

UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN LATHES FOR TURNING BUTTONS.

Specification forming part of Letters Patent No. **214,705**, dated April 22, 1879; application filed February 24, 1879.

To all whom it may concern:

Be it known that I, THOMAS J. ROCKWOOD, of Leominster, Worcester county, in the State of Massachusetts, have invented certain new and useful Improvements relating to Lathes for Turning Buttons, of which the following is a specification.

It has been common in the manufacture of buttons from horn-tips and analogous material to produce the blanks in the form of a short cylinder of proper diameter, and of a length equal to or a little in excess of the thickness of the button, and to give the proper swelled form to each face and the rounded section at the edge by subsequent treatment in a lathe. I have devised an improvement in such lathes, by which the operation is facilitated.

Lathes have been before known which worked rapidly, but involved a waste of material, which my invention avoids. The more common mode of treatment heretofore has used the material economically, but involved increased labor. My chuck economizes both time and material.

I designate by the term "chuck" the holding means for the blank, and also the mechanical devices by which the proper opening and closing motion is imparted thereto.

My experiments have been made with that class of buttons in which there is one hole exactly in the center on the front face and two holes in the rear face converging together; but the invention may apply to other styles as well.

Automatic mechanism may be used for operating the cutting-tool; but I will describe as having the cutter worked by hand.

The accompanying drawings form a part of this specification, and represent what I consider the best means of carrying out the invention.

Figure 1 is a side elevation of the lathe, partly in section. Fig. 2 is an end view of the chuck-head alone. The remaining figures are sections through the button-blank when partly formed and the outline of the adjacent portion of a chuck-head. These figures show the button-blank in two positions. Fig. 3 shows the button-blank as it is first held. Fig. 4 shows the button-blank after it has been reversed in position to allow the last side to be finished.

Similar letters of reference indicate corresponding parts in all the figures.

A is the fixed frame-work. B is the shaft or arbor running in fixed bearings therein, and driven by a belt (not represented) from any suitable power. Its overhanging end B' is screw-threaded on its exterior, and matches the internal threads of a separate piece, D, which forms the body of my chuck. The outer end is slotted longitudinally, and in the slots are mounted levers turning on pins *e*. There may be various numbers of these levers. I have shown four; but three may, for some reasons, be preferable. Each is marked E¹ E². E¹ is the back end, through which motion is imparted, and E² the front end, through which the gripe upon the blank is transmitted.

The button-blank is marked *m*. I will describe it as a button having an equal amount of swell on each face, though this may be varied.

The shaft or arbor B is hollowed from the front end backward for a considerable distance. In the hollow interior is placed a long and sufficiently stiff spiral spring, G. In the front, and pressing backward against the spiral spring, is an axially-sliding pin, H, having a conical end projecting between the ends E¹ of the gripping-levers.

I is a loosely-fitted ring applying on the exterior of the arbor B. It is connected rigidly with the pin H by a screw, J, which is tapped solidly into the latter. A longitudinal slot is produced in the arbor B, which allows the pin H with its screw J to be moved backward and forward.

K is a hand-lever, turning on a center, *k*, and engaging in a groove in the ring I. By moving the hand-lever K, pressing the pin H inward against the tension of the spring G, the gripping-levers E¹ E² are set at liberty. Small flat springs L are employed, which move the ends E¹ toward each other, and cause the gripping-arms E² E² to open. This liberates the blank, and it falls out. On inserting a new one, and moving the hand-lever K in the proper direction, the pin H is thrust outward by the force of the spring G. This causes the blank *m* to be strongly griped.

The outer face of the chuck-body D may allow the button-blank to be pressed directly against it, or there may be any suitable ad-

justable piece—as the large smooth head of a screw—at that point to make an adjustable bearing for the blank, to provide for treating material of different thicknesses.

I have not represented the cutting-tool or any rest for it. The tool and rest may be of any ordinary form, and the cutter being operated by a skillful button-maker, the outer face and rim are shaped with great rapidity and perfection. After one face is thus finished, the blank is dropped by a proper movement of the hand-lever K to open the grippers, and is caught by the hand of the attendant and turned and replaced. Now the nicely-rounded face instead of the flat face is presented backward against the end of the arbor, and the end of the arbor having been properly recessed the swelled face of the blank enters therein. Now the gripping-levers, instead of taking hold, as at first, of the cylindrical surface near one edge of the blank, take hold of the previously-finished rounded edge at the middle of the edge. The flat face which is presented outward is next shaped by a proper manipulation of the cutter, and the finished blank is dropped by another movement of the hand-lever K, and a new blank introduced.

It will be understood that on first introducing each blank the plane face presented backward against the arbor bears only at the rim, and the blank is held outward so far that the gripping jaws or arms E¹ E² only take hold on the periphery near one edge; but it has a sufficient hold to allow the button to be strongly held, and a good chip cut by the cutting-tools. My device is much superior in this respect to the common lathe, which takes hold of the blank at or near the center only. While it is thus held the front face and a little over the periphery is finished. On turning this half-finished button and replacing it, the material which has been removed near the periphery allows the blank to sink deeper into the hollowed end of the arbor, and the jaws take hold properly on the finished periphery.

Modifications may be made. Only two of the gripping-levers E¹ E², or a greater number than four, may be employed.

The spring G, mounted centrally in the arbor, may be dispensed with, and the gripping-force may be imparted through the hand-lever K, either directly or through some spring which acts thereon, and some of the advantages of my invention may be realized. So

also the spring action may be dispensed with altogether, and a sufficient hold may be obtained on the buttons by the direct force of the hand, or by any suitable mechanism.

Other means than the hollowed end of the arbor may be employed to allow the blank to stand farther back, or be sunk farther into the arbor on the second presentation than in the first. I can, if preferred, use two machines, one for the first treatment and another for the second treatment of the button.

I can change the lever E¹ E² or change the positions of the centers *e* to adapt the machine to different-sized buttons. It may generally be more convenient, however, to change the entire head or body, and to provide different sizes for different-sized buttons. The other parts may be the same for all sizes of buttons. I prefer the arrangement herein shown.

The mounting of the jaws E¹ E² in slots within the head or body D, and operating all by a central pin, H, allows the whole device to be very compact.

The central position of the spring G relieves it from being disturbed by centrifugal force.

My construction allows the parts to be short as well as close to the center, so that the arbor need overhang or project only to a small extent.

The spring-action to induce the closing of the grippers insures a just sufficient amount of force without ever marking or marring the buttons.

I claim as my invention—

1. In a button-lathe, a threaded arbor, B, carrying an adjustable wedge device and means for moving the latter axially at will, in combination with a detachable chuck-head or body, D, correspondingly threaded, and with clamping-arms E¹ E², removable and exchangeable with the head, and adapted to serve as herein set forth.

2. The spring G and conical pin H, mounted axially in the arbor B, in combination with pivoted levers E¹ E² and chuck-body D, as herein specified.

In testimony whereof I have hereunto set my hand this 19th day of February, 1879, in the presence of two subscribing witnesses.

T. J. ROCKWOOD.

Witnesses:

THOMAS D. STETSON,
H. A. JOHNSTONE.