2 Sheets—Sheet 1.

W. F. NILES.

Button-Polishing Machine.

No. 202,369. Patented April 16, 1878.

FIG. 1.

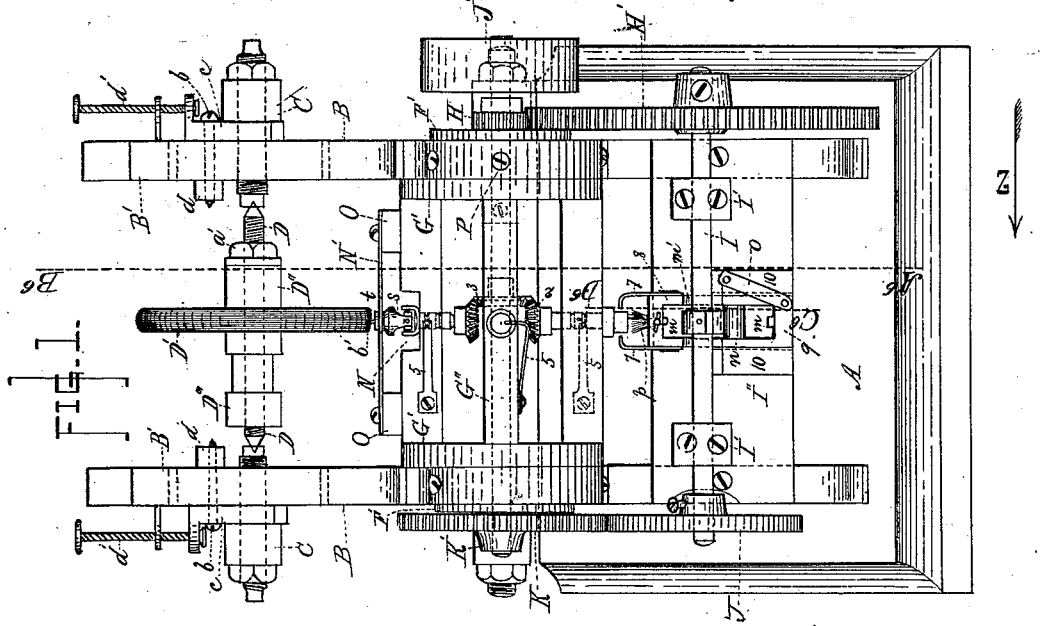
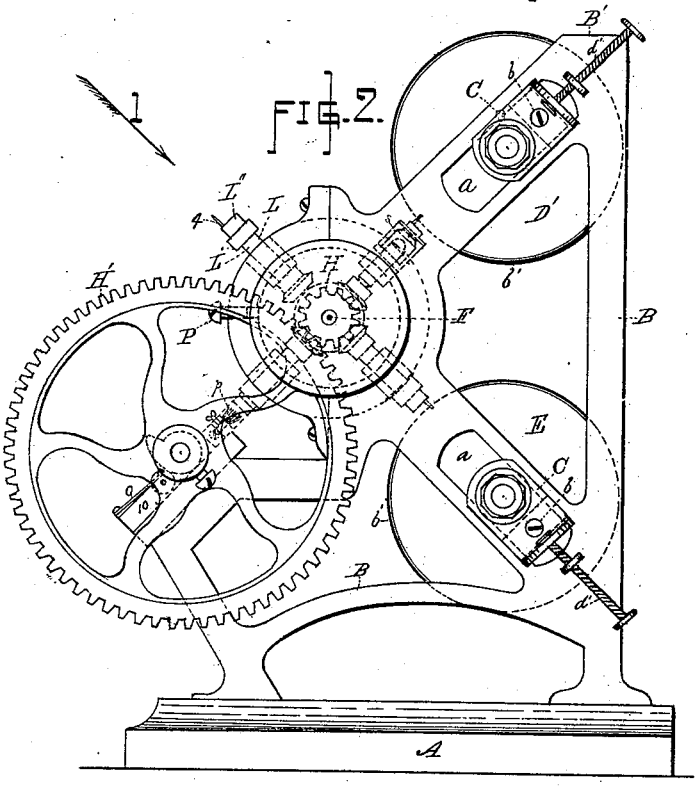


FIG. 2.



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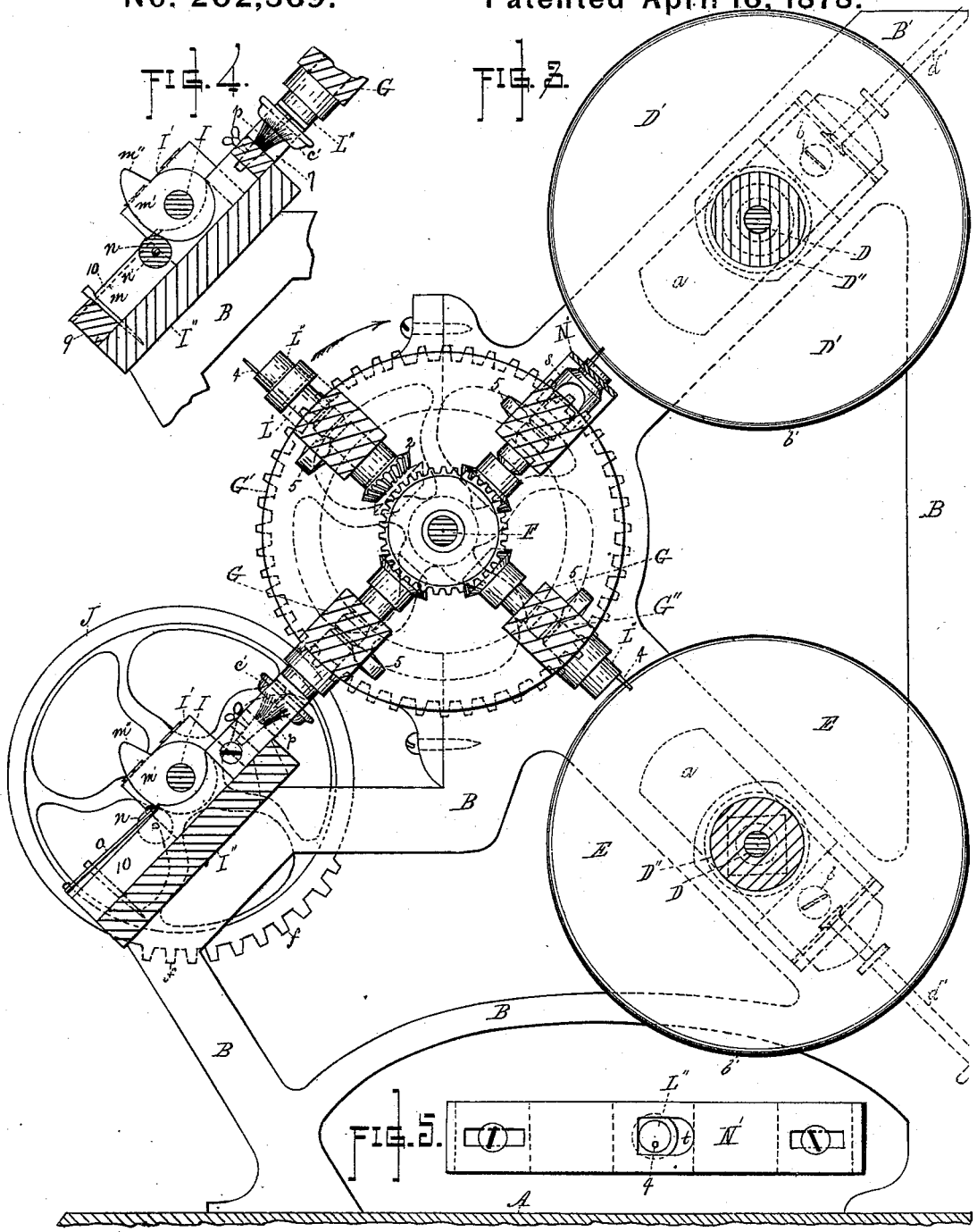

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UNITED STATES PATENT OFFICE.

WILLIAM F. NILES, OF LEOMINSTER, MASSACHUSETTS.

IMPROVEMENT IN BUTTON-POLISHING MACHINES.

Specification forming part of Letters Patent No. **202,369**, dated April 16, 1878; application filed January 7, 1878.

To all whom it may concern:

Be it known that I, WILLIAM F. NILES, of Leominster, in the county of Worcester and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Button-Polishing Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 represents a front view, looking in the direction of arrow 1, Fig. 2. Fig. 2 represents a side or end view of the machine. Fig. 3 represents, upon an enlarged scale, a vertical section on line A^6 B^6, Fig. 1, looking in the direction of arrow 2, Fig. 1. Fig. 4 also represents, upon an enlarged scale, a section of a portion of the machine, as indicated by dotted lines C^6 D^6, looking in the direction of arrow 2, Fig. 1; and Fig. 5 represents a plan view of one of the metal plates used or employed for supporting the button shaft or spindle when made with a swivel-head, as will be hereinafter described.

To enable those skilled in the art to which my invention belongs to make and use the same, I will proceed to describe it more in detail.

The nature of my invention consists, first, in the combination, with the rotating button-supporting reel, of an adjustable polishing or buffing wheel; second, in a rotating button-supporting reel provided with a series of button-supports, as hereinafter described; third, a self-adjusting button-support, in combination with the rotating reel, as will be hereinafter explained; fourth, the combination, with the rotating button-supporting reel, of an automatic-adjusting button-discharging device, as hereinafter described; fifth, the combination, with the button-discharging device, of a central brush, as hereinafter described; sixth, in the combination, with the button-supporting stands, of square or cornered tapering button-holding pins, as hereinafter described; seventh, the combination, in a machine for polishing buttons, of a rotating button-supporting reel, an automatic button-discharging device, and one or more polishing balls or wheels; eighth, the combination, with the button-supporting reel and button-supports, of a friction-device, as and for the purposes hereinafter described.

In the drawings, the part marked A is the base of the machine, upon which is mounted the frame B. The upper ends B′ B′ of the main frame B are provided with slots *a*, (shown in dotted lines in the drawings,) and in which slots are fitted adjustable bearing-pieces C, so constructed as to receive and support the shaft D of the polishing-wheel D′. In this instance the fibrous material of which the wheel D′ is composed is attached to a cylinder or hub-piece, D″, said hub or cylinder being held in place and secured to the shaft D by means of a set-nut, *a′*, which screws upon the end of shaft D, a hub or pulley, D‴, being fastened upon the opposite end of shaft D, against which the hub or cylinder D″ is forced by means of nut *a′*.

The adjustable bearing-pieces C C are held in place by means of screws *b b*, which pass through the plates *c* and through slots *a* into cross or holding blocks *d d*, whereby said adjustable bearing-pieces are securely clamped to the upper ends B′ B′ of the main frame B. Adjustable bearing-pieces C C may be moved up or down by means of adjusting-screws *d′ d′*. (Represented in Fig. 1.) The object of the adjustment above referred to is for adjusting the polishing-wheel D′ as it wears away, so that its periphery *b′* will rotate in the proper position to polish the buttons which may be placed upon button-stands.

In the lower back part of the frame is arranged another fibrous polishing-wheel, E, whose supporting-shaft, its bearings, and the adjustment thereof may be constructed and arranged the same as those of polishing-wheel D′, above described.

F is a central shaft fitted to turn in the heads F′ F′ of the button-supporting reel G, which is made up of the heads F′ F′, flanges G′ G′, and horizontal connecting-pieces G″, which latter are secured at each end to the flanges G′ G′, the heads F′ F′ turning in bearings in the sides of the main frame, and shaft F is so arranged that it can be turned independently of the reel G.

Reel G is operated as follows: A cog-gear, H, (shown in dotted lines, Fig. 2, and full lines,

Fig. 1,) fast on shaft F, gears into a cog-gear, H′, on the end of shaft I, which is supported and turns in bearings I′ I′ on the cross-piece I″ of the main frame. Upon the opposite end of shaft I is a wheel, J, having cogged teeth *f* upon a portion only of its periphery, as shown in Fig. 3 of the drawings.

J′ is a pulley upon the end of shaft F, by which motion can be communicated to the latter, thereby giving a rotary motion to shaft I through cog-gear H, and as shaft I revolves an intermittent motion will be imparted, by means of cogs *f* on wheel J, to the cog-wheel K on the end of a tubular stem, K′, attached to the head F′ of the reel G on that side of the machine.

The reel-arms G″ are to be provided with a series of button-supports, L. These supports are constructed as follows: A short shaft, L′, is supported in a bearing which permits it to slide back and forth, as occasion may require. On the inner end of such shaft is a bevel-gear, 2, which gears into a bevel-gear, 3, fast on shaft F, and the outer end of shaft L′ is provided with a button-supporting head, L″, provided with one or more tapering triangular button-holding pins, 4.

Each arm G″ of the reel is to be provided with one of these button-supporting devices L on a line with each set of polishing-wheels D′ and E, and any number of such sets desired may be arranged in the machine which the width thereof will permit, thus enabling several sets or series of buttons to be polished at the same time.

A spring, 5, is arranged to press upon each shaft L′, for the purpose of keeping gear 2 out of mesh or into mesh, as the case may be. This friction-spring 5 is secured to the side of the arm G″ with its bent point passing through a hole in the side of the arm and bearing against shaft L, as fully indicated in Fig. 1 of the drawings by full and dotted lines.

The buttons to be polished are secured to the heads L″ of the button-supporting shafts or devices L by means of tapering triangular pins 4 passing through the holes in the buttons; and one or more of these pins 4 may be used in each head; one, however, will answer very well.

The buttons, after they have been polished, are discharged by the hooked fingers 7 7, attached to the head 8 of a sliding frame, 9, which is fitted to work up and down between suitable guides 10 10, attached to the cross-piece I″.

Sliding frame 9 has an opening, *m*, in which a cam, *m′*, on shaft I works when shaft I is rotated, and a friction-roll, *n*, arranged to turn on a journal, *n′*, having its ends supported in the sides of frame 9, is kept in contact with cam *m′* by the contractive action of a spring, *o*, one end of which is attached to the lower end of the sliding frame 9, and the upper end to the cross-piece I″; but a different kind of a spring may be used, provided its arrangement is such that its force will be exerted to press or force frame 9 up so as to keep friction-roll *n* in contact with the surface of cam *m′*.

A cleaning-brush, *p*, is properly secured in a hole in the upper end or head of frame 9, and said brush is arranged so as to stand in a central position as respects the fingers 7 7 and button-supporting stands L, as fully indicated in full and dotted lines in the drawings.

The button-supporting reel G rotates or turns in the direction indicated by arrow, Fig. 3. In Fig. 4, *c′* represents the button in the position just before it is withdrawn from the button stand or support L″ by means of the fingers 7 7.

In lieu of making shafts L′ in one piece, they may be made with the head L″ swiveled thereto, as shown at *s* in Figs. 1, 2, and 3; and when this is done, I cut the rails or cross-pieces G″ out, as shown at N, and secure metal plates N′ to said cross-pieces, as shown at O, Fig. 1. When this is done the metal plates N′ are cut out, as shown in Fig. 5, so as to allow the heads L″ to cant over on one side, *t*, when the buttons are struck by the polishing-wheels, thus increasing the effective action of the wheels upon the surface of the buttons.

Power being applied to pulley J′, the button-supporting reel G is set in motion, and at the same time a rapid rotary motion is given to the polishing-wheels by proper belts or otherwise.

The attendant, as reel G revolves, places the buttons to be polished upon the button-supports L when the latter are about in the position pointing toward or in the same plane as arrow 1, Fig. 2, since, when reel G is in this position, it will be at rest.

The attendant also, at the same time, forces stand L in toward the center, so that its gear 2 will be in mesh with gear 3 on shaft F.

At the next contact of cogs *f* of wheel J with gear K, reel G is turned another quarter way around, and the buttons just placed upon the stands L will be carried up under polishing-wheel D, and another set of button-stands, L, will be brought into position to be supplied with buttons.

At the next quarter-turn the buttons first put on will be carried down to be acted upon by the cleaning or finishing wheel E, while at the next quarter-turn they will be carried around below the fingers 7 7, in contact with brush *p*, which has a tendency to remove any remaining dirt which may happen to stick in the center of the button or in grooves thereof.

In Fig. 4 of the drawings the button is shown in the last above-described position, and, as cam *m′* turns around so that its end *m″* presses roll *n* down, fingers 7 7 draw the button off of the pin or pins 4, and at the same time the action of fingers 7 7 draws shaft L′ out so as to withdraw gear 2 out of mesh with gear 3, and the said button-supporting stands are ready to be refilled with buttons at the next quarter-turn of reel G, as first above explained.

A friction-screw, P, is inserted in one of the bearings of the heads of reel G, for the purpose of forcing a leather or rawhide pad against the head F′, so as to impart the necessary friction to keep reel G from turning, excepting when propelled by cogs *f* on wheel J.

From the foregoing description it will be seen that, after the reel has been once around, while the attendant is refilling one set of button-supports the buttons on one other set will be in position to be discharged by the fingers 7 7, while those on one of the others will be in position to be finished and cleaned by the wheel F, and those on the other set will be in position to be polished by wheel D′, thereby rendering the operation quite expeditious.

Having described my improvements in button-polishing machines, what I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

1. The combination, with the button-supporting reel G, provided with a series of button supports or stands, L, of one or more adjustable polishing-wheels, D′, substantially as and for the purposes set forth.

2. The rotating button-supporting reel G, provided with rotating button-supports L, substantially as and for the purposes set forth.

3. The combination, with the rotating button-supporting reel G, of an adjustable button-support, L, substantially as and for the purposes set forth.

4. The combination, with the rotating button-supporting reel G, of the automatic adjusting button-discharging device 7 8 9 10 *m′*, substantially as described.

5. The combination, with the button-discharging device shown, of the central brush *h*, as and for the purposes set forth.

6. The combination, with the button-supporting stand L, of a square or cornered tapering button-holding pin, 4, substantially as and and for the purposes set forth.

7. The combination, in a machine for polishing buttons, of a rotating button-supporting reel, G, provided with a series of button-supporting stands, L, an automatic button-discharging device, as shown, and one or more button-polishing balls or wheels, D′, substantially as and for the purposes set forth.

8. The combination, with the reel-arms G″, of plate N′, slotted as described, and hinged button-supporting head L″, as and for the purposes stated.

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