J. C. TERRY.

Button-Blank Turning-Lathe.

No. 222,963. Patented Dec. 23, 1879.

Fig. 1

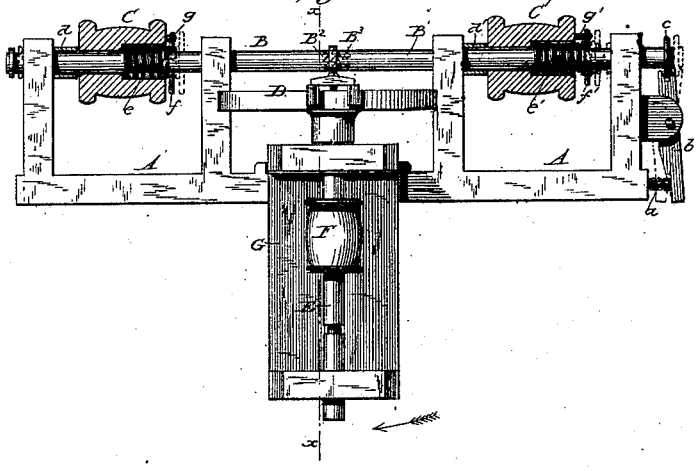


Fig. 2.

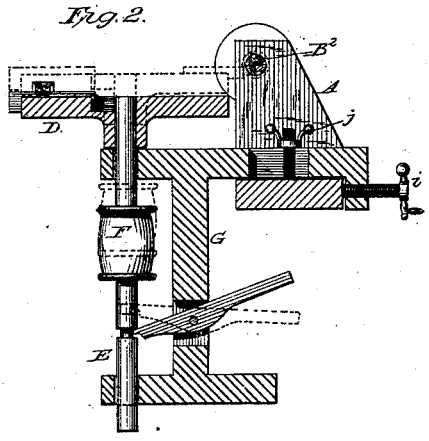
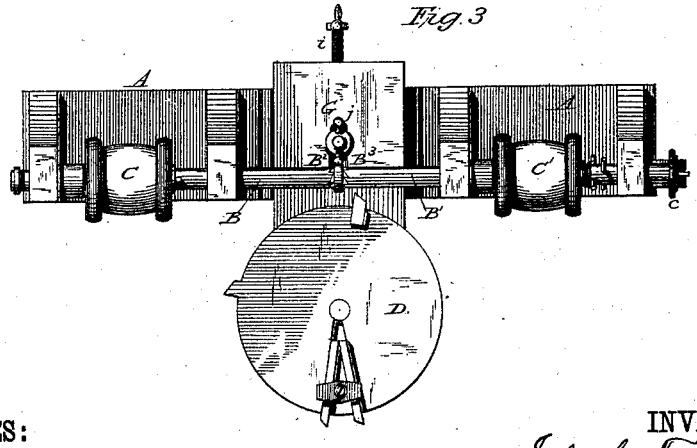


Fig. 3



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JABEZ C. TERRY, OF SPRINGFIELD, MASSACHUSETTS.

IMPROVEMENT IN BUTTON-BLANK-TURNING LATHES.

Specification forming part of Letters Patent No. **222,963**, dated December 23, 1879; application filed November 1, 1879.

To all whom it may concern:

Be it known that I, JABEZ C. TERRY, of Springfield, in the county of Hampden and State of Massachusetts, have invented a new and Improved Button-Blank-Turning Lathe; 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 part of this specification, in which—

Figure 1 is a rear elevation. Fig. 2 is a vertical section through the line *x x* of Fig. 1. Fig. 3 is a plan view.

In turning the edges of the plates of stock from which buttons are made into a round blank, preparatory to turning the button therefrom, the method heretofore in general use has been to clamp the piece of stock between two oppositely-pressing gripes, and, by means of a tool operating concentrically through one of the gripes, to form an annular cut through the stock, which cuts out disk or blank.

My invention consists in the combination of a pair of revolving gripes for holding the stock, which are held normally together by spring-pressure, but have a treadle-connection for separating or retracting them, and a cutter-head revolving in a plane at right angles to the plane of revolution of the gripes, or parallel with the axis of the latter, which cutter-head is combined also with a treadle-connection for causing said cutter-head to approach the axis of the gripes at the will of the operator.

The invention also consists in the peculiar means for causing the gripes to hold the blank, and for connecting and disconnecting the revolving gripe-arbors and their driving-pulleys.

In the drawings, A is a suitable frame, in bearings in which are arranged the horizontal arbors B B′, having at their adjacent ends oppositely-facing gripes or chucks B^2 B^3. Upon these arbors B B′ are arranged driving-pulleys C C′, which may be allowed to revolve loosely upon the arbors B B′, or be geared rigidly therewith, to cause said arbors to revolve as may be desired.

The button-blank is held between the gripes by the tension of spring *a*, which, pressing against the lower end of lever *b*, throws its upper end inward, which upper end is forked and embraces a flange, *c*, on one of the gripe-arbors to form a loose swiveling connection, so that said inward pressure of the upper end of the lever tends to throw the gripe B^3 against gripe B^2, to secure the blank-stock. When the blank-stock is thus secured it is, of course, necessary that the rotary motion of the pulleys should be transmitted to the gripe and blank-stock; and when the blank is to be removed for the insertion of another piece of stock it is necessary, to avoid injury to the hands, that the gripes should be disconnected from the revolving pulleys. To accomplish this I fix the pulleys C C′ so that they cannot move endwise by arranging pulley C between a collar, *d*, which resists movement in one direction, and a spiral spring, *e*, which at one end shoulders against the pulley to resist its movement in that direction, the other end of said spring bearing against a pin, *f*, in the arbor B. The other pulley, C′, is similarly held between collar *d′*, spring *e′*, and pin *f′*, and each pulley has a laterally-projecting stud, *g g′*. Now, a piece of a button-blank stock being fixed between the gripes, it will be seen that, the arbors B B′ being adjustable longitudinally and the pulleys being non-adjustable, the tension of spring *a*, acting through lever *b*, forces arbor B′ toward the center, and the pin *f′* of said arbor compresses the spiral spring *e′* in the pulley C′, and in so compressing it causes the ends of the pin *f′* to come into range of the laterally-projecting pin *g′* on the pulley, so that the arbor and pulley on this side revolve together. As the gripe B^3 then advances and presses against B^2 the arbor B recedes slightly, and the pin *f* compresses the spring *e* and passes into range of contact with the laterally-projecting pin *g* of the other pulley, C. The result is, that whenever the blank-stock is clamped the same action connects both pulleys and their respective arbors for rigid revolution.

When the blank is turned into circular form by the means hereinafter described, and it is to be dislodged, the lever *b* is deflected against the tension of the spring *a* by means of a treadle or other equivalent mechanism, and as its upper end passes outward the arbor B′ is carried in the same direction. The result is, that the spring *e′* expands and pin *f′* is forced

out of range of contact with the laterally-projecting pin g', as shown in dotted lines in Fig. 1, and the arbor B′ and gripe B^3 cease to revolve; and as the pressure on the end of gripe B^2 is also relieved by the retreat of the gripe B^3, the spring *e* of the pulley C forces the pin *f* and arbor B inwardly until the pin *f* passes out of the range of contact with the laterally-projecting pin *g*, as shown in dotted lines, Fig. 1, and the result is, that it also ceases to revolve simultaneously with the first.

It will be seen, then, that although both pulleys are revolving constantly, whenever the blank is clamped it is being also revolved, and when it is released the gripes are stationary, so that they are not liable to injure the hand of the operator in inserting a new blank.

To permit button-blanks of smaller size to be turned the gripe-arbors are made hollow, as shown in Fig. 2, so that other smaller and detachable gripes may be slipped concentrically into the same.

For turning the rough edges of a piece of flat stock to form a disk or blank from which a button is to be turned, I employ a horizontal cutter-head, D, provided with suitable cutters, which may be formed on the cutter-head or detachably secured thereto. This cutter-head I mount upon a vertical and longitudinally-adjustable shaft, E, provided with a pulley, F, for rotating it. This cutter-head, it will be seen, is arranged to revolve in a plane at right angles to the plane of revolution of the blank, or parallel with the axis of the gripes, and when required for action it is raised, as shown in dotted lines in Fig. 2, preferably by a treadle mechanism, until it is brought into peripheral contact with the revolving piece of material having irregular edges, which are to be turned into a circular curve. As the cutter-head comes in contact with the irregular edges of the blank it cuts away the projections on the same as fast as they are turned into range, while the cutting strain is in a direction parallel with the gripe-arbor, which has no tendency to dislodge the blank from its gripes. The button-blank being revolved at a high speed, it will be seen that the whole of its peripheral edge is in a moment subjected to the action of the cutter-head and a circular disk cut. As the cutting action is a peripheral action and the clamping of the blank is from the center, small pieces of stock can be quickly, economically, and perfectly turned. As soon as one blank is turned it is released by one treadle, while the cutter-head drops down by the relaxation of pressure upon the other, and is out of the way of the operator's hand while inserting a new piece of stock.

To provide for the different diameters of different button-blanks, the cutter-head and shaft are mounted in bearings in an adjustable frame, G, which is connected to frame A by set-screw *i* and binding-screw *j*, to adjust the cutter-head to or from the center of the gripes.

In defining my invention more clearly I would state that I am aware that it is not a new principle in lathes, &c., to combine a pair of revolving clamping devices for holding the stock with a cutter-head revolving in a plane at right angles to the plane of revolution of the stock, or parallel with the axis of the lathe, and I therefore disclaim this general idea. In turning button-blanks, however, where the bits of stock are to be inserted and removed many thousand times a day, it becomes practically necessary to provide some means for facilitating this work. In applying the general principle, therefore, to button-making, I cause the stock to be held by the simple endwise advance of the gripes, which have a normal tendency toward each other from spring-tension, and the gripes I combine with a treadle-connection, for retracting or separating them when the blank is to be removed. Although this mode of holding the blank would not be sufficient if the resistance in turning the blank were applied in the plane of the revolution of the blank, I find that when the resistance is applied at right angles to the plane of revolution of the blank, as exists with the cutter-head arranged as described, the simple clutch or frictional engagement of the blank is sufficient for all practical purposes, and has the further advantage of permitting the blank to drop quickly and freely without hanging, thereby facilitating the work.

The adjustment of the cutter-head to or from the axis of the gripes being also effected by a treadle movement, it thus makes the machine under easy and quick control.

Having thus described my invention, what I claim is—

1. A button-blank lathe consisting of the combination of a pair of revolving gripes held normally together from spring-pressure, a treadle-connection for retracting or separating them, and a cutter-head revolving in a plane parallel with the axis of the gripes, or at right angles to the plane of revolution of said gripes, and a treadle device for adjusting the cutter-head at will to or from the axis of the gripe, substantially as and for the purpose described.

2. The longitudinally-adjustable gripe-arbors B B′, combined with each other, their loose pulleys C C′, the interposed springs, and couplings, as described, whereby the arbors revolve when clamping the blank, and are stationary when retracted from the same, substantially as set forth.

JABEZ C. TERRY.

Witnesses:
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LOVENA H. PEASE.