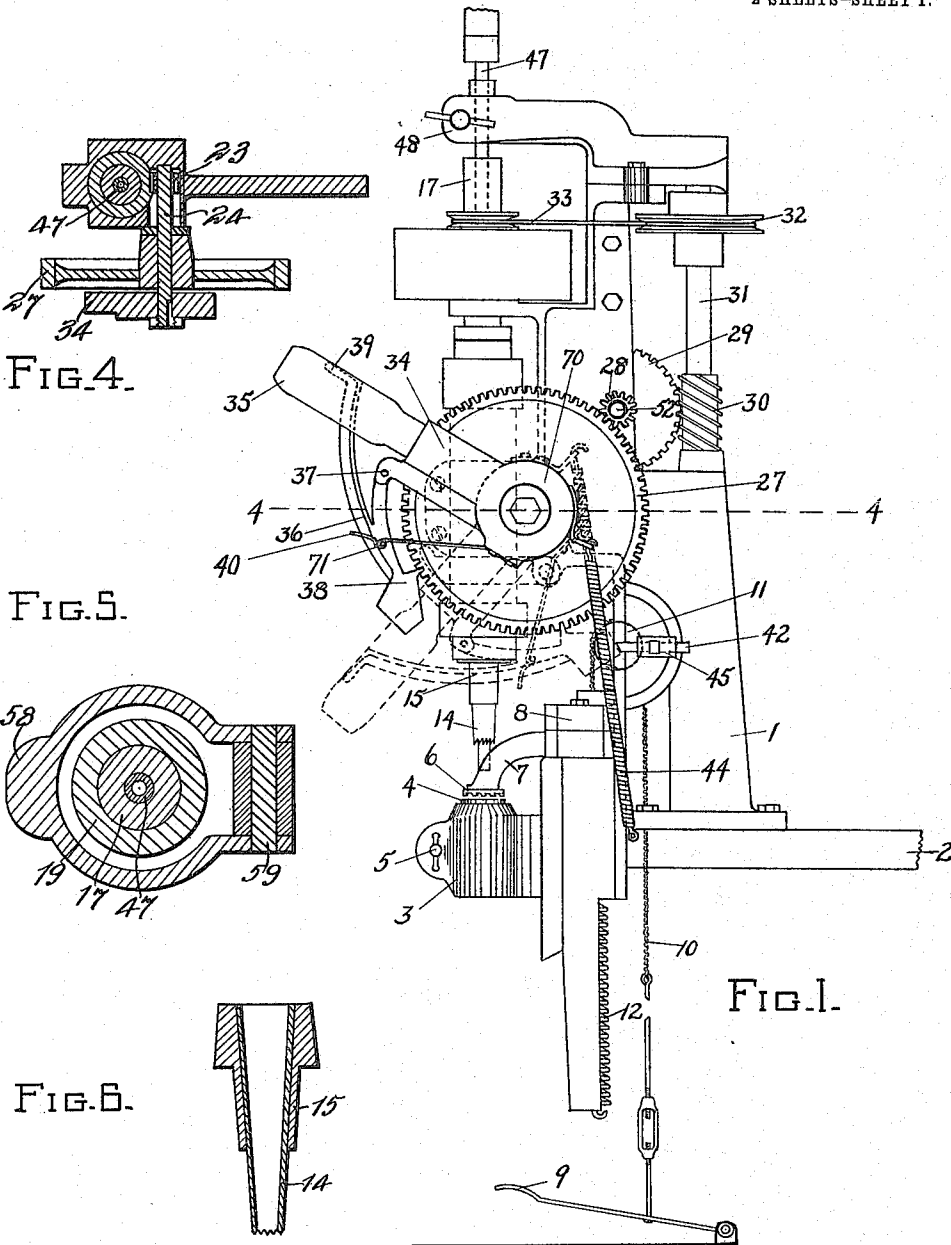


H. CHALMERS.
 BUTTON CUTTING MACHINE.
 APPLICATION FILED AUG. 25, 1908.

1,129,166.

Patented Feb. 23, 1915.

2 SHEETS—SHEET 1.



WITNESSES

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UNITED STATES PATENT OFFICE.

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BUTTON-CUTTING MACHINE.

1,129,166.

Specification of Letters Patent.

Patented Feb. 23, 1915.

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To all whom it may concern:

Be it known that I, HARVEY CHALMERS, a citizen of the United States, residing at Amsterdam, county of Montgomery, and State of New York, have invented certain new and useful Improvements in Button-Cutting Machines, of which the following is a specification.

The invention relates to such improvements and consists of the novel construction and combination of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawings, and the reference characters marked thereon, which form a part of this specification. Similar characters refer to similar parts in the several figures therein.

Figure 1 of the drawings is a view in side elevation of my improved button-cutting machine, showing by solid lines the saw and saw-lifting mechanism at the limit of their upward movements, and by dotted lines the position of the saw-lifting mechanism when the saw is at the limit of its downward movement. Fig. 2 is a view in front elevation of the same, showing the saw and saw-lifting mechanism in a position midway of their extreme up and down movements. Fig. 3 is a central vertical longitudinal section of the same taken on the broken line 3—3 in Fig. 2, with the movable parts in the position shown by solid lines in Fig. 1. Fig. 4 is a horizontal cross-section of the same taken on the broken line 4—4 in Fig. 1. Fig. 5 is a horizontal cross-section of the same taken on the broken line 5—5 in Fig. 3 on an enlarged scale. Fig. 6 is a central vertical section on an enlarged scale, of the saw and its supporting plug detached.

The objects of the invention will appear in connection with the following description.

Referring to the drawings wherein the invention is shown in preferred form, 1, represents of the machine mounted upon the table 2. The frame, 1, is formed with a split bearing, 3, wherein is adjustably supported a post, 4, preferably of wood, which supports the shell from which a blank is to be cut. The members of the split bearing, 3, are clamped upon the post, 4, by means of a screw, 5, connecting together said members.

The shell is held upon the upper end of the post, 4, during the cutting operation by

means of a clamp, 6, on the end of an arm, 7, projecting from a weighted and a spring-controlled vertically movable member, 8, connected with a treadle, 9, by means of a chain, 10, which passes over a rounded bearing surface, 11, on the frame of the machine. The clamp, 6, is raised by depressing the treadle, 9, and when the treadle is released, said clamp is yieldingly forced against the shell on the post, 4, by the weight of the member, 8, and its controlling spring 12. The piece of shell so held upon the upper end of the post, 4, is adapted to be engaged by the tubular saw, 14, whereby a circular blank or disk can be cut from the shell suitable for manufacture into a button or the like. The saw, 14, is fixed upon an inclosing sleeve, 15, which is exteriorly tapered to fit within a similarly tapered socket, 16, in the lower end of the vertical shaft, 17. The saw is mounted upon the shaft, 17, by tightly driving the tapered sleeve, 15, into its socket, 16. The shaft, 17, is rotatively mounted and capable of vertical sliding movements in a bearing, 18, on the frame of the machine, and is rotatively mounted within a sleeve, 19, which is longitudinally movable in a split bearing, 20, on the frame of the machine. The shaft, 17, is rotated by means of a belt pulley, 21, splined thereon to permit the necessary longitudinal movement of said shaft.

Reciprocating longitudinal movements are imparted to the shaft, 17, through the non-rotative sleeve, 19, which is capable of vertical sliding movement in the split bearing, 20, and has a gear-rack, 22, adapted to be engaged by a pinion, 23, on the horizontal shaft, 24, rotatively mounted in bearings on the frame of the machine. The sleeve, 19, is confined between a shoulder, 41, on the socket-end of the shaft, 17, and a ball-bearing, 25, one member of which is adjustably held upon said shaft, by means of a nut, 26, fitting a screw-threaded portion of said shaft.

A gear-wheel, 27, is mounted to rotate freely on the shaft, 24, and is engaged by a pinion, 28, fixed to a worm-gear, 29, adapted to be operated by an engaging worm, 30, on the worm-shaft, 31, upon which is fixed a pulley, 32, connected by belt, 33, with a pulley on the shaft, 17, whereby continuous

rotative movement is imparted to the gear-wheel, 27, whenever, and only when, the saw-shaft, 17, is rotated.

Fixed upon the shaft, 24, is a rocker-arm, 34, having a handle, 35, and carrying a coupling member, 36, pivoted thereto at 37, said coupling member having a coupling-tooth, 38, adapted to be moved into or out of engagement with the gear-wheel, 27, by a swinging movement of the coupling member, 36, which hangs freely by gravity out of engagement with said gear-wheel. The coupling member, 36, has a handle or thumb-piece, 39, whereby it can be swung upon its pivot, 37, by the same hand which grasps the handle, 35, of the rocker-arm, 34. When the coupling member is thrown into engagement with the gear-wheel, 27, it is yieldingly held in such position by the spring detent, 40, fixed upon the rocker-arm hub, 70, and engageable with the pin 71. The gear-wheel, 27, being continuously operated and the locking member being held in engagement therewith by the detent, 40, a rotative movement will be imparted to the pinion, 23, through the shaft, 24, and rocker-arm, 34, thereby causing a downward movement of the saw-shaft and saw through the sleeve, 19, and gear-rack, 22, thereon, and such downward movement will continue so long as the rocker-arm, 34, remains coupled to the gear-wheel, 27.

As a means for automatically uncoupling the rocker-arm, 34, from the gear-wheel, 27, I provide a stop, 42, in the path of the coupling member, 36, adapted to have a wedgewise engagement therewith, whereby the coupling member is forced out of engagement with, and freed from, the detent, 40, and is thus permitted to swing by gravity free from the gear-wheel, 27, whereupon the rocker-arm, 34, is automatically returned to its initial position by the coil spring, 44. The stop, 42, is adjustable in a support or bearing, 45, and is so adjusted as to uncouple the rocker-arm, 34, from the gear-wheel, 27, when the cutting edge of the saw reaches substantially the plane of the top of the post, 4, by which time the saw will have cut through a piece of shell supported on said post.

In operating the machine, a piece of shell is clamped upon the post, 4, and the rocker arm is operated by hand to force the saw down against the upper surface of the shell, and is then coupled to the gear by a swinging movement of the coupling member induced by engagement of the thumb-piece, 39, by the thumb of the operator's hand which grasps the handle, 35, of the rocker-arm. The saw is thus instantly forced into operative position after which the operation proceeds automatically. A single operator can thus operate a number of such machines at the same time by starting them succes-

sively. The clamp, 6, is formed with teeth on its under surface, adapted to engage the upper side of the shell and prevent displacement or disarrangement thereof upon encountering the saw-teeth. The wooden post, 4, is raised in its split-bearing from time to time to compensate for wear. Water is supplied to the saw and shell through a pipe, 47, clamped in a split-bearing, 48, on the frame of the machine, and extending down through the shaft, 17, which is hollow. The lower end of the pipe, 47, forms an ejector adapted to engage and force from the saw the cut disk of shell. Water may be supplied to the pipe, 47, in any known manner as through the hose, 50. A bracket, 51, extends downward from the upper part of the frame of the machine to form a bearing for one end of the shaft, 52, upon which the pinion, 28, and worm-gear, 29, are fixed. As a means for removing the saw from the shaft, 17, I have shown a plunger, 46, located within the hollow shaft and adapted to engage the inner end of the tapered support or plug which carries the saw, said plunger being connected by screw-bolts, 55, passing through slots, 56, in the wall of the shaft, 17, with a sleeve, 57, movably mounted on the outside of said shaft in the path of an oscillatory hammer, 58, pivoted at, 59, upon the frame of the machine and yieldingly supported by a coil-spring, 60. When it is desired to remove the saw, the hammer is forced down by hand into engagement with the sleeve, 57, which is thereby depressed, carrying with it the plunger, 52, which is thus driven against the saw-support. The split-bearing, 3, for the post, 4, is formed in a separable portion of the frame secured to the main frame by bolts, 62. To relieve the pinion, 23, and gear-rack, 22, from the shock of the blows of the hammer in driving out the saw, I have provided a block, 63, hinged to the frame of the machine at, 64, and adapted to be swung in between the top of the split bearing, 20, and the cap, 65, of the ball-bearing, whereby the shock of the hammer is transmitted from the saw-shaft, 17, through threaded sleeve, 19, to said cap, 65, and thence through said block, 63, to the frame of the machine. In the ordinary use of the machine, the block, 63, is swung out to the position shown in Fig. 2.

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

1. In a machine of the class described, and in combination, a tubular saw; a saw-shaft; means for operating said saw-shaft rotatively; feeding-mechanism for moving said shaft longitudinally, comprising in part a rock-shaft; a rocker-arm fixed to said rock-shaft; a gear-wheel mounted to rotate independently of said rock-shaft; means for operating said gear-wheel; a coupling mem-

ber pivotally mounted on said rocker-arm adapted to be swung into and out of engagement with said gear-wheel; and a stop in the path of said coupling member adapted to disengage the same from said gear-wheel.

2. In a machine of the class described, and in combination, a tubular saw; a saw-shaft; means for operating said saw-shaft rotatively; feeding-mechanism for moving said shaft longitudinally, comprising in part a rock-shaft; a rocker-arm fixed to said rock-shaft; a gear-wheel mounted to rotate independently of said rock-shaft; means for operating said gear-wheel; a coupling member pivotally mounted on said rocker-arm adapted to be swung into and out of engagement with said gear-wheel; a yielding detent for holding said coupling member in engagement with said gear-wheel; and a stop in the path of said coupling member adapted to disengage the same from said gear-wheel and detent.

3. In a machine of the class described, and in combination, a tubular saw; a saw-shaft; means for operating said saw-shaft rotatively; feeding-mechanism for moving said shaft longitudinally, comprising in part a rock-shaft; a rocker-arm fixed to said rock-shaft; a gear-wheel mounted to rotate independently of said rock-shaft; means for

operating said gear-wheel; a coupling member pivotally mounted on said rocker-arm adapted to be swung into and out of engagement with said gear-wheel; a yielding detent for holding said coupling member in engagement with said gear-wheel; a stop in the path of said coupling member adapted to disengage the same from said gear-wheel; and a handle on such rocker-arm; and a thumb-piece on such coupling member adapted to be simultaneously engaged by one hand of the operator.

4. In a machine of the class described, and in combination, a hollow saw-shaft provided with a tapered socket; a saw; a tapered saw-support frictionally held in said socket; a plunger movable within said hollow shaft into engagement with said saw-support; a hammer pivotally mounted exteriorly of said shaft, and provided with an aperture through which said shaft loosely passes; and a member located in the path of said hammer and connected with said plunger through slots in the wall of said hollow shaft.

In testimony whereof, I have hereunto set my hand this 21st day of August, 1908.

HARVEY CHALMERS.

Witnesses:

EDWARD COOPER,
THAD T. DATCHER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."