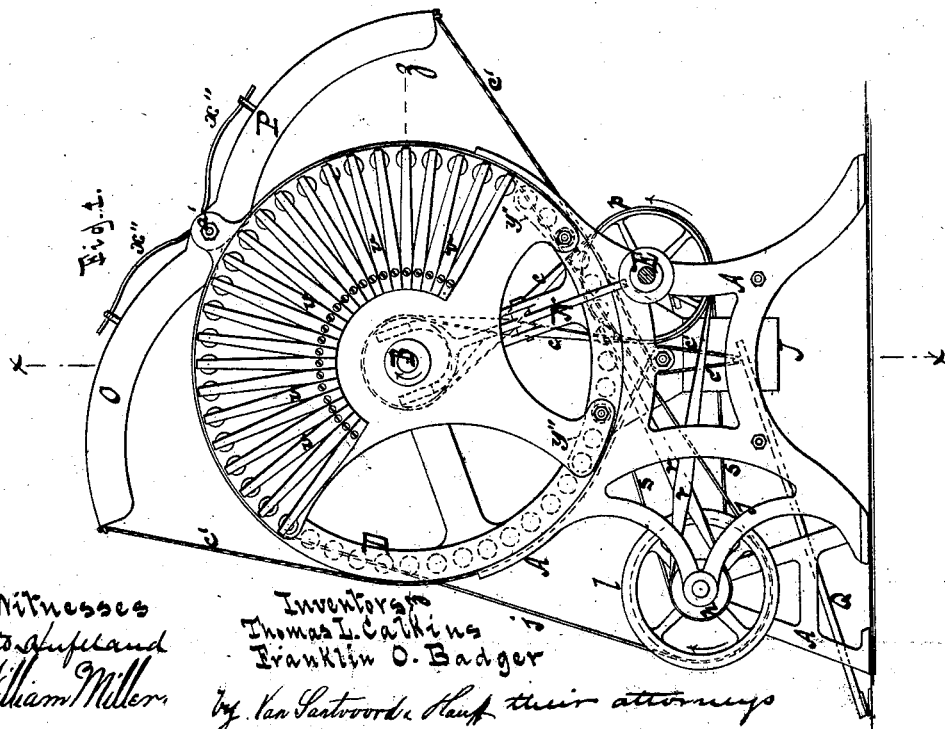
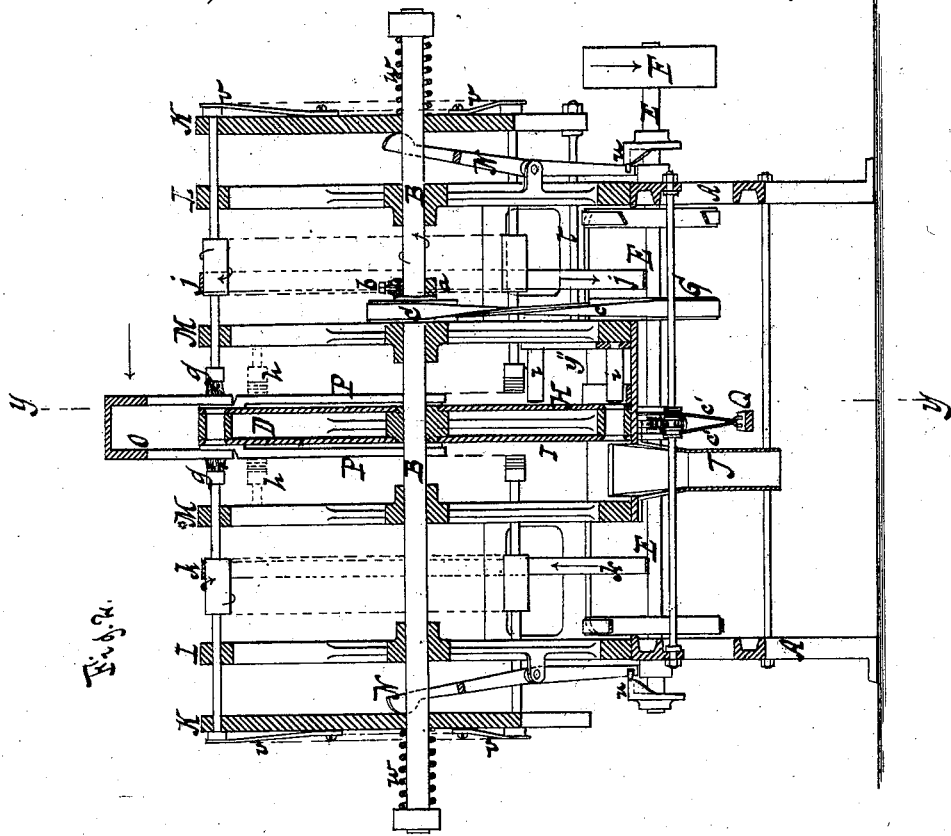


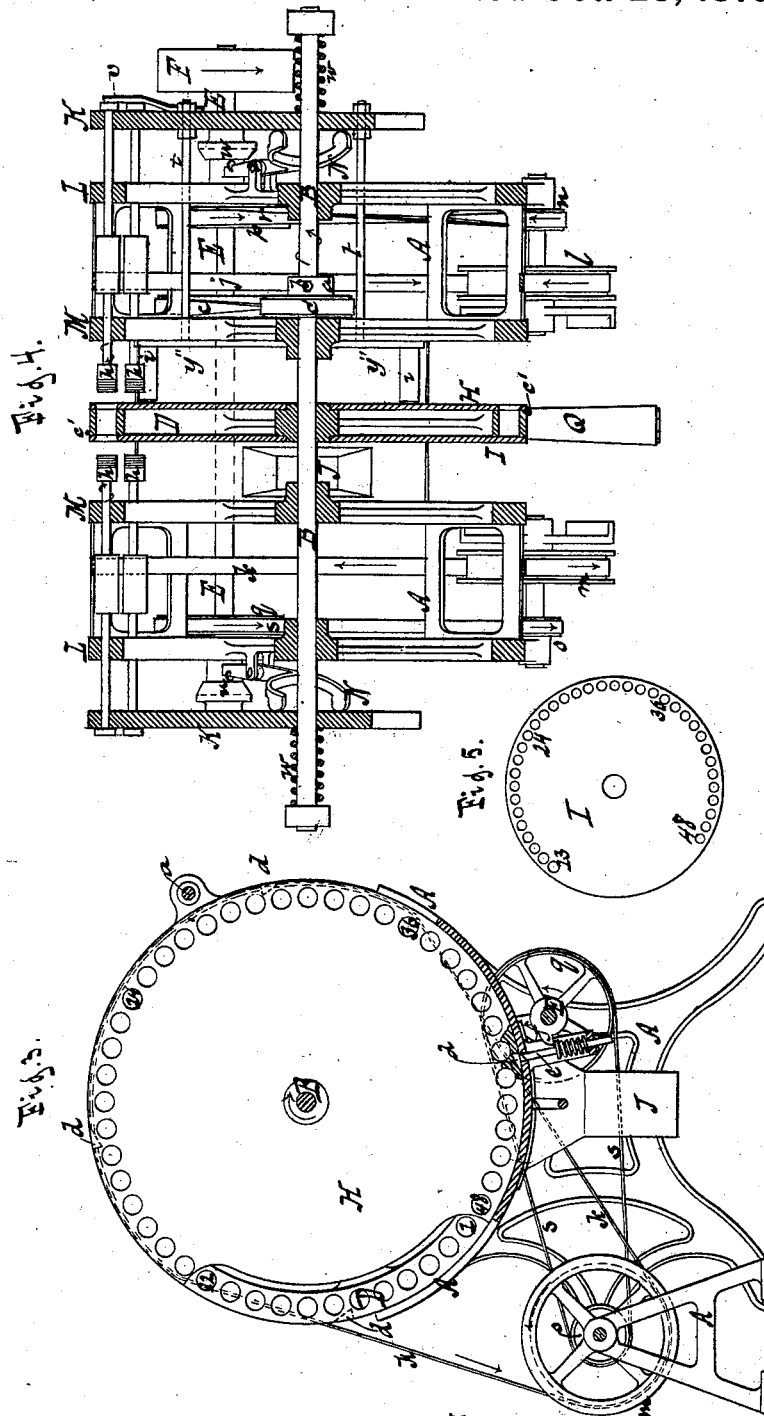
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Machine for Polishing Buttons, &c.  
No. 221,030. Patented Oct. 28, 1879.



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# UNITED STATES PATENT OFFICE.

THOMAS L. CALKINS, OF NEW YORK, AND FRANKLIN O. BADGER, OF  
BROOKLYN, N. Y.

## IMPROVEMENT IN MACHINES FOR POLISHING BUTTONS, &c.

Specification forming part of Letters Patent No. **221,030**, dated October 28, 1879; application filed  
September 4, 1879.

*To all whom it may concern:*

Be it known that we, THOMAS L. CALKINS, of the city, county, and State of New York, and FRANKLIN O. BADGER, of the city of Brooklyn, county of Kings, and State of New York, have invented a new and useful Machine for Polishing Buttons and other Articles, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a side view of the machine, the driving-pulley being removed. Fig. 2 is a vertical longitudinal section in the plane  $xx$ , Fig. 1. Fig. 3 is a vertical transverse section in the plane  $yy$ , Fig. 2. Fig. 4 is a horizontal section in the plane  $zz$ , Fig. 1. Fig. 5 is a detached view of one of the retaining-plates.

Similar letters indicate corresponding parts.

This invention consists in the combination, in a machine for polishing buttons and other articles, of a carrier provided with cells or recesses for receiving the articles to be polished, and buffs revolving in opposite directions, and so arranged as to act on both sides of the articles at the same time. With these devices are further combined pushers for ejecting the finished articles from the recesses in the carrier. Also, in the combination, in a polishing-machine, of a revolving carrier provided with recesses for receiving the articles to be polished, mechanism for imparting to said carrier an intermittent motion, buffs and cleaners acting on the articles in the carrier, mechanism for causing the same to enter the recesses in the carrier when the same is at rest and to recede therefrom when the carrier is revolved, pushers for ejecting the finished articles from the carrier, and mechanism for imparting motion to said pushers; the combination, in a machine for polishing buttons and other articles, of a carrier revolving on a shaft, friction-pulley for imparting motion to said shaft, detent for holding said carrier stationary, buffs and cleaners revolving in opposite directions, and so arranged as to act on both sides of the articles, pushers for ejecting the finished articles from the carrier, and cam-levers operated by cams, and so arranged as to allow the buffs, cleaners, and pushers to act on the articles in the carrier when the same is at rest, and to cause

them to recede from the carrier when the same is revolving, as will be hereinafter more fully set forth; a polishing-machine, constructed substantially as described, provided with a feeder for impregnating the buffs with polishing material, wiper for removing the impurities from the cleaners, and mechanism for bringing said feeder and wiper to act on the buffs and cleaners when the same are not in operation, and for allowing said feeder and wiper to spring back to their former position when the buffs and cleaners are about to enter the recesses in the carrier, as will be hereinafter more fully described; the combination, in a polishing-machine, of a revolving carrier, buffs, and cleaners revolving in opposite directions, and so arranged as to act on both sides of the article at the same time, pushers for ejecting the finished articles from the carrier, and retaining-plates for preventing the articles from falling out of the carrier when the same is in motion.

In the drawings, the letter A designates the frame forming the bearings for the working parts of the machine. In this frame is revolved an axle, B, by means of a pulley, C. This pulley C is provided with a sleeve,  $a$ , surrounding the shaft B, and motion is imparted to the shaft B by the friction of said sleeve on the shaft. This friction may be regulated by a screw,  $b$ , or other suitable means. The pulley C receives motion by means of a belt,  $c$ , from the pulley G, which pulley G is keyed on the driving-shaft E, to which motion is imparted by the pulley F, which is operated by power or other suitable means. The pulley F revolves in the direction of the arrow shown upon it, and since the belt  $c$  is crossed, the shaft B revolves in an opposite direction, carrying with it the carrier D, which is keyed upon it. This carrier D continues to revolve until the detent  $e$ , Fig. 3, springs by the action of a weight or spring into one of the notches  $d$  in the periphery of the carrier D. This detent holds the carrier D and shaft B stationary, while the pulley C continues to revolve. When the shaft E has revolved far enough, the cam  $f$ , Fig. 3, mounted upon it, presses the detent  $e$  out of the notch, and the carrier D again revolves, and so on alternately. This

carrier D is provided with any desired number of cells or recesses for receiving the articles to be polished, forty-eight being shown in the drawings, and numbered 1, 12, 24, 36, and 48, respectively. This carrier D revolves between two fixed perforated plates, H I, which are attached to the frame A. The plate H, as shown in Fig. 3, has part of its periphery cut away, so as to leave a certain number of recesses—as, for example, twelve—in the carrier uncovered. The plate I, Fig. 5, has the corresponding part of its periphery complete, and not provided with any perforation. The advantage of this arrangement is, that when the machine stands as in Figs. 3 and 4 the articles to be polished can be rapidly fed into these twelve cells or recesses in the carrier from one side without risk of falling out at the other.

When the carrier D now revolves for one-fourth of a revolution, the cells or recesses 1 to 12 are carried between the plates H and I, and as said carrier D revolves rapidly the articles in said cells cannot slip out and through the perforations in the plates H and I. When said carrier D has thus partly revolved, the detent *c* holds it for a while stationary. While it is thus held the buffs *g*, of which there are twelve on each side of the carrier D, enter the recesses in the carrier and polish the articles in the same. At the same time the cleaners *h*, of which there are a corresponding number, enter the twelve succeeding cells or recesses in the carrier D, and clean the polishing-powder and other impurities from the articles, while twelve pushers, *i*, enter the succeeding twelve recesses in the carrier D from one side, and push the finished articles into a chute, J, or other fit receptacle. Of course the plates H and I have to be so arranged that when the carrier D is at rest the perforations in said plates correspond with the recesses in the carrier.

The cells or recesses in the carrier are large enough for the largest buttons, and are of a form adapted to hold the button from peripheral displacement by centrifugal force, the result being that the machine can be used for buttons of different sizes. If a button be dropped into one of the cells or recesses of the carrier, and it lies therein in an oblique position, it will be immediately brought into an upright position by the action of the buffs acting thereon from opposite sides, and by such peculiar construction the use of clamps for holding the buttons firm in the carrier can be entirely dispensed with.

The buffs, cleaners, and pushers are operated as follows: The buffs *g* and cleaners *h* revolve in the frames K L M, and motion is imparted to them by belts *j k*. These belts receive motion from pulleys *l m*, to which motion is imparted by pulleys *n o* on the same shafts. These pulleys *n o* are connected to pulleys *p q* on the driving-shaft E by belts *r s*. One of these belts—as, for example, the belt *r*—is crossed, so that the buffs and cleaners on one side of the carrier D revolve in a

direction opposite to that of the buffs and cleaners on the other side.

By this arrangement the buffs and cleaners act on both sides of the articles in the carrier D, holding them upright and stationary, so that the use of clamps for holding the articles firm and steady can be dispensed with, and much time and labor, which would be lost in tightening and opening these clamps, is saved.

The frames L and M, in which these buffs and cleaners revolve, are fixed on the frame A, while the frames K slide on the shaft B, and are pressed by the springs *w* against the cam-levers N, which rock on bearings attached to the frames L. These cam-levers N are operated by cams *u* on the shaft E, and as these levers N rock to and fro, the frames K slide back and forth. On these frames K are springs *v v*, which press on the heads of the shafts of the buffs *g* and cleaners *h*, whereby these buffs and cleaners are caused to slide back and forth with the frames K K, thus alternately entering the recesses in the carrier D, and alternately receding from the same. This motion is so timed that the buffs and cleaners act on the articles in the carrier D when the same is stationary, and recede therefrom when the carrier revolves.

From one of the frames K project two rods, *t t*, of metal or other suitable rigid material. To the end of these rods is secured a plate, *y''*, Figs. 1, 2, and 4, of metal or other suitable material, to which are attached the pushers *i*, twelve in number. As this frame K slides toward the carrier D these pushers enter from one side the twelve recesses or cells from 36 to 48, Fig. 3, and push the finished articles out of the recesses into the chute J or other suitable receptacle.

Thus it will be seen that the articles which are placed in the receiver D are first polished by the buffs *g*, then cleaned by the cleaners *h*, and then, when finished, ejected from the carrier D by the pushers *i*.

When the buffs are out of the recesses in the carrier D, as shown in Figs. 2 and 4, it is desirable to impregnate them with some suitable polishing-powder as is used in the trade. For this purpose a feeder, O, carrying on its face a polishing-powder, is provided. This feeder O swings on bearings *a'* on the plates H and I, and is held up in the position shown in Fig. 1 by a spring, weight, or other suitable means.

When it is desired to impregnate the buffs *g* with the powder, the operator steps on the treadle Q, and by means of the strap or belt *c'* the feeder is caused to glide over the faces of the buffs *g*, supplying them with powder.

The feeder O is covered with buckskin or other suitable material adapted to retain a quantity of polishing-powder, which is transferred to the buffs when the feeder is swung down.

The wiper P, also swinging in the bearings

*a'*, is, by the same strap or belt *c'*, caused to slide over the cleaners *h*. The faces of this wiper are covered with gravel-paper or other fit material, whereby it removes all impurities from the faces of the cleaners *h*.

The wiper *P* is caused to move past the faces of the cleaners by the action of the treadle *Q*, to which it is connected by the strap or belt *c'*.

On freeing the treadle *Q*, the feeder and wiper spring back to their former position by the action of the spring *x'' x'''*. Of course, if desired, the feeder and wiper can be operated by a cam or other suitable device, which, when attached to the shaft *E*, may be caused to act on the treadle *Q*.

If it should be desired to cut grooves in the articles before ejecting them from the carrier *D*, some of the cleaners *h* may be removed and revolving cutters substituted, whereby the desired object would be accomplished.

A simple and cheap way of constructing the buffs is as follows: We take elastic tubular heads of about an inch and a half long, and into these heads we draw bristles or narrow strips of leather or similar material, so that one series of ends of said bristles or strips is flush with one end of the tubular head, while their other ends project beyond the tubular head a short distance. This tubular head inclosing the bristles or strips is then inserted in a metallic capsule, the other end of which capsule is tapped for the reception of the screw ends of the shafts carrying the buffs.

The cleaners are made in the same manner, with the exception that cotton-waste or like material is used in place of bristles or leather strips.

This construction of buffs and cleaners has the advantages that it is cheap, and that, as the buffs and cleaners are liable to wear out rapidly, the tubular heads can be supplied with new bristles or cotton-waste at very little expense and in a very short time.

What we claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a polishing-machine, of a carrier having cells or recesses adapted in form to hold the article to be polished from peripheral displacement, with buffs arranged to revolve in opposite directions for simultaneous action upon both sides of the article, and means for operating the carriers and buffs, all substantially as and for the purpose set forth.

2. The combination, in a polishing-machine, of a carrier, *D*, buffs and cleaners revolving in opposite directions, and adapted to act on both sides of the articles at the same time,

means for operating the carriers and buffs, whereby the use of clamps for holding the articles firmly in the carrier is dispensed with, and pushers *i*, for ejecting the finished articles from the carrier, all constructed and adapted to operate substantially as set forth.

3. The combination, in a polishing-machine, of a revolving carrier, *D*, mechanism for imparting to said carrier an intermittent motion, buffs and cleaners acting on the articles in said carrier, mechanism for causing said buffs and cleaners to enter the recesses in the carrier when the same is at rest, and to recede therefrom when the carrier is revolved, pushers *i*, and mechanism for imparting motion to said pushers, all constructed and adapted to operate substantially as set forth.

4. The combination, in a polishing-machine, of a carrier, *D*, revolving on a shaft, friction-pulley *C*, for imparting motion to said shaft, detent *e* for holding the carrier stationary, cam *f*, and spring or weight for operating said detent, buffs *g*, cleaners *h*, pushers *i*, and cam-levers *N*, operated by cams *u* and springs *w*, all constructed and adapted to operate substantially as described.

5. A polishing-machine constructed substantially as described, and provided with a feeder, *O*, and wiper *P*, and treadle *Q*, or other equivalent mechanism for bringing said feeder and wiper to act on the buffs and cleaners when the same are not in operation, and spring or weight for causing the feeder and wiper to spring back to their former position when the buffs and cleaners are about to enter the recesses in the carrier *D*, substantially as shown and described.

6. The combination, in a polishing-machine, of a revolving carrier, *D*, buffs *g*, and cleaners *h*, revolving in opposite directions, and so arranged as to act on both sides of the article at the same time, so that the use of clamps for holding the articles steady in the carrier can be dispensed with, pushers *i*, for ejecting the finished articles from the carrier *D*, cam-lever and spring for operating such pushers, and retaining-plates *H* and *I*, for preventing the articles from falling out of the carrier when the same is revolving, all constructed and adapted to operate substantially as set forth.

In testimony whereof we have hereunto set our hands and affixed our seals this 1st day of September, 1879.

THOMAS L. CALKINS. [L. S.]

FRANKLIN O. BADGER. [L. S.]

Witnesses:

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W. C. HAUFF.