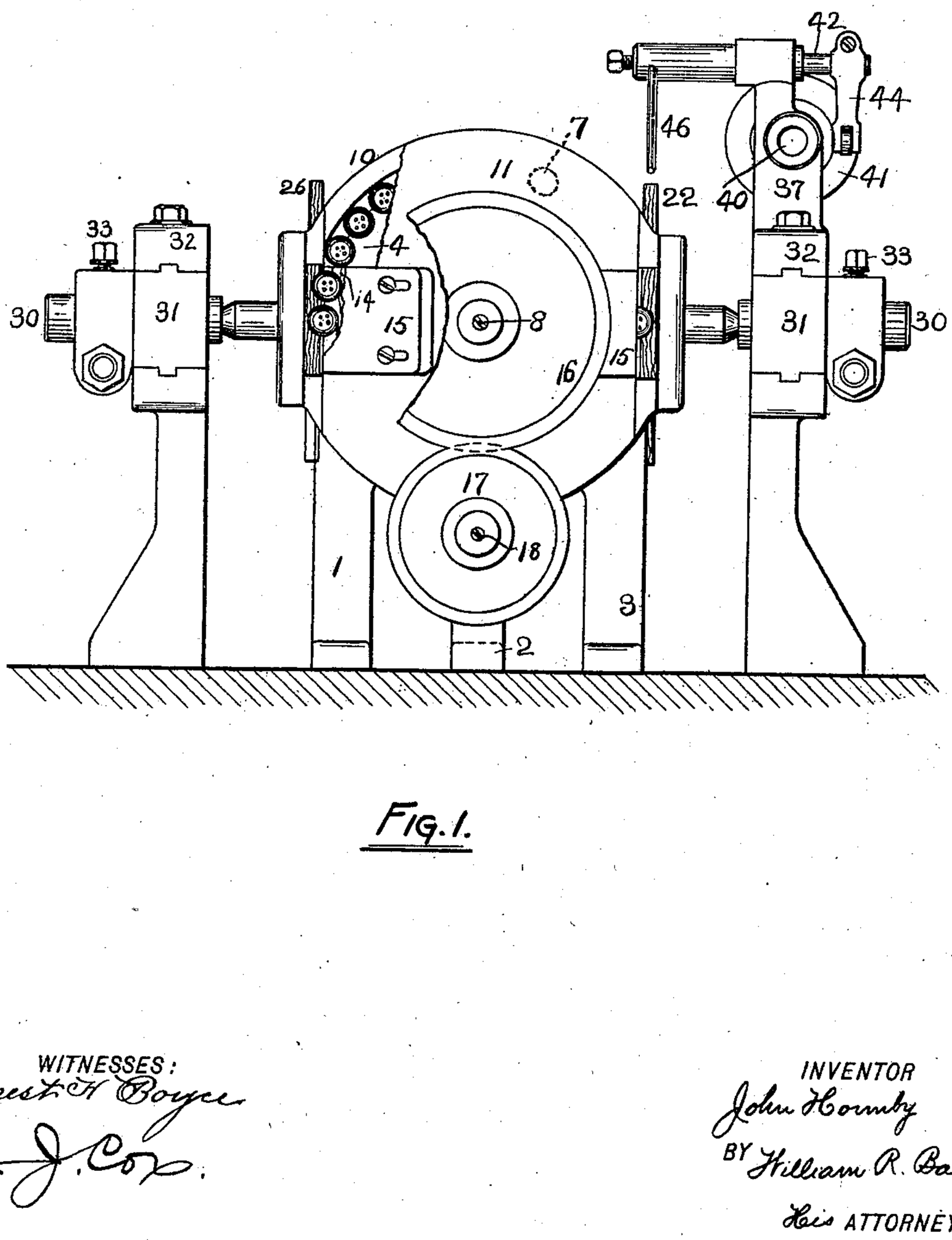


FIG. 1.

WITNESSES:
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S. J. Cox.

INVENTOR
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BY William R. Baird
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No. 708,768. Patented Sept. 9, 1902.

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## BUTTON POLISHING MACHINE.

(Application filed Apr. 4, 1902.)

(No Model.)

5 Sheets—Sheet 2.

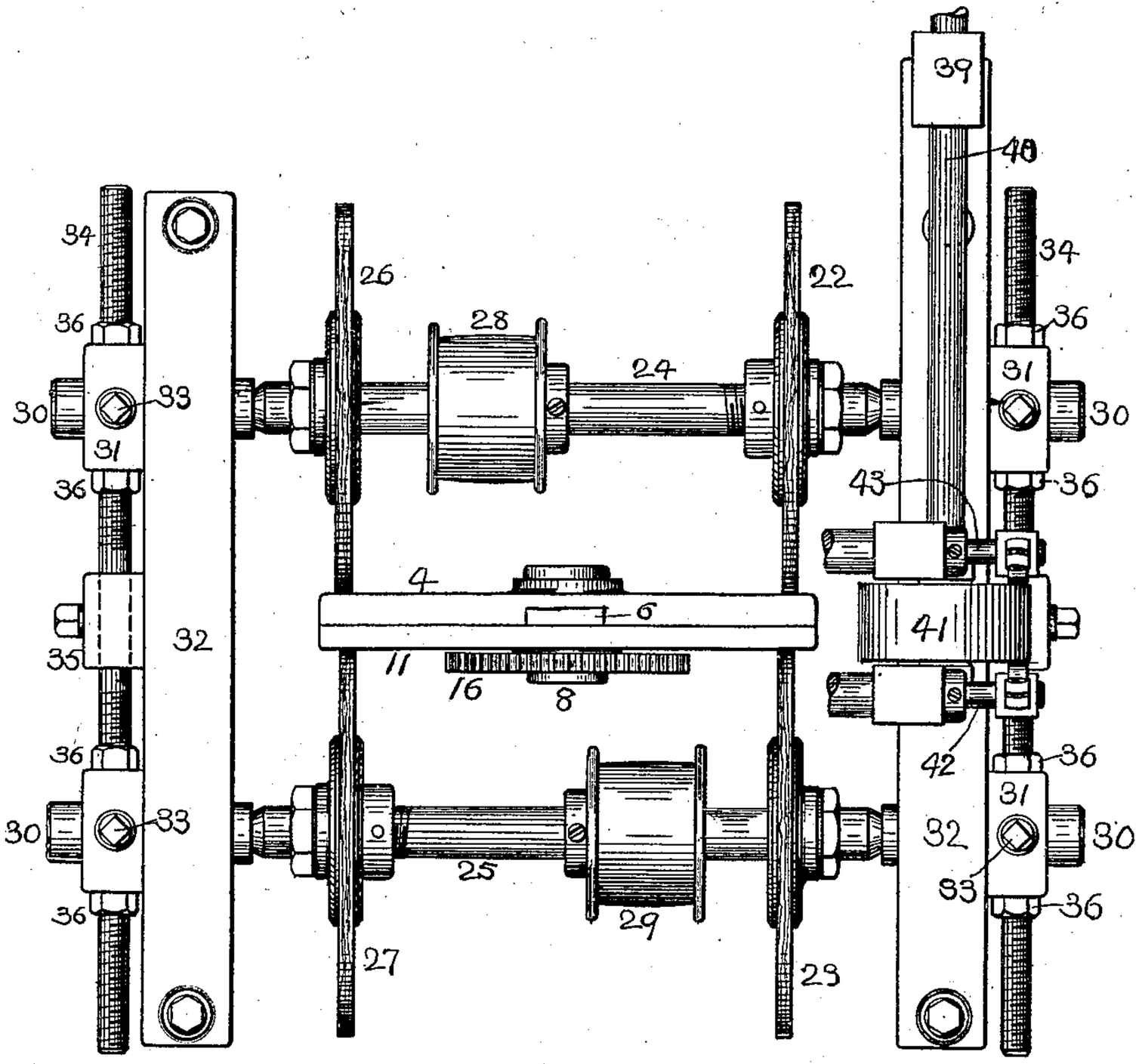


FIG. 2.

WITNESSES:
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## BUTTON POLISHING MACHINE.

(Application filed Apr. 4, 1902.)

(No Model.)

5 Sheets—Sheet 3.

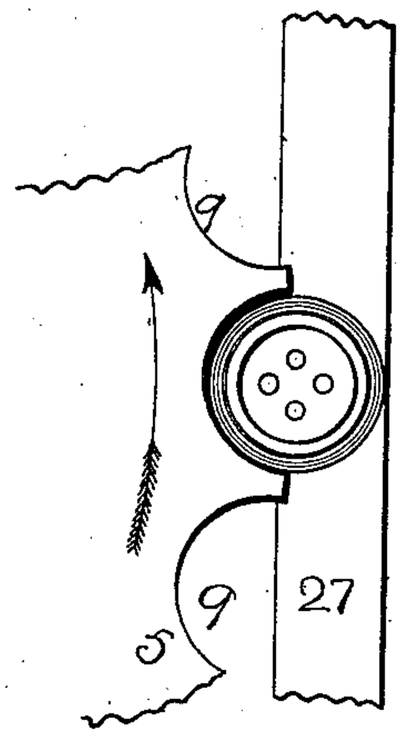


FIG. 5.

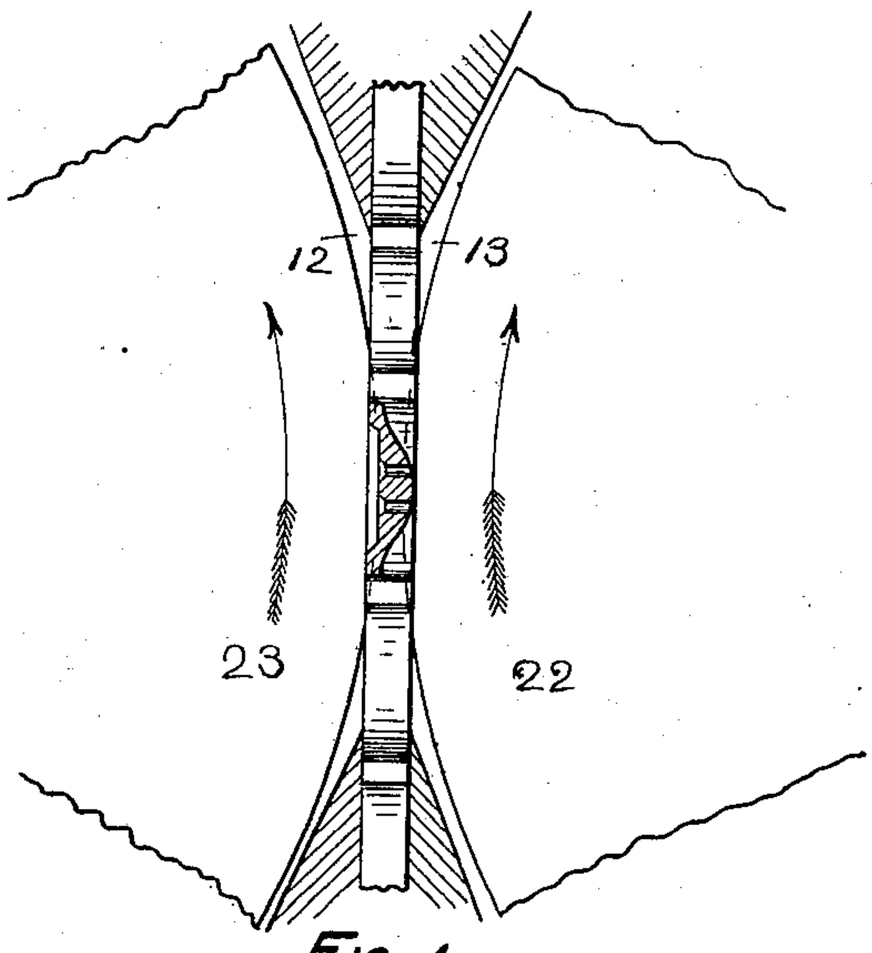


FIG. 4.

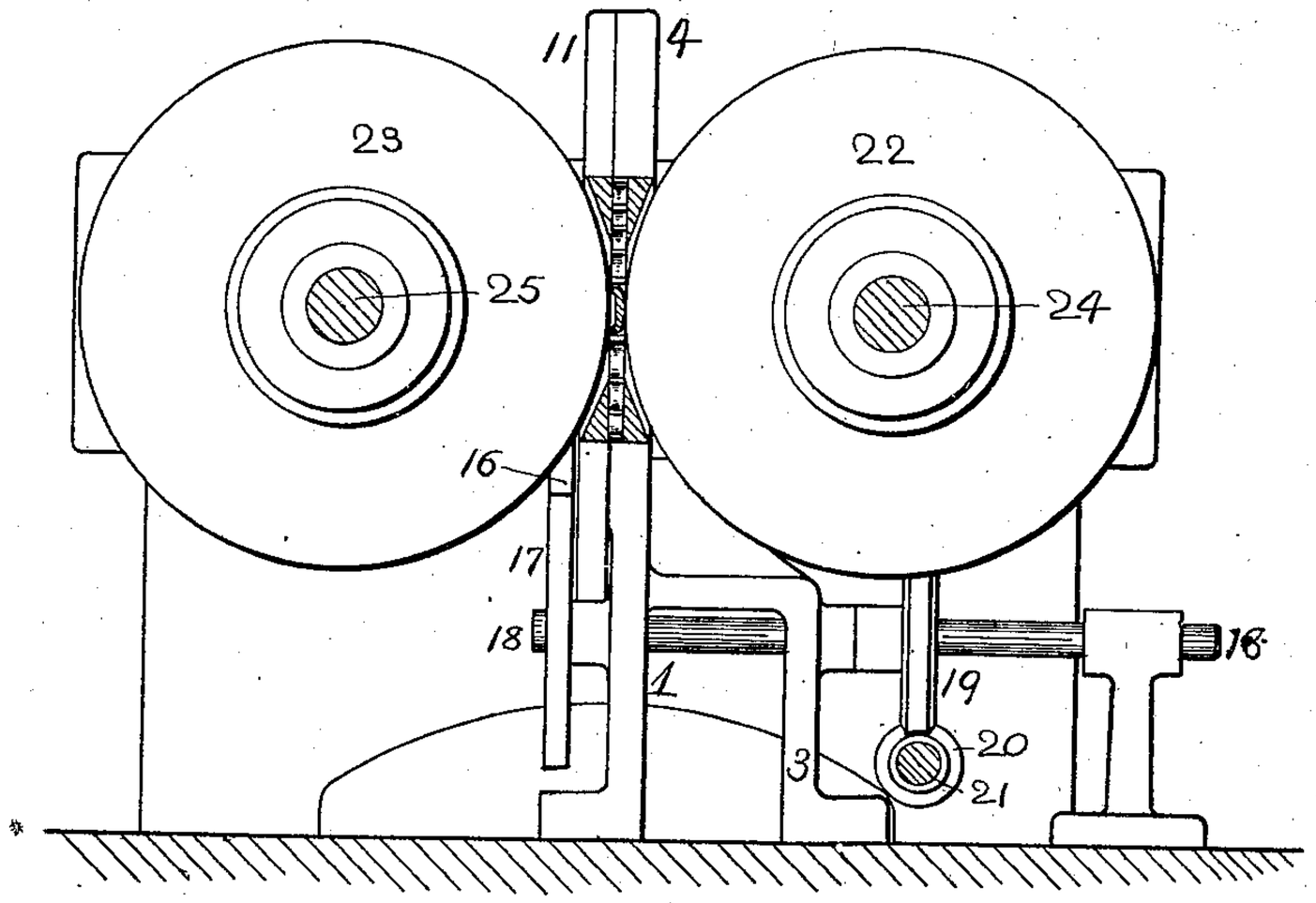


FIG. 3.

WITNESSES:
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No. 708,768. Patented Sept. 9, 1902.

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## BUTTON POLISHING MACHINE.

(Application filed Apr. 4, 1902.)

(No Model.) 5 Sheets—Sheet 4.

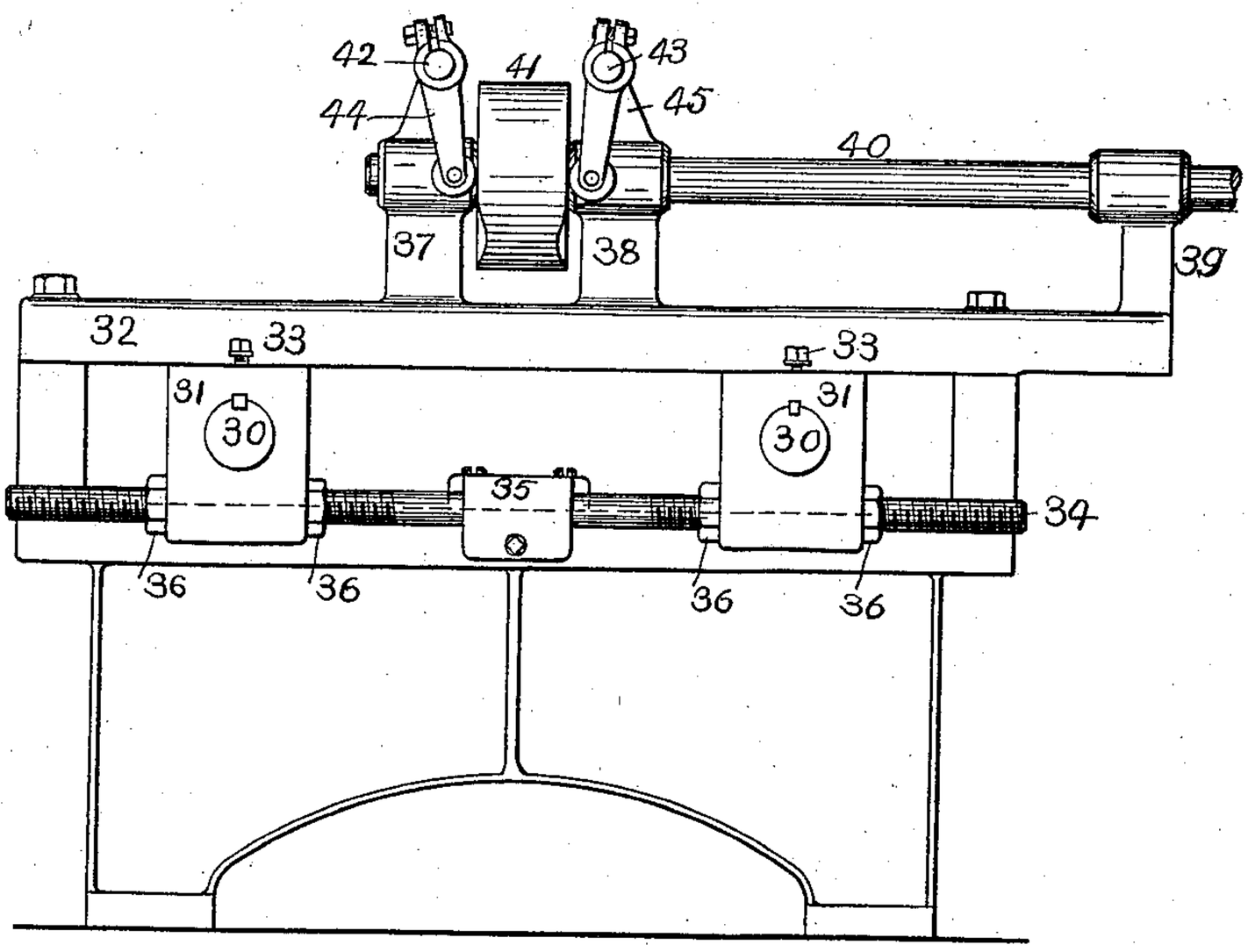


FIG. 6.

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No. 708,768. Patented Sept. 9, 1902.

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## BUTTON POLISHING MACHINE.

(Application filed Apr. 4, 1902.)

(No Model.) 5 Sheets—Sheet 5.

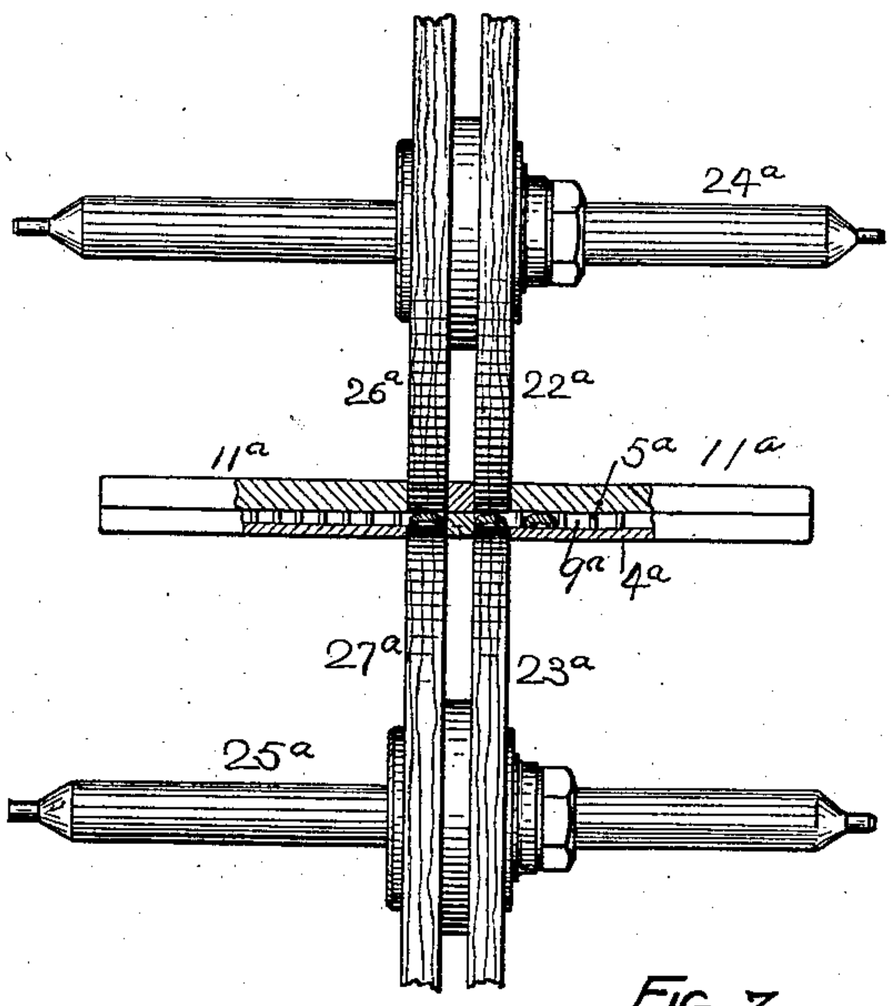


FIG. 7.

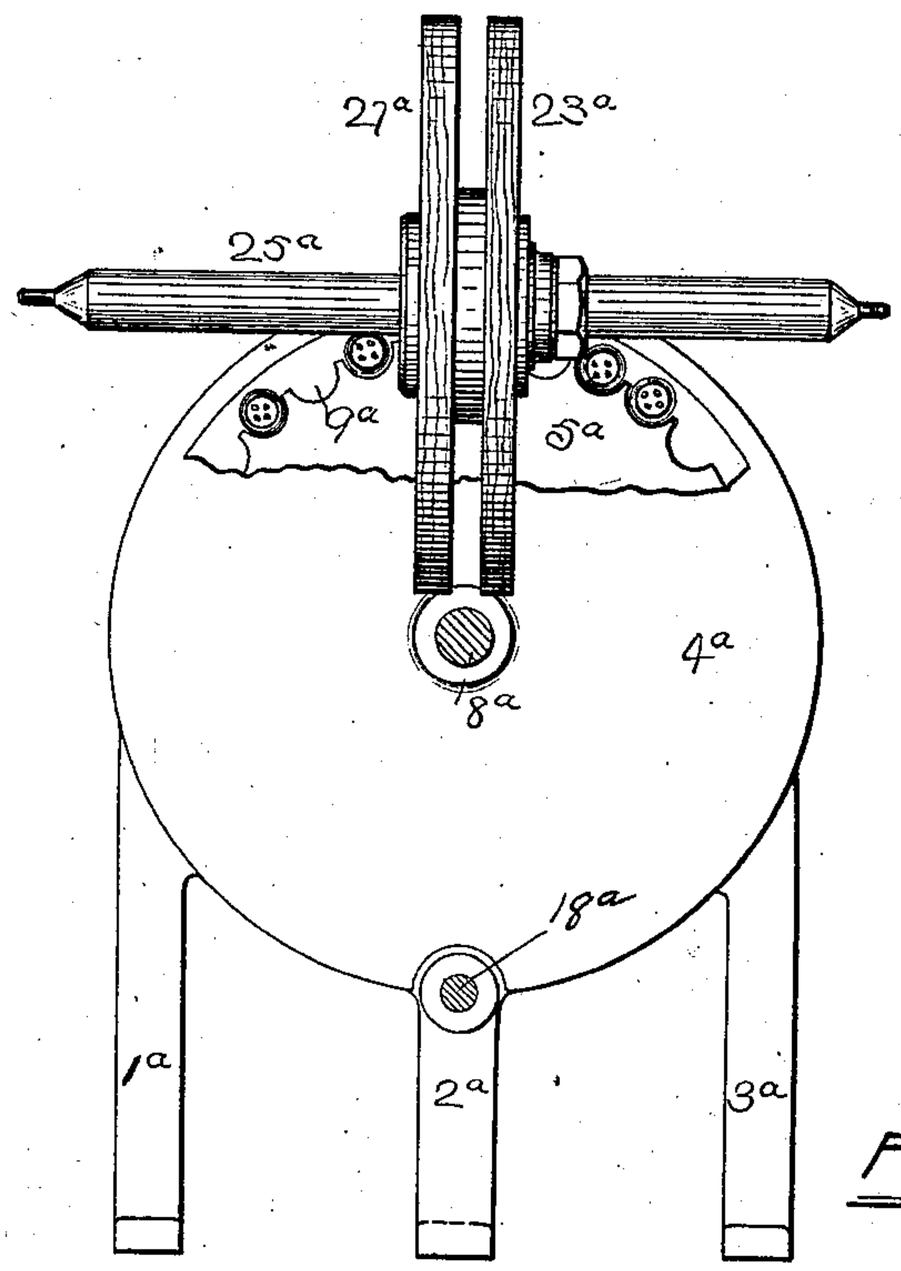


FIG. 8

WITNESSES:
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S. J. Cox.

INVENTOR
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BY William R. Baird
His ATTORNEY

# UNITED STATES PATENT OFFICE.

JOHN HORMBY, OF WOONSOCKET, RHODE ISLAND.

## BUTTON-POLISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 708,768, dated September 9, 1902.

Application filed April 4, 1902. Serial No. 101,439. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN HORMBY, a citizen of the United States, residing at Woonsocket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Buffers and Polishers for Button-Making Machines, of which the following is a specification.

This invention relates to machines for buffing and polishing buttons, and has for its object to provide an improved machine of this class which shall finish the back and face of a button in one seating and which shall comprise a button-carrier to which the buttons are fed singly, carried around to position between two buffers or buffing-wheels, further carried around to position between two polishing-wheels, and finally discharged from the carrier, the buttons being caused to rotate by both the buffing and polishing wheels and the polishing-wheels being supplied with suitable polishing material while in operation.

With this object in view the invention consists in the improved construction, arrangement, and combination of the parts of such a machine, which will be hereinafter fully described, and afterward particularly pointed out in the appended claims.

In the accompanying drawings, in which I have illustrated a machine embodying my improvements, Figure 1 represents a view of the machine in front elevation, parts being broken away. Fig. 2 represents a top plan view. Fig. 3 represents the machine, partly in side elevation and partly in section. Figs. 4 and 5 are fragmentary detail views illustrating, respectively, the relative positions of the carrier, button, and one buffer and of the two buffers, the carrier, and button in working position. Fig. 6 is a view in elevation looking at the right-hand side of Fig. 2. Figs. 7 and 8 are respectively a partial top plan and a partial elevation of the carrier and buffer in a modified arrangement.

The machine is mounted in a suitable frame, of which 1, 2, and 3 are standards which support a guide or guard plate 4, which is the inner guide of the button-carrier 5 and is provided with a slot 6, through which to feed buttons to the carrier, and an opening (shown in dotted lines in Fig. 1) through which to discharge the polished buttons. The guide serves as a bearing for the shaft 8 of the button-carrier 5. This is a disk provided around its periphery with button-seats, consisting of substantially semicircular notches 9. The carrier is of less diameter than the guide 4, and a ring 10, formed with or secured to the inner side of the guard, serves to keep the buttons in place in their seats as they are carried around by the vertical carrier. Mounted loosely on the shaft 8 of the carrier is the outer guide-plate 11, which, secured to the inner guide 4, forms the complete casing of the carrier. In each of the guides 4 and 11 at each side are registering slots 12 13, formed in the guides themselves or in plates 14, secured thereto, arranged to expose the outer half of each button on each face to the polishers and buffers, such slots being adjustable in width by means of plates 15, horizontally adjustable in the guides. The carrier is rotated at a moderate rate or preferably adjusted intermittingly, so as to leave a button in contact with the buffers a greater or less time, as required by the color or shape of the button, by means of a gear 16 on its shaft meshing with a pinion 17 on a counter-shaft 18, on which is a worm-wheel 19, driven by a worm 20 on a shaft 21, driven by belting from a main shaft or any suitable source of power. (Not shown.)

The polishers (or polishing-wheels) 22 and 23 are mounted, respectively, on horizontal shafts 24 and 25 on opposite sides of the carrier and at points in line with the slot 12, and the buffers (or buffing-wheels) 26 and 27 are similarly mounted on the same shafts at points in line with slot 13 and are adjustable both ways, said shafts being driven in opposite directions by belting and pulleys 28 and 29 from any suitable driving-shaft. (Not shown.)

In order to obtain greater friction to polish a very hard shape, it is sometimes desirable or necessary to run the buffers in the same direction, one spindle being rotated faster than the opposite one, the buffers being set a little out of alinement with each other, so that the button will rotate very slowly, thus getting more friction and more cut to the button.

The shafts 24 and 25 have cone-bearings in

pins 30, adjustable in bearing-blocks 31, mounted to slide in side frames 32, the pins being splined in the blocks and securable in any adjustment by set-screws 33 and the blocks being adapted to slide on screws 34, secured in blocks 35, nuts 36 being provided on opposite sides of blocks 31 to secure them in any adjustment.

At 37 38 are standards on one of the side frames 32, which, with the standard 39 on the same frame, form bearings for a shaft 40, driven from any suitable driving-shaft, a cam 41 being secured on the shaft 40 between the standards 37 and 38 in line with the button-carrier. In the upper ends of the standards 37 and 38 are journaled rocking shafts or pins 42 43, which at their outer ends carry arms 44 45, provided with friction-rollers adapted to come into contact with cam 41, and at their ends in the vertical plane of the polishers carry sticks 46, of rouge or of graphite or other polishing material.

In the modification illustrated in Figs. 7 and 8 the pairs of polishing-wheels 22 and 20 and 23 and 27, respectively, are brought closer together on their shafts and are arranged to bear on opposite sides of the portions of buttons exposed beyond the periphery of the carrier, the exposing-openings of the carrier being located at the top instead of the sides thereof.

In the operation of the machine the buttons are fed into the carrier through the slot 6 by any suitable feeding mechanism until a sufficient number of seats have been filled to bring the first button to the exposing-slot 12, where its outer half is acted upon by the polishers, which are adjusted close together, so as to exert some pressure upon the button or squeeze it. These polishers rotating in opposite directions, their contacting surfaces both move downward and acting upon the outer half only of the button they cause it to be rapidly rotated in its seat, so that by the time the slowly-moving or intermitting carrier has moved the button out of contact with the polishers every particle of both surfaces has been thoroughly polished. The continued rotation of the carrier brings the polished button opposite the slot 13 and between the buffers, where a wiping or cleaning operation is performed, with the total result that the polishers, being always kept supplied with fresh polishing material, will have made both surfaces clean and smooth, and the buffers, being simply provided with soft buffing or wiping peripheries, have completed the operation, and the button is ready for use. Both buffers and polishers acting with equal force against opposite faces of the buttons no strain is brought upon the carrier, thus greatly facilitating the easy operation of the machine. The parts are all adjustable in every requisite direction, and the mechanism operated by the cam 41 keeps the polishers always supplied with material necessary to their continued proper operation. The plates 15 for adjusting the width of the exposing-slots 12 and 13 also serve to guard the button-carrier against contact with the abrasive wheels, and thus take all wear, and this wear may be compensated for by moving these plates, which may be easily and cheaply renewed when worn down. When sticks of polishing material are used, the friction of the polishers will heat them sufficiently to cause a proper deposit of their material therein.

In the modifications shown in Figs. 7 and 8 the button-exposing slots are shown at the top of the casing, with the polishers opposite each other and adjacent to the buffers, the parts being indicated by the same reference characters used in the other figures with the exponent "a" added. The construction and operation of such modification will be readily understood.

Having thus fully described my invention, what I claim as new is—

1. In a button-polishing machine, the combination with a circular rotating button-carrier constructed to expose substantially half of a button beyond its periphery, of a wheel mounted on a shaft at a right angle to that of the carrier, provided with a peripheral polishing-surface and arranged to bear upon the exposed portion of a button in the carrier.

2. In a button-polishing machine, the combination with a rotating button-carrier, and guides on opposite sides thereof provided with exposing-slots, of polishing-wheels mounted on shafts at right angles to that of the carrier and arranged to meet in said exposing-slots.

3. In a button-polishing machine, the combination with a rotatable button-carrier provided in its periphery with substantially semi-circular button-seats, of polishing-wheels rotating in planes at right angles to the plane of the carrier and bearing upon opposite sides of buttons on portions thereof which project beyond the seat in the carrier.

4. In a button-polishing machine, the combination with a button-carrier, provided with peripheral seats arranged to expose one-half of the buttons beyond its periphery, and polishing-wheels rotating in opposite directions and bearing simultaneously upon the opposite faces of the exposed portions of the buttons.

5. In a button-polishing machine, the combination with a button-carrier provided with peripheral seats arranged to project one-half of a button beyond its periphery, guides for the carrier slotted to expose the projected portion of a button, polishing-wheels acting through said slots on opposite faces of the exposed portion of the button, and plates for adjusting the width of the exposing-slots and protecting the carrier against wear by the polishing-wheels.

6. In a button-polishing machine, the combination with a rotating button-carrier, polishers acting simultaneously upon opposite sides of buttons carried thereby, a rock-pin in line with the carrier, lubricator-deliverers

carried by said pin above and in line with the polishers, and means for rocking the pin to cause the lubricator-carriers to contact alternately with the opposite polishers.

7. In a button-polishing machine, the combination with a vertical button-carrier, polishers in line with each other on opposite sides thereof, a shaft, a cam thereon, a rocking pin journaled above and in line with the carrier, arms on said pin contacting with opposite sides of said cam, and lubricator-carriers projecting in opposite directions from said pin in line with and above the two polishers.

Witness my hand this 17th day of March, 1902, in the presence of two subscribing witnesses.

JOHN HORMBY.

Witnesses:
EDWIN J. PERRIN, Jr.,
RALPH F. BUNKER.