

No. 624,377.

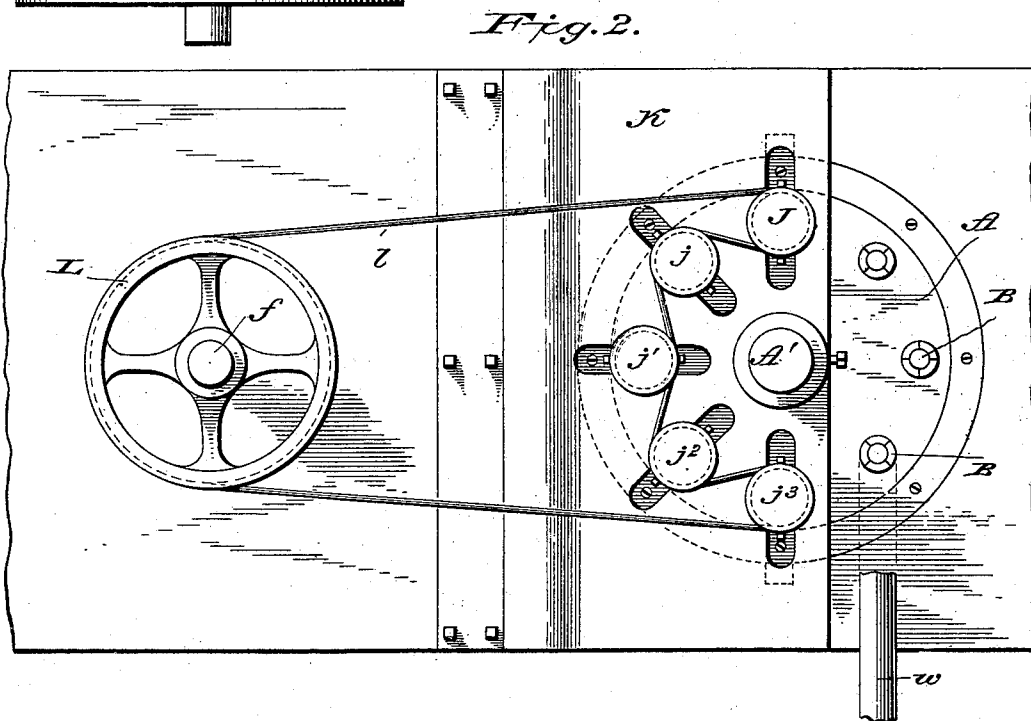
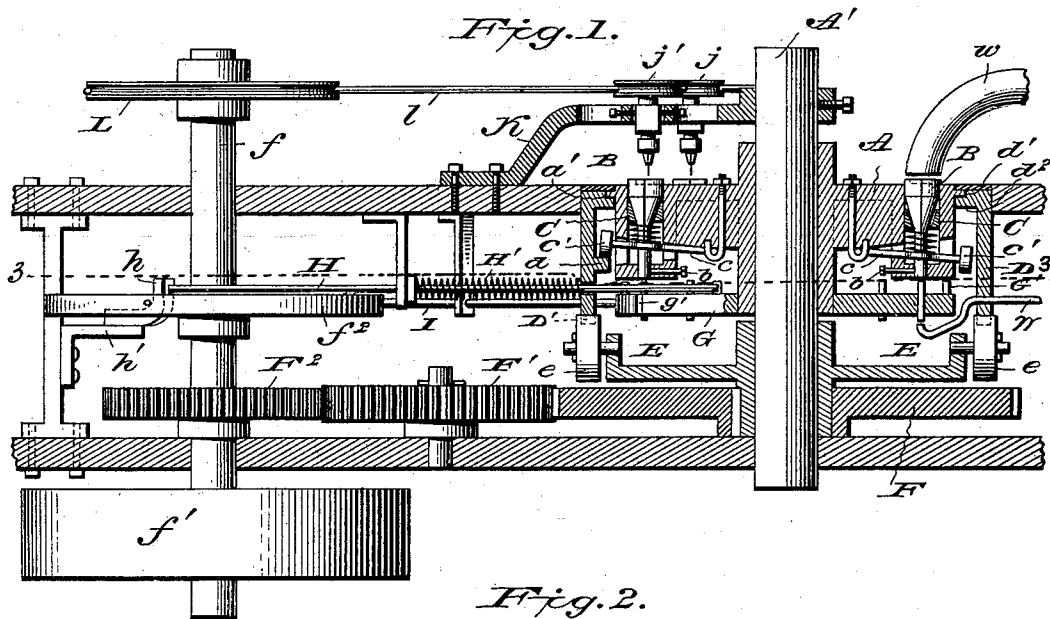
Patented May 2, 1899.

W. J. PUGH.
BUTTON MAKING MACHINE.

(Application filed June 30, 1898.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES

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Fig. 3.

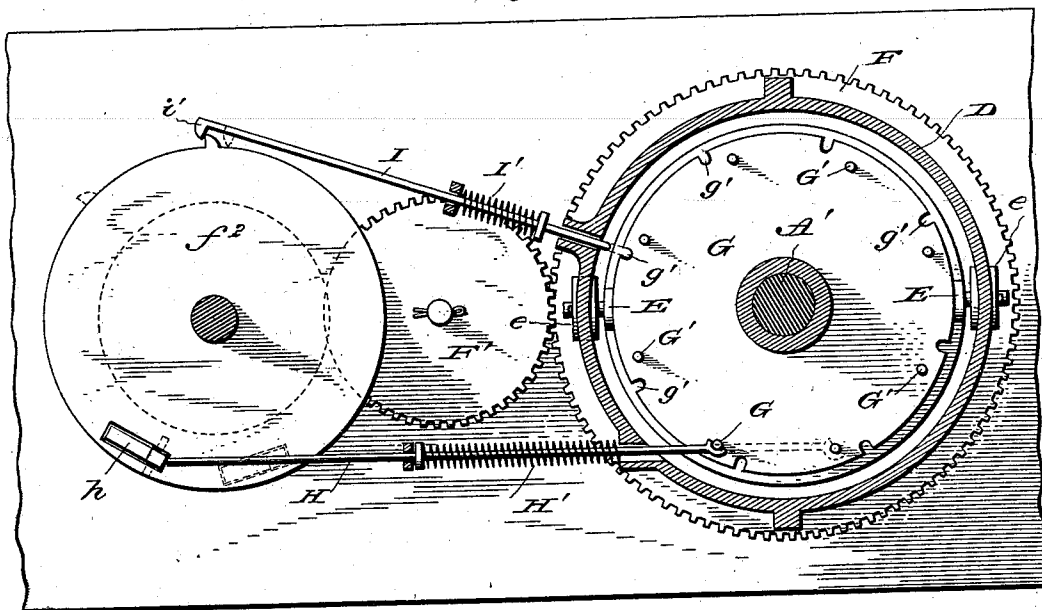


Fig. 4.

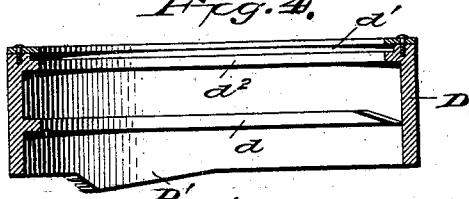


Fig. 5.

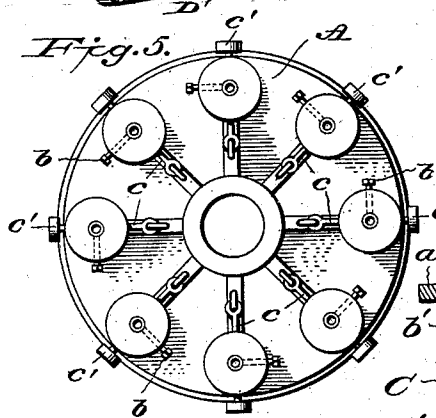


Fig. 6.

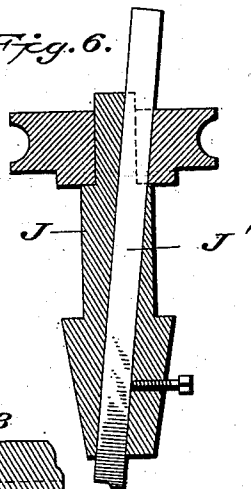
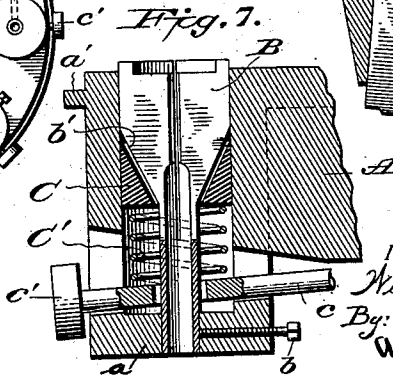


Fig. 7.



WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM J. PUGH, OF MUSCATINE, IOWA, ASSIGNOR OF TWO-THIRDS TO
WILLIAM S. HILL AND EDWARD HORTON, OF MUSCATINE COUNTY,
IOWA.

BUTTON-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 624,377, dated May 2, 1899.

Application filed June 30, 1898. Serial No. 684,862. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. PUGH, of Muscatine, in the county of Muscatine and State of Iowa, have invented certain new and useful Improvements in Button-Making Machines; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is an improvement in button-making machinery, and is more especially designed for working upon pearl, bone, and shell buttons. Its object is to provide a machine which will be substantially automatic in its action and which will take the rough blanks and face and perforate the same without further manual handling of the button or manipulation of mechanism, the button-blanks being fed into the machine by hand at one point and delivered therefrom in faced and perforated condition at another point.

The invention therefore consists in the novel construction and combination of parts summarized in the claims forming part of this specification, and the following is a description of the best form of machine now known to me, which is represented in the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section through the complete machine. Fig. 2 is a top plan view thereof. Fig. 3 is a horizontal longitudinal section on line 3 3, Fig. 1, looking downward. Fig. 4 is a detail transverse section of the flanged ends. Fig. 5 is a bottom plan view of the blank-carrier. Fig. 6 is a sectional detail of the facing or centering tool, and Fig. 7 is a detail enlarged sectional view of the chuck.

A designates a horizontal rotary disk constituting the chuck-carrier and mounted upon the shaft A', secured in a suitable casing. As shown, this carrier is provided with eight equidistant and concentrically-disposed chucks B, which are of usual form and which are set in vertically-disposed holders a in the carrier A, as shown in Fig. 1, and are secured by set-screws b. The chucks are tapered, as at b', and below this tapered portion is a conically-

bored ring C, which is supported upon a spring C', that is in turn upheld on a radially-disposed lever c, pivoted at its inner end to the bottom of the carrier A and projecting beyond the periphery of the carrier, provided with a roller c' on its outer end, which is adapted to engage a segmental flange d on the interior surface of a cylinder D, surrounding the carrier A. When the rollers c' ride up on the flange d, the spring and ring C are lifted, and the ring causes the upper end of the chuck to contract and retain the button-blank placed therein until the roller c' runs off the flange d, whereupon the lever c, spring, and ring drop, and the button-blank is freed.

The holder is tubular throughout, and at the point where the blanks are to be discharged they come directly over the end of an air-pipe W, which is connected to a suitable air-forcing apparatus, by which air can be blown upward through the chuck, so as to free the latter from all dust and so as to blow the finished button out of the chuck into and through the discharge-tube w.

As indicated in Fig. 1, the carrier A is provided with an external flange a', which is adapted to engage a groove d' in an internal flange d² at the upper end of cylinder D, so that when the cylinder is raised or lowered the carrier will move therewith, for a purpose hereinafter explained.

The cylinder D rests upon rollers e, attached to rotating arms or disks E, loosely mounted on shaft A' and keyed to a large gear F, which is driven by an intermediate F' from a pinion f² on a driven shaft f, which is provided with a belt-pulley f', by which it can be connected with a prime motor or driven by other suitable means. The cylinder D is also provided with one or more pairs of diametrically-opposed cams D' on its lower edges, and when the rollers pass under said cams the cylinder D is lifted, and with it the carrier A, as hereinafter explained.

As shown, a disk G is keyed on the lower end of the hub of carrier A. This disk is provided with a series of equidistant lugs or pins G', one for each chuck A B, (shown in the drawings,) and is also provided with a like number of equidistant peripheral notches g'. The pins

G' are arranged to be successively engaged by a reciprocating push-rod H, which is actuated in one direction by a spring H' and in the opposite direction by a dog h, which is pivoted on a rotating disk or arm f^2 on shaft f . This dog normally hangs in such position that it would not engage the end of rod H; but when it comes over a bracket h' , fixed to the main frame, as shown in Fig. 1, the dog is thrown into position to engage rod H and push the same forward, so as to engage pin G' and impart a one-eighth revolution to the carrier A. Then the dog clears the bracket h and drops into inoperative position, while the rod H is returned to normal position by means of spring H'. When the carrier A is shifted to proper position, a notch g' in disk G is engaged by a locking-rod I, which is normally pushed inward by means of a spring I', so as to engage with the notches, but is pulled out at the proper moment (which is just before rod H is pushed inward) by means of the lug i on disk f^2 , which engages with a tooth i' on the rod I, as indicated in Fig. 3.

Located above the carrier A are five equidistant vertical spindles J, j , j' , j^2 , and j^3 . These spindles are arranged in a semiconcentric series, so that each spindle will be directly over one of the chucks on the carrier A whenever the latter is locked and after each partial rotation of the latter. These spindles may be adjustably mounted, as shown, in a suitable bracket-plate K, and they may each be provided with grooved pulleys, so as to be driven by a single endless belt l from a larger grooved pulley L on the upper end of shaft F, as shown. The spindle J carries the centering or facing tool J', (see Fig. 6,) while the spindles j , j' , j^2 , and j^3 may carry drilling-tools. These spindles may each be made adjustable, so that the tools can operate upon the button-blanks at the proper point.

In this machine the button-blanks are held stationary while being subjected to the operation of the tools.

The operation is as follows: The operator stands at one side of the machine and feeds the blanks to the empty chucks before they are moved under the spindle J, and consequently while the chucks are open, as the rollers c' are disengaged from the flange d . Then as the carrier is rotated so as to move the chucks and blanks under the spindles the roller c' , riding up on the beveled end of flange d , causes the contraction of the chuck through the means described and holds the blank firmly. Each blank fed in will be successively subjected to the action of the trimmer on spindle J and then to the perforators or drills or other tools on the spindles j , j' , &c., and if the operator keeps the carrier supplied with blanks while the machine is in operation five buttons will be simultaneously operated upon by the several spindles or at each rising of the carrier A. The carrier is first rotated so as to carry the blanks under the spindles and is then lifted so as to present the blanks

on the chucks to the action of the trimmers and drills on the spindles, the lifting of the blanks being more or less gradual, according to the pitch of the cams D' and the speed of the orbital movement of the rollers e . After the buttons have been centered and drilled they are moved out from beneath spindle j^3 , and after so doing the rollers g' drop off the flange, allowing the chucks to open, and the chucks are stopped while over the end of the air-pipe W, and the upward blast of air therefrom clears the chuck from dust and blows the finished button out of the chuck into the discharge-tube w or other suitable receiver.

I do not limit myself to any particular number of chucks upon the carrier, as their number would advantageously be varied according to the size of the carrier A and of the machine, nor do I limit myself to the number of spindles, and, if desired, more trimming-spindles might be employed. I consider the employment of eight chucks and five spindles, however, as shown in the drawings, a very advantageous form of machine.

It will be observed that in this case the buttons are trimmed or centered by means of a rotating device, the button-blank being held stationary. By this means I am enabled to center or trim the buttons on the same machine with which I drill them and simultaneously with the drilling operation.

Of course various modifications may be made in the device within the scope of my claims, and I do not limit myself to the precise construction of parts shown herein.

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

1. In a button-making machine, the combination of a vertically-movable non-rotatable cylinder, a rotatable blank-carrier within said cylinder, and vertically movable therewith, and a stationary series of rotatable spindles carrying button-finishing tools, above said carrier; in combination with means for imparting a step-by-step movement to the carrier, and means for intermittently raising and lowering the cylinder, substantially as described.

2. In a button-making machine, the combination of the carrier, a series of chucks in said carrier, a vertically-movable collar and spring for closing said chucks, and means for lifting said collar and spring, so as to keep the chucks closed upon the blanks, substantially as described.

3. In a button-making machine, the combination of the carrier, a series of chucks in said carrier, a vertically-movable collar and spring for closing each chuck, and a lever for lifting said collar and spring, and a cam-flange adapted to be engaged by said lever so as to close the chucks with a series of button-finishing tools, adapted to operate upon the blanks, for the purpose and substantially as described.

4. In a button-making machine, the combi-

nation of the vertically-movable cylinder, a rotatable carrier therein and vertically movable therewith, a series of chucks in said carrier, a vertically-movable collar and spring for closing each chuck, and a lever for lifting said collar and spring, adapted to engage a flange on the cylinder, so as to keep the chucks closed upon the blanks; with a series of rotatable spindles above the carrier, carrying button-finishing tools adapted to operate upon the blanks when the carrier is lifted by the cylinder, for the purpose and substantially as described.

5. In a button-making machine, the combination of the rotatable carrier; with a notched disk below the carrier, provided with a series of lugs, a locking-rod adapted to engage the notches of the disk, and a push-rod adapted to engage the lugs on the disk, and means for actuating the push-rod, and for disengaging the locking-rod from the disk, for the purpose and substantially as described.

6. In a button-making machine, the combination of the rotatable carrier, a series of chucks in said carrier, means for closing said chucks, and a series of button-finishing tools, adapted to operate upon the blanks; with a notched disk below the carrier, provided with a series of lugs, a locking-rod adapted to engage the notches of the disk, a push-rod adapted to engage the lugs on the disk, and a rotatable disk carrying a pivoted dog adapted to actuate the push-rod and provided with a tooth adapted to disengage the locking-rod from the disk, for the purpose and substantially as described.

7. In a button-making machine, the combination of the rotating carrier, the split chuck therein, the tapered ring for closing the chuck, the pivoted lever for actuating said ring, and the spring interposed between said lever and ring, for the purpose and substantially as described.

8. In a button-making machine, the combination of the rotating carrier, the split chuck therein, the tapered ring for closing the chuck,

the pivoted lever for actuating said ring, and the spring interposed between said lever and ring; with the fixed semi-annular cam-flange adapted to be engaged by said lever and cause the closing of the chuck, for the purpose and substantially as described.

9. In a button-making machine, the combination of the rotating carrier, the split chuck therein, the tapered ring for closing the chuck, the pivoted lever for actuating said ring, and the spring interposed between said lever and ring; with means for holding the blank stationary, a rotating spindle carrying a centerer or facer, adapted to operate upon the blank when presented thereto by the carrier, for the purpose and substantially as described.

10. In a button-making machine, the combination of the vertically-movable non-rotatable cylinder, a rotatable carrier therein, vertically movable therewith, a concentric series of chucks in said carrier, the vertically-movable collar and spring for closing said chucks, the lever for lifting said collar and spring, adapted to engage a flange on the cylinder, so as to keep the chucks closed upon the blanks; and a semiconcentric series of rotatable spindles above the carrier, carrying button-finishing tools, adapted to operate upon the blanks when the carrier is lifted by the cylinder; with a disk below the carrier, provided with a series of lugs, a locking-rod adapted to engage the notches in the disk, a push-rod adapted to engage the lugs on the disk, and a rotatable disk carrying a pivoted dog adapted to actuate the push-rod and provided with a tooth adapted to disengage the locking-rod from the disk, for the purpose and substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

WILLIAM J. PUGH.

In presence of—

JAMES R. MANSFIELD,
B. T. WEBSTER.