

No. 855,901.

PATENTED JUNE 4, 1907.

S. O. McMASTER.  
BUTTON TURNING MACHINERY.

APPLICATION FILED APR. 24, 1906.

2 SHEETS—SHEET 1.

FIG. 1.

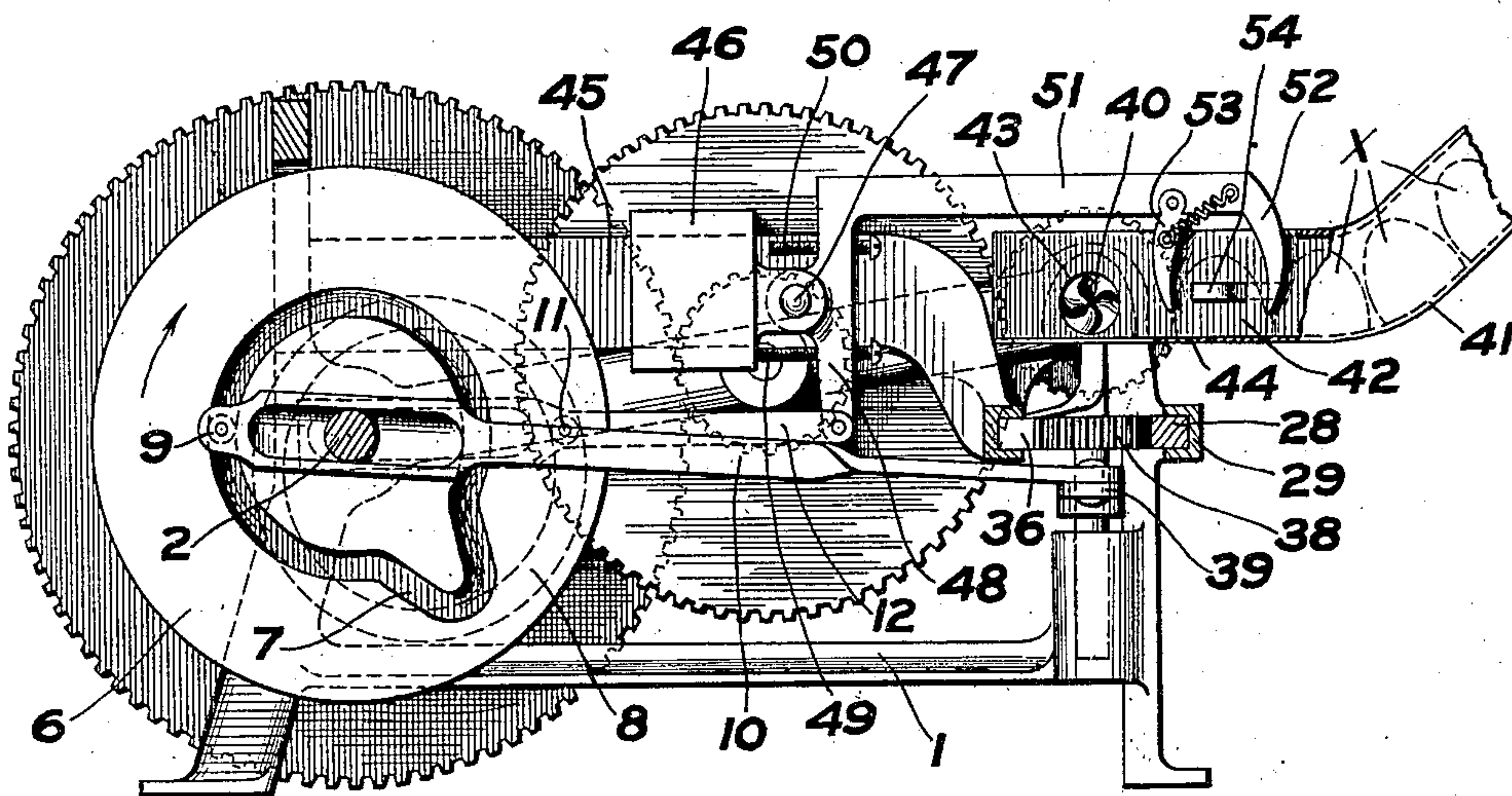
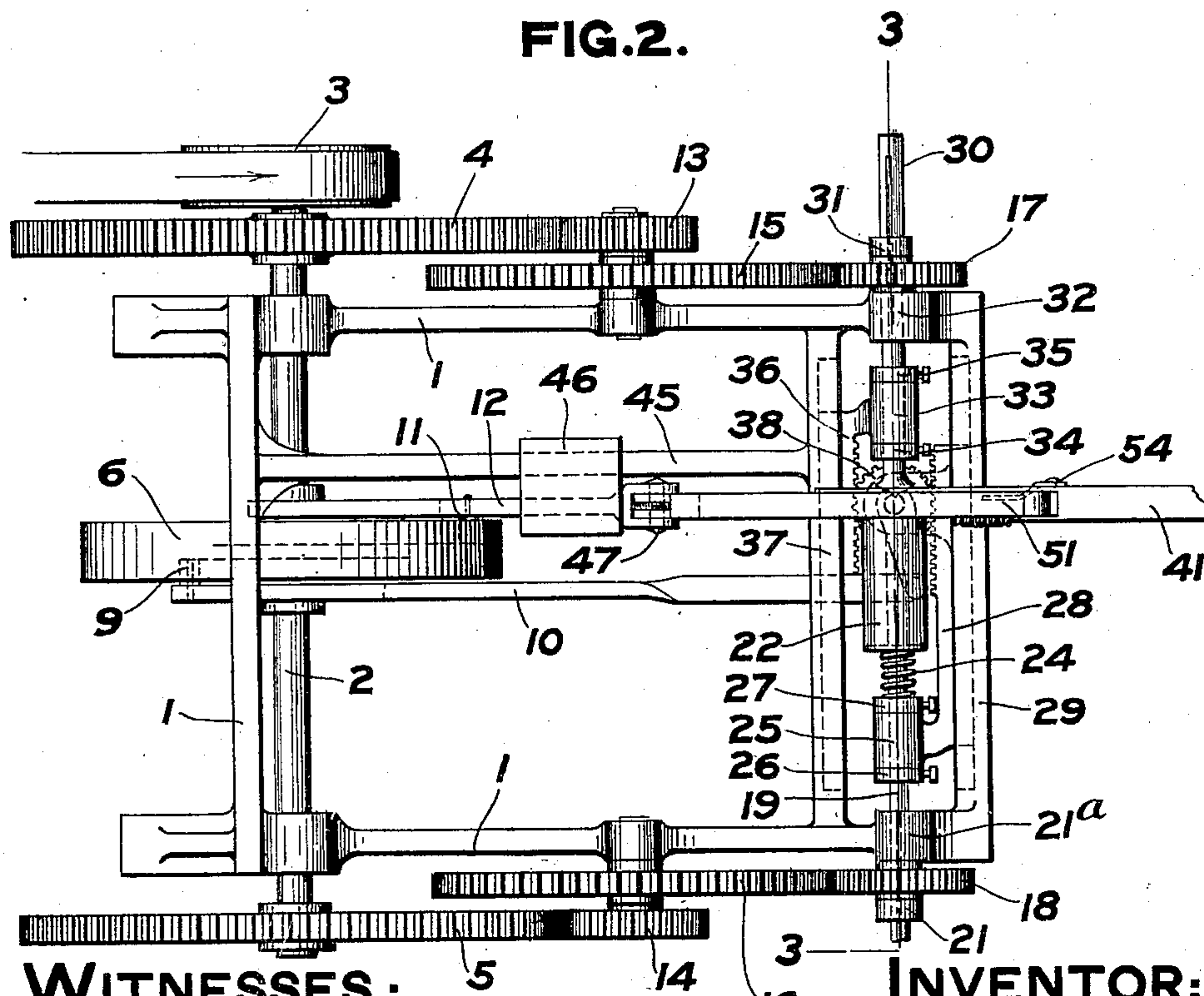


FIG. 2.



WITNESSES:

Clarence W. Carroll.  
H. Gurnee.

INVENTOR:

Samuel O. McMaster  
by O. J. Smith  
his Atty

No. 855,901.

PATENTED JUNE 4, 1907.

S. O. McMASTER.  
BUTTON TURNING MACHINERY.

APPLICATION FILED APR. 24, 1906.

2 SHEETS—SHEET 2.

FIG. 3.

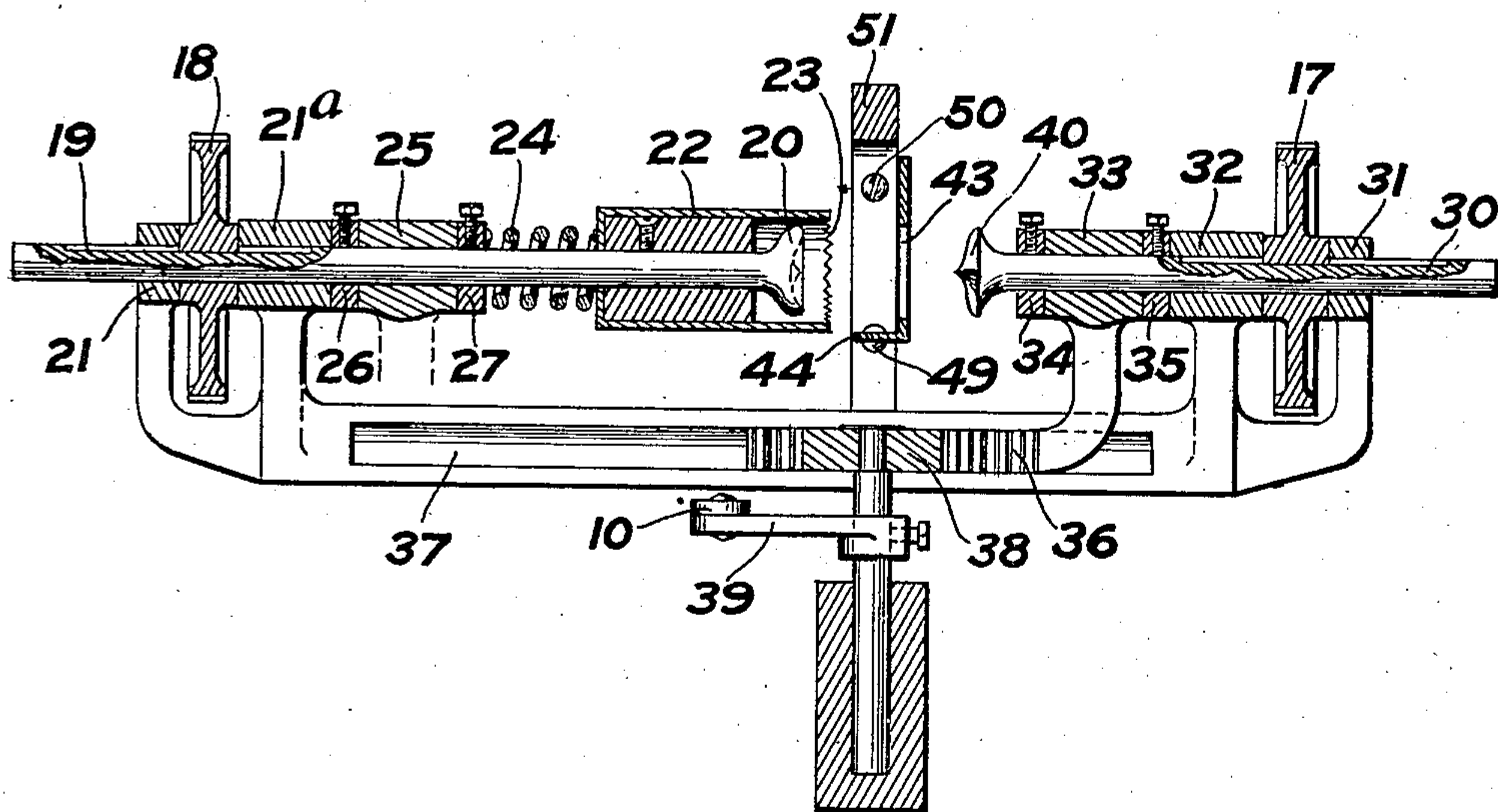
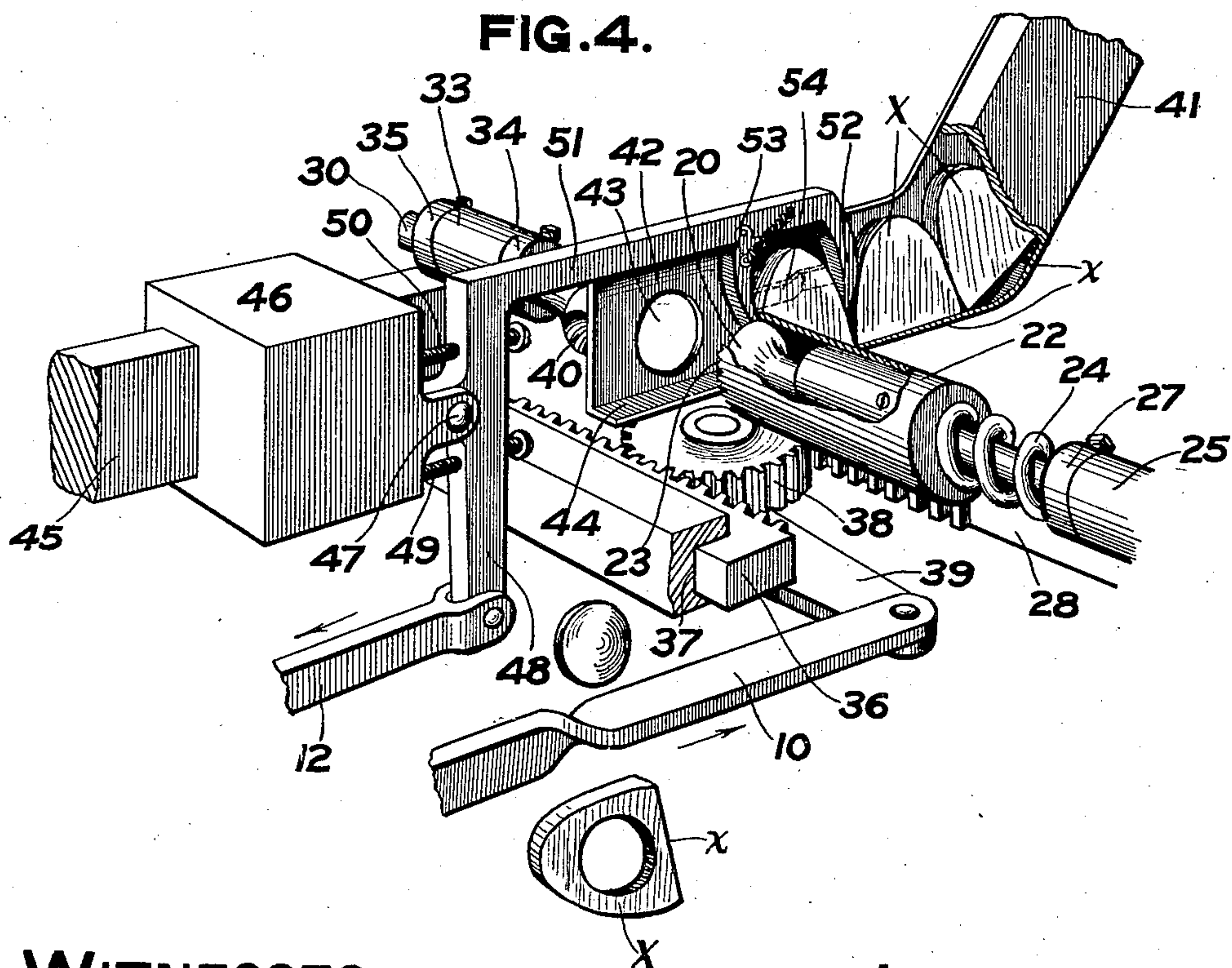


FIG. 4.



**WITNESSES:**

Clarence W. Carroll.  
H. Gurnee.

**INVENTOR:**

Samuel O. McMaster  
By Ogden & Davis  
his Attys



# UNITED STATES PATENT OFFICE.

SAMUEL O. McMASTER, OF ROCHESTER, NEW YORK.

## BUTTON-TURNING MACHINERY.

No. 855,901.

Specification of Letters Patent.

Patented June 4, 1907.

Application filed April 24, 1906. Serial No. 313,407.

*To all whom it may concern:*

Be it known that I, SAMUEL O. McMASTER, a citizen of the United States, and a resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Button-Turning Machinery, of which the following is a specification.

This invention relates to machinery for turning buttons from blanks having two parallel faces and one substantially flat edge, but more or less irregular on the remainder of the contour thereof. It is intended particularly for turning buttons from blanks made from vegetable ivory nuts. These blanks have the two parallel faces above mentioned and one edge substantially flat, the remainder of the contour being somewhat oval.

The object of the invention is to cut the button from such a blank, and from substantially the center thereof, together with apparatus for holding the blank in proper position, and apparatus for feeding the successive blanks forward to the cutting position from a proper chute or channel.

The invention consists in the apparatus hereinafter described and claimed.

In the drawings:—Figure 1 is a side elevation of a machine embodying this invention, parts being omitted to show construction; Fig. 2 is a top plan view of the same machine; Fig. 3 is a section on the line 3—3 of Fig. 2; and Fig. 4 is a perspective view of a portion of the apparatus.

A suitable frame 1 is provided which carries a shaft 2 driven by a pulley 3. This shaft carries two gear wheels 4 and 5 on opposite sides of the frame 1, and in the center a double cam wheel 6 having on one side a pear shaped cam groove 7 and on the other the eccentric groove 8, shown in dotted lines in Fig. 1. The cam groove 7 engages a pin 9 and moves a bar 10, which may be slotted, and thus employ the shaft 2 as a support at one end. At the other end the bar 10 is connected with a link to be described below. The eccentric groove 8 engages a pin 11 in a bar 12 that is connected with the blank feeding device to be described below. The bar 11 may be slotted, as shown in dotted lines in Fig. 1, and in a manner like the bar 10, so as to encircle, and be supported at one end by, the shaft 2. The gear wheels 4 and 5 operate

pinions 13 and 14, which in turn operate gears 15 and 16 that mesh with pinions 17 and 18 for driving a pair of drills or cutters that are shown most clearly in Fig. 3. The gear wheel 18 is splined on a cutter rod 19 running in bearings 21, 21<sup>a</sup>, so that the pinion 18 may revolve between said bearings, but has no lateral movement, and thus drives the cutter rod 19. The said cutter rod carries at its end a cutter 20 of suitable shape to cut one face of a button. The said rod also carries a cylinder 22, preferably having teeth 23 on its end. The said cylinder is carried by the rod 19, but the rod may turn without rotating said cylinder. A spring 24 presses on the cylinder 22 and thus tends to force it toward the right hand in Fig. 3. A stationary bearing for the spring 24 is provided, such as a collar 25 through which the rod 19 passes, and which may be held in place by means of two set collars 26 and 27, one on each side of the collar 25, and held in place on the rod 19 by set screws, or in any other suitable manner, so that when the collar 25 is positively moved in either direction, the rod 19 moves with it. The said collar 25 is fastened to a rack bar 28 that moves in a proper guide way 29 on the frame 1 so as to permit the movement of said collar 25 and of the cutter rod 19 in the line of the axis of the latter. In this movement, if toward the right in Fig. 3, the first effect is to communicate motion to the cutter rod and to the cylinder 22 in the same direction, but when the cylinder 22 makes contact with any stationary object, the spring 24 becomes compressed and the cutter 20 may move onward while the cylinder is stationary, so that the cutter may meet and operate upon the object held by the cylinder 22. When these acts are occurring the rod 19 moves axially through the pinion 18, and the cutter rod revolves with said pinion.

The pinion 17 is splined upon a cutter rod 30 so as to revolve with it, and to permit axial movement of the cutter rod in the pinion. The pinion is held between stationary bearings 31 and 32 so as to prevent axial movement of the pinion. The cutter rod passes through a collar 33 and is held in place thereon by set collars 34 and 35 on each side of the collar 33; and the collar 33 is carried by the rack bar 36 that moves in suitable guides 37 parallel to the axis of the



cutter rod 30. The rack bars 28 and 36 have racks facing each other, and engage opposite sides of a pinion 38, so that said pinion is revolved in one direction or the other. The  
5 said rack bars move in opposite directions to bring together or to separate the cutter 20 on the cutter bar 19 and the cutter 40 on the cutter rod 30, so that the button blank when held in position, and between the two  
10 cutters, will be formed both on its front and on its back. The pinion 38 is operated by an arm or crank 39 that is connected to the bar 10 above mentioned, and as said bar 10 reciprocates in one direction or the other, the  
15 cutters 20 and 40 will be separated or brought together. The axes of the cutters 20 and 40 are in the same line.

Leading to a point between the cutters 20 and 40 is a guide way or chute 41, which has  
20 in the line of the cutters a plate 42 having a perforation 43 smaller than the serrated end 23 of the cylinder 22, but of sufficient size to permit one of the cutters (in this case the cutter 40) to pass through said perforation  
25 in order to operate upon the blank. The bottom of the chute 41 is continued in the horizontal shelf 44 adjacent to the perforation 43. Blanks X are placed in the chute 41, which has a downward inclination at its  
30 entrance end and so that their lower flat edges *x* rest upon the bottom of the chute. On a suitable frame bar 45, which is at right angles to the axes of the cutter rods, is a sliding block 46, to which, by the horizontal  
35 pivot 47, is pivoted a vertical arm of the bell crank lever 48. The free end of said vertical arm is connected with the rod 12 above mentioned. The said bell crank lever has a pair of adjusting screws 49 and 50, one on each  
40 side of the pivot 47, and passing preferably through the arm 48 and adapted to stop the oscillation of said arm in each direction, and at the same time to adjust the degree of arc and the division of the arc of such oscillation.  
45 The said bell crank lever has a horizontal arm 51 that overhangs the horizontal portion of the chute 41, which is the shelf 44, and the extremity of said horizontal arm 51 carries a downwardly projecting hook or stationary  
50 jaw 52, while the said arm 51 also carries the movable spring-operated jaw 53. The said jaws are adjusted to fit upon the side edges of the blanks X. At each oscillation of the bell crank lever the horizontal arm 51 rises  
55 so far that its jaws may pass over the top of one of the blanks X, and upon its downward oscillation said jaws will come in contact with the side jaws above stated. The stroke of the bar 12 is such as not only to oscillate  
60 the horizontal arm and the jaws thereof in a vertical plane, but also to shift the whole bell crank lever in the line of the lower end of the chute 41, carrying with it the sliding block 46, and the stop screws 49 and 50 de-

termine not only the oscillation in a vertical 65 plane of the jaws 52, 53, but also the reciprocation of the bell crank lever in a horizontal line. The chucking means provided in this embodiment of the invention consists in the movable sleeve 22 and the plate 42. 70

The operation of the device is as follows:— the chute 41 is filled with blanks, each blank having its flat edge on the bottom of the chute. The blanks slide down the inclined  
75 portion of the chute until they reach its horizontal portion, and there they are stopped by the spring 54 of the blank feeding device. When the machine operates, the cam groove 8 causes the jaws 51, 52 to rise and to move  
80 toward the right in Fig. 4, so that the jaw 52 moves over a blank. This occurs when the bar 12 is moving in the direction opposite to the arrow in Fig. 4. On continued move-  
85 ment, the cam groove 8 causes the bar 12 to move in the direction of the arrow in Fig. 4, which causes the jaws to descend and to straddle a blank X; and when said jaws have reached their lowest position shown in said  
90 Fig. 4, the stop 49 makes contact with the block 46 and then the further movement of the bar 12 in the direction of the arrow causes said block 46 to slide in the direction  
95 of said arrow on the bar 45, thereby bringing the blank held by the feeding device along the chute until it is opposite the hole 43. The concentric part of the cam groove 7  
100 holds the clamping device and the cutters in engagement with a blank, and the steep parts of said groove 7 cause quick movements of the pinion 38 and of the rack bars 26 and 28, thus moving the cutters 20 and 40 away from  
and toward each other. Before either cutter touches the blank X, the serrated edge of the cylinder 22 comes in contact with the blank and forces it strongly against the back plate  
105 42 and holds the blank firmly against movement, the strength of the spring 24 when compressed being sufficient for this purpose. The rods 19 and 30 continue their movement toward each other, and the cutter 40 operates  
110 through the perforation 43 upon one side of the blank, while the cutter 20 operates upon the opposite side of the blank, cutting a complete button off from said blank X. The cutting is finished during the oscillation of  
115 the bar 10 in the direction shown by its arrow in Fig. 4, and when, by reason of the cam slot 7, the bar 10 begins a movement in a direction opposite to that of its arrow in Fig. 4, the cutters separate and the blank is released  
120 from the pressure of the cylinder 22. The parts remain in this position until the next blank is brought forward by the feeding apparatus in the manner above described, which pushes the blank just cut from the  
125 shelf 44 of the chute, and the operations are repeated. It is clear that this feeding and cutting device can be used with blanks of ir-



regular form. It is obvious that this device may be used without the cutter 40 for the back of the blank, and that in that case the cutter rod and its rack bar 36 would be  
5 omitted.

What I claim is:—

1. In a button turning machine, a channel for guiding a series of button blanks to a chucking position, a feeding arm having a  
10 jaw, means for oscillating said arm to pass said jaw over a blank in said channel and to place it behind the blank, and means for reciprocating said arm for moving the blank along the channel to the chucking position  
15 and for returning the arm to engage another blank.

2. In a button turning machine, a channel for guiding a series of button blanks to a chucking position, a feeding arm having a  
20 fixed jaw for engaging a blank on one edge and an automatically adjusted jaw for engaging the blank on the other edge and for pressing said blank against said fixed jaw, means for oscillating said arm to pass said fixed jaw  
25 over a blank in said channel and to place it behind the blank and simultaneously to place said automatically adjusted jaw in front of said blank, and means for reciprocating said arm for moving the blank along the channel  
30 to the chucking position and for returning the arm to engage another blank.

3. In a button turning machine, a channel for guiding a series of button blanks to a chucking position, a feeding arm having a  
35 fixed jaw for engaging a blank on one edge and a spring actuated jaw for engaging the blank on the other edge for pressing said blank against said fixed jaw, means for oscillating said arm to pass said fixed jaw over a  
40 blank in said channel and to place it behind the blank and simultaneously to place said spring jaw in front of said blank, and means for reciprocating said arm for moving the blank along the channel to the chucking po-  
45 sition and for returning the arm to engage another blank.

4. In a button turning machine, a channel for the button blanks, chucking means for said blanks, a reciprocable support, a feed-  
50 ing arm pivoted to said support having means for engaging a blank on opposite edges, and means for oscillating said arm with reference to said support for engaging one blank at a time, and for reciprocating  
55 said arm and support together, for feeding

the blanks one by one along the channel to the chucking position.

5. In a button turning machine, a channel for the button blanks, chucking means for said blanks, a reciprocable support, a feed- 60 ing arm pivoted to said support having means for engaging a blank on opposite edges, stops for said arm on each side of its pivot for limiting the oscillation of said arm upon the pivot, and means for oscillating 65 said arm with reference to said support and for reciprocating said arm and support together, for feeding the blanks one by one along the channel to the chucking position.

6. In a button turning machine, a channel 70 for the blanks having, at the delivery end, only a bottom and one side, a movable chuck part adapted to clamp a blank against said side of the channel, and a feeding arm hav- 75 ing means for engaging a blank on opposite edges, means for oscillating said arm, and for reciprocating said arm for moving the blanks one by one along the channel to the chucking position, and means for operating 80 said movable chuck part.

7. In a button turning machine, a channel for the blanks having, at the delivery end, only a bottom and one side, a movable chuck part adapted to clamp a blank against said side of the channel, a reciprocable support, 85 a feeding arm pivoted to said support having means for engaging a blank on opposite edges, and means for oscillating said arm with reference to said support and for recip- 90 rocating said arm and support together, for feeding the blanks one by one along the chan- 95 nel to the chucking position.

8. In a button turning machine, a channel for guiding a series of button blanks to a chucking position, a support, a feeding arm 95 pivoted to said support having a jaw, means for oscillating said arm with reference to said support to pass the jaw over a blank in said channel and to place it behind the blank, and for reciprocating said support for 100 moving the blank along the channel to the chucking position and for returning the arm to engage another blank and an adjustable stop for said arm for limiting its oscillations upon its pivot.

SAMUEL O. McMASTER.

Witnesses:

D. GURNEE,  
L. THON.