(No Model.) 2 Sheets—Sheet 1.

S. L. OTIS.

BUTTON LATHE.

No. 317,183. Patented May 5, 1885.

Fig. 1.

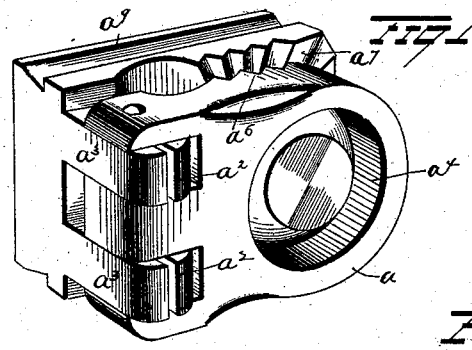


Fig. 2.

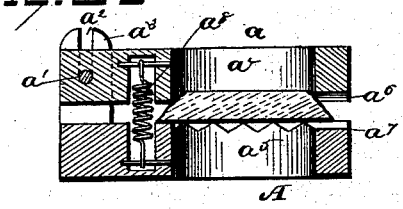
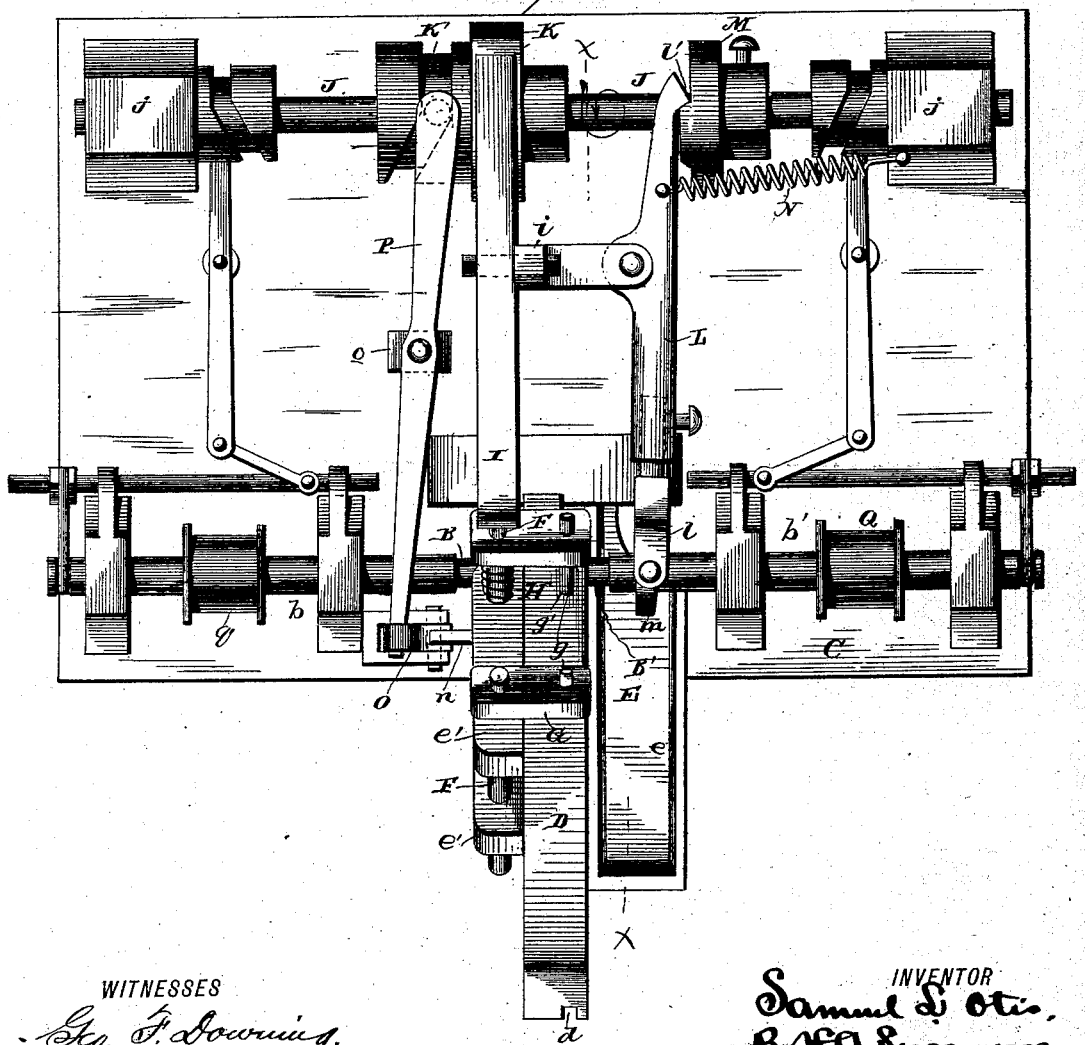


Fig. 3.



WITNESSES

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

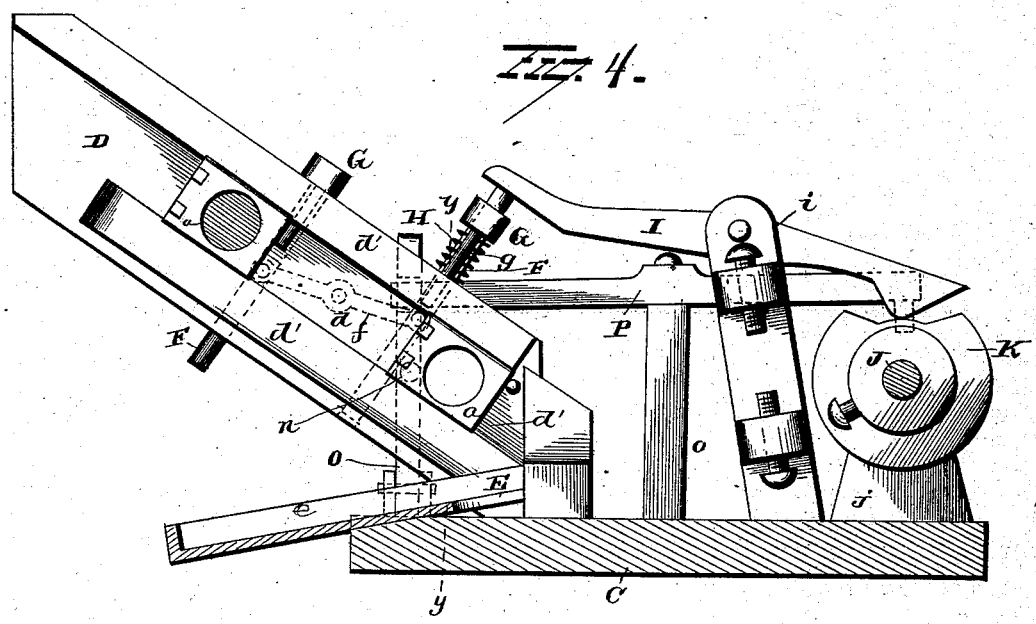
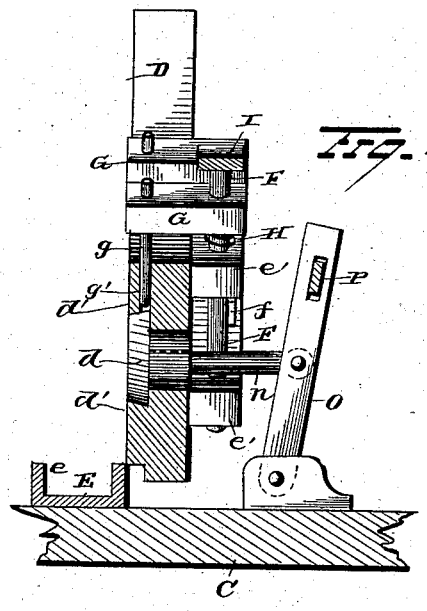


Fig. 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

SAMUEL L. OTIS, OF BIRMINGHAM, ASSIGNOR TO ALFRED H. NOBLE AND GEORGE B. NOBLE, OF NEW MILFORD, CONNECTICUT.

BUTTON-LATHE.

SPECIFICATION forming part of Letters Patent No. 317,183, dated May 5, 1885.

Application filed January 21, 1885. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL L. OTIS, of Birmingham, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Button-Lathes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in button-lathes, the object of the same being to provide devices for feeding the button-blanks to the cutters and discharging the same therefrom, by means of which a great saving in labor shall be effected and an improved article of manufacture turned out; and with these ends in view my invention consists in separable chucks, each adapted to receive and clamp a blank, and in mechanism adapted to automatically feed the chucks to the cutters and return them to the operator.

My invention further consists in certain features of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of the chuck with blank in position. Fig. 2 is a longitudinal section of same. Fig. 3 is a plan view of the lathe. Fig. 4 is a vertical section of the same through the line *x x* of Fig. 3, showing the feed and discharge ways, and one of the chucks in position in each; and Fig. 5 is a vertical section through the line *y y* of Fig. 4, showing the mechanism for regulating the feed and discharge of the blanks.

A represents the under jaw, and *a* the upper jaw, of a separable chuck, forming one of a set adapted to be used in connection with a lathe of peculiar construction, as will hereinafter appear. The jaws A *a* are hinged together at one end by a vertically-movable pintle, *a'*, which passes through the three projections on the end of the upper jaw, *a*, and through open slots a^2, formed in the ends of ears or projections a^3, secured to the end of the lower jaw, A, and adapted to fit loosely between the outer and middle projections, respectively, of the upper jaw. The said jaws are provided with perforations a^4 a^5, for admitting the cutter-heads to the opposite sides of the blank, and with series of teeth a^6 a^7, for taking a secure hold on the blank. The jaws are drawn and held normally in closed adjustment by means of a spring, a^8, of the required tension, conveniently secured thereto a short distance forward of the hinge, as shown.

One or both of the edges of the lower jaw, A, are provided with a groove, a^9, for locking the chuck to the guideway.

The lathe for receiving the chucks, described above, consists, in substance, of a pair of rotary cutters adapted to approach and recede from each other, an incline way adapted to automatically slide the chucks between the cutters, an incline way adapted to return the chucks to the operator, and a system of cam-operated levers for regulating the feed, clamping the chuck, and discharging the same, the particular construction and operation of which are as follows:

B represents the face-cutter, and B' the back-cutter secured to suitable spindles, *b* and *b'*, respectively. The cutters are located with their axes in the same horizontal line and journaled in uprights secured to the supporting table or frame C. An oblique support, D, is secured to the table C at its lower end, and extends upwardly to a point within convenient reach of the operator, in one face of which support the feedway *d* is formed. The way *d* is provided with a pair of parallel guides, *d'*, projecting from its face and adapted to engage the edges of the separable chuck herein-before described. The lower end of the way is between the cutters, and at this point the oblique support D is perforated to admit the cutter-head B. A second oblique support, E, is secured at its upper end at the side of and just beneath the lower end of the way *d*, with its lower end within convenient reach of the operator, and is provided on its face with a trough, *e*, adapted to receive the chucks as they fall from the way *d* and guide them back to the operator.

To regulate the feed of the chucks between the cutters, I provide the back of the support D with a pair of parallel brackets, *e'*, in which a pair of vertically-sliding bars or rods, F, are secured and connected by a lever, *f*, pivotally secured to the support D between the said

rods F. Cross-heads G are rigidly secured to the upper ends of the rods F and are provided with depending stops *g*, which project through perforations *g'* in the edge of the way *d*. A spring, H, is inserted between the lower cross-head, G, and its support, the tension of which tends to keep the lower stop *g* in a normally-elevated adjustment, and hence, through the action of the lever *f*, the upper stop *g* in a depressed adjustment. The stop *g* is forced downwardly at regular intervals by means of a lever, I, pivoted to a support, *i*, one end of the lever being adapted to rest on the upper end of the rod F, or on the cross-head secured thereto, and the opposite end of said lever adapted to engage a cam-wheel, K, rigidly secured on a shaft, J. The shaft J is mounted in uprights *j*, secured to the table C, and preferably lies parallel with the spindles *b*.

The operation of the stops *g* in connection with the chucks will be hereinafter explained. To hold the chuck in snug contact with the way while being operated upon by the cutters, I provide a laterally-swinging lever, L, pivoted to the support *i*, one end of which is provided with a bifurcated longitudinally-adjustable head, *l*, and the opposite end adapted to engage a cam, *l'*, on the face of the cam-wheel M, secured on the shaft J. A ring, *m*, of suitable size and material, is pivotally secured between the branches of the bifurcated head *l*, and is adapted to adjust itself to and rest in contact with the face of the chuck when the latter is in position to be acted upon by the cutters. The cutter B' passes through the ring *m* to engage the blank. The head *l* is held in contact with the chuck by means of a spring, N, of suitable tension, secured to one arm of the lever L and to a rigid support, *j*, for example, and is forced out of contact with the chuck by the said cam *l'*. The chuck is ejected from the way *d* at the proper moment by means of a push rod or pin, *n*, attached to a vibrating standard, O, and passing through the support D. The vibrating standard O is operated by means of a lever, P, pivoted to a support, *o*, and having one end in engagement with a cam-groove, *p*, in the face of the wheel K', which forms an extension of the wheel K. Motion is imparted to the spindles *b b'* and to the shaft J through band-pulleys Q and bands from a counter-shaft. (Not shown.)

The operation is as follows: The chucks are first charged with blanks and placed in the end of the way *d* by the operator. They slide down the way by their own gravity and are held in check by the upper stop *g*. When the lower stop *g* is depressed, the upper stop is elevated, and the chuck in advance slides down in contact with the lower stop, while those behind follow closely after. As soon as the lever I reaches the cut-away portion of the cam-wheel K the lower stop *g* is elevated by the tension of the spring H, and the chuck slides on down to a position between the cutters. At this moment the head *l* of the clamping-lever L is thrown into contact with the chuck, and holds it firmly in position while the face-cutter B advances and forms the face of the button, and recedes, followed by the back-cutter B', which now advances and cuts the back, continuing its advance until the button is entirely severed from the blank. It then recedes, the clamp is forced away from the chuck, and the push-pin *n* advances and ejects the chuck from the way *d*. The chuck falls into the trough *e* and slides back to the operator. In the meantime a second chuck has passed the stop *g* and taken its position between the cutters. Thus the operation is continued, the operator receiving the chucks from the trough or way *e*, removing the cut blank, inserting a new one, and placing the chuck in the end of the way *d*.

It is evident that the separable chucks might be fed to the cutters by other devices than that shown and described—as, for example, by a revolving or reciprocating carrier—and that other changes might be made in the form and arrangement of the parts described, without departing from the spirit and scope of my invention; hence I do not wish to limit myself strictly to the construction herein set forth; but,

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

1. The combination, with two cutters located in the same plane, and a feedway located at right angles to and passing between the cutters, of a removable chuck constructed to fit within the feedway, substantially as set forth.

2. The combination, with two cutters and an inclined feedway located at right angles to and passing between the cutters, of a removable chuck constructed to fit within the feedway, substantially as set forth.

3. In a button-lathe, the combination, with two cutters located in the same horizontal plane opposite each other, and an inclined way located at right angles to and passing between the cutters, of a chuck removably held on the inclined way, and a movable clamp for holding the chuck steady while the blank is being operated on by the cutters.

4. In a button-lathe, the combination, with the two cutters and an inclined feedway located at right angles to and passing between the cutters, and provided with a set of stops for automatically regulating the descent of the chucks, of removable chucks constructed to be retained in the feedway, and devices for ejecting the chuck from between the cutters.

5. In a button-lathe, the combination, with a gravity or inclined feedway having stops for regulating the feed, and an inclined discharge-way located below the feedway, of a removable chuck constructed to travel in the feedway, a device for holding the chuck in position while being operated on, and cutters for engaging the opposite sides of the blank, substantially as set forth.

6. In a button-lathe, the combination, with

an inclined feedway, cutters located at right angles to and on opposite sides of the feedway, and an inclined discharge-way located below the feedway, of a removable chuck constructed to travel in the feedway, substantially as set forth.

7. The combination, with two cutters and a feedway passing between said cutters, of a removable chuck constructed to fit within said feedway, and provided with an extensible hinge.

8. The combination, with two cutters and a feedway located between said cutters, of a removable chuck constructed to slide within said feedway, and consisting, essentially, of two jaws and a spring for holding the jaws in closed position.

9. The combination, with two cutters and a feedway passing between said cutters, of a removable chuck constructed to slide within said feedway, and consisting, essentially, of two jaws connected by an extensible hinge, and a spring for holding the jaws in closed position, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

SAMUEL L. OTIS.

Witnesses:
WM. S. DOMS,
WM. H. WILLIAMS.