

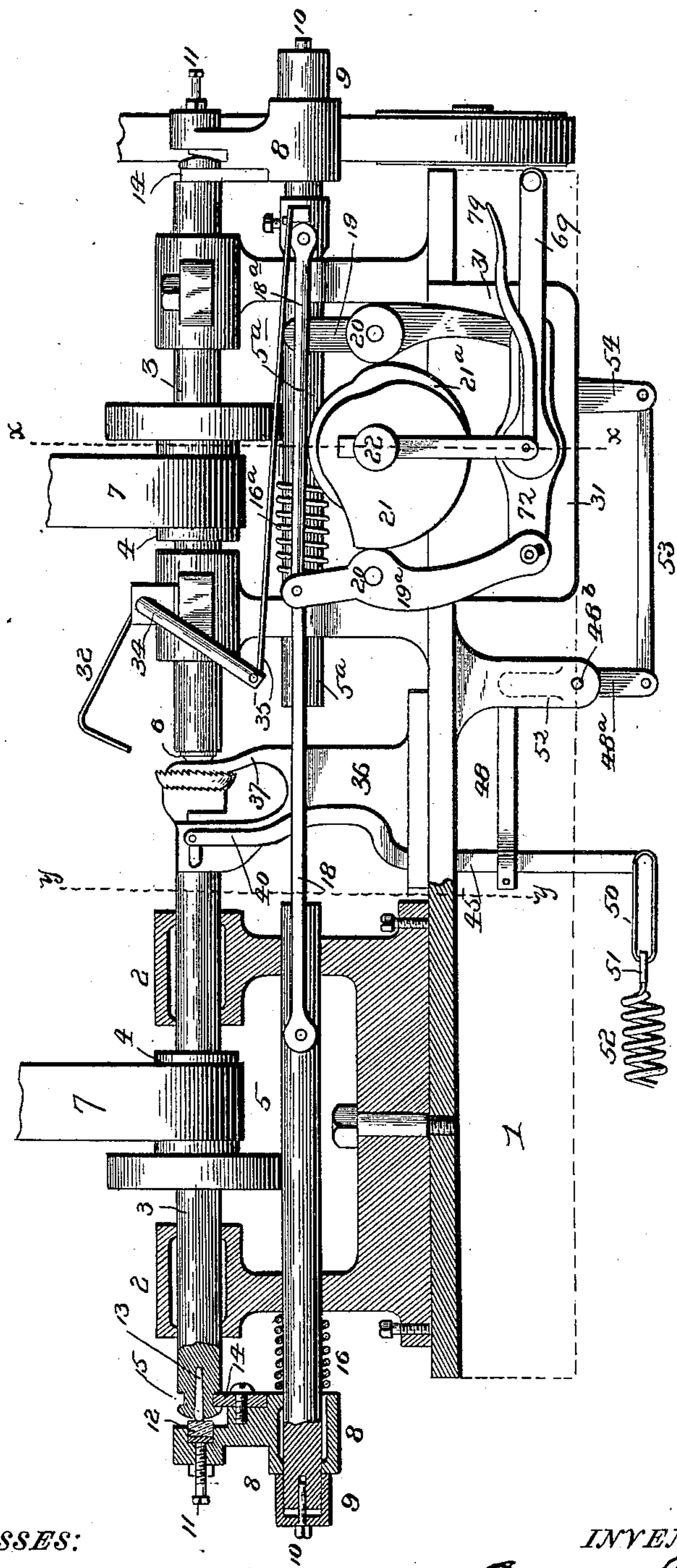
(No Model.)

5 Sheets—Sheet 1.

D. B. SHANTZ.
LATHE FOR TURNING BUTTONS.

No. 427,919.

Patented May 13, 1890.



WITNESSES:

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INVENTOR:

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 Attorneys

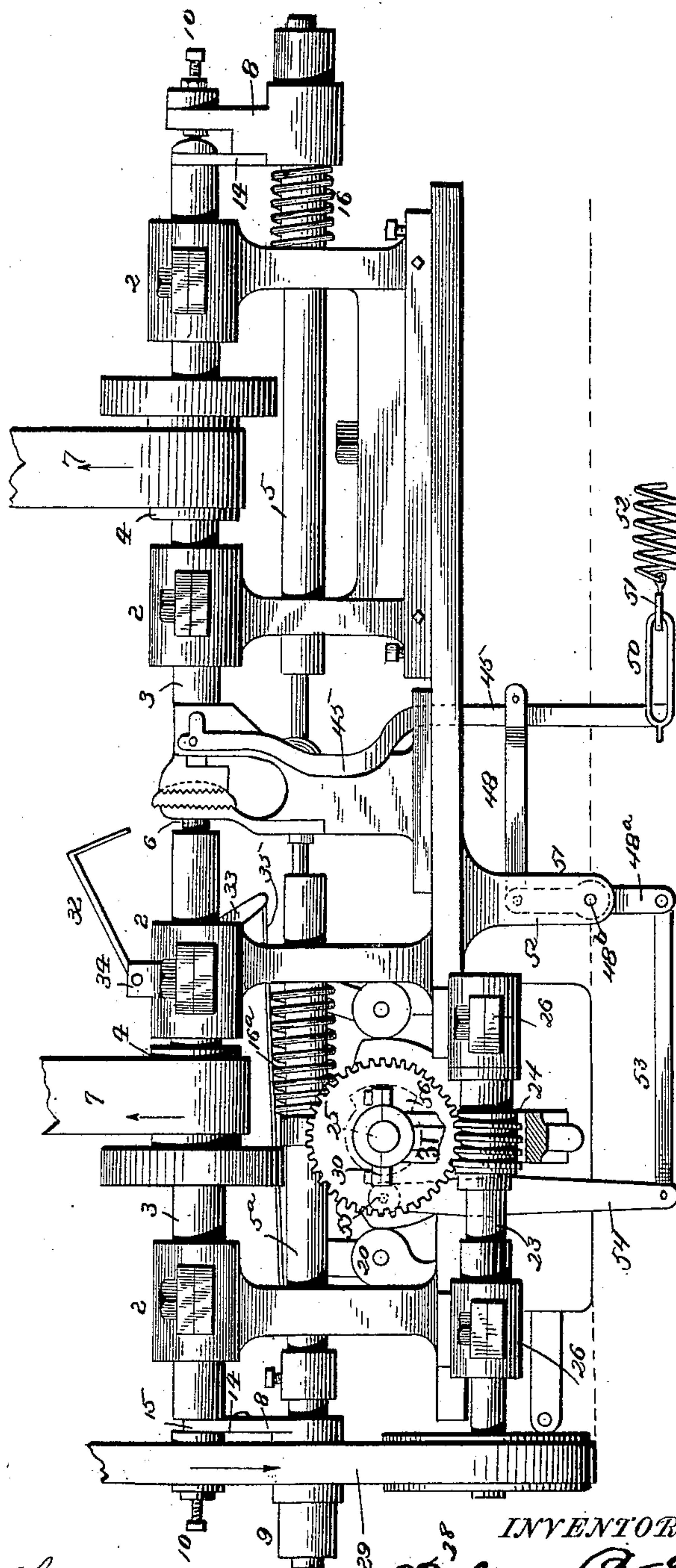
(No Model.)

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D. B. SHANTZ.
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(No Model.)

5 Sheets—Sheet 3.

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Fig. 5.

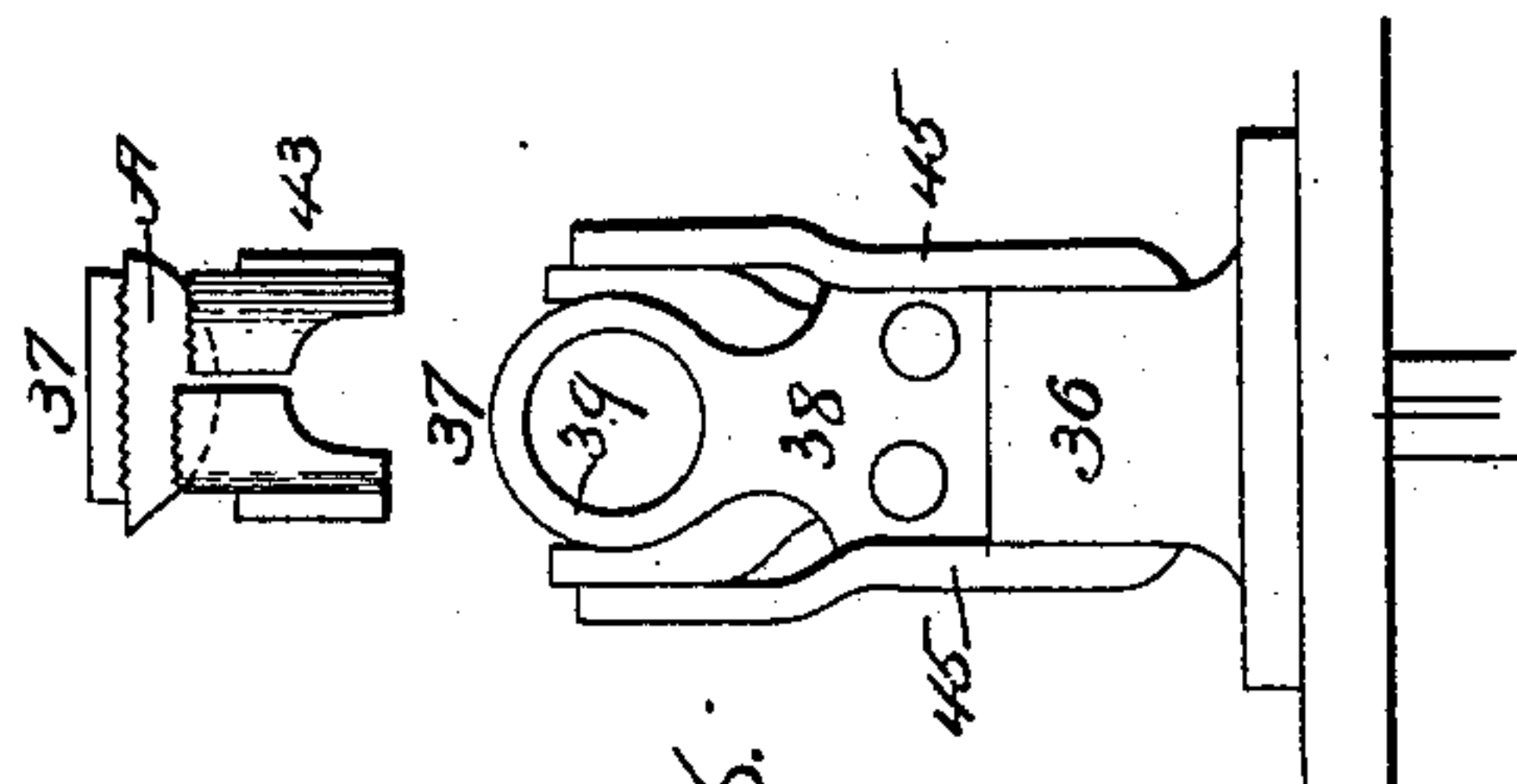


Fig. 6.

Fig. 4.

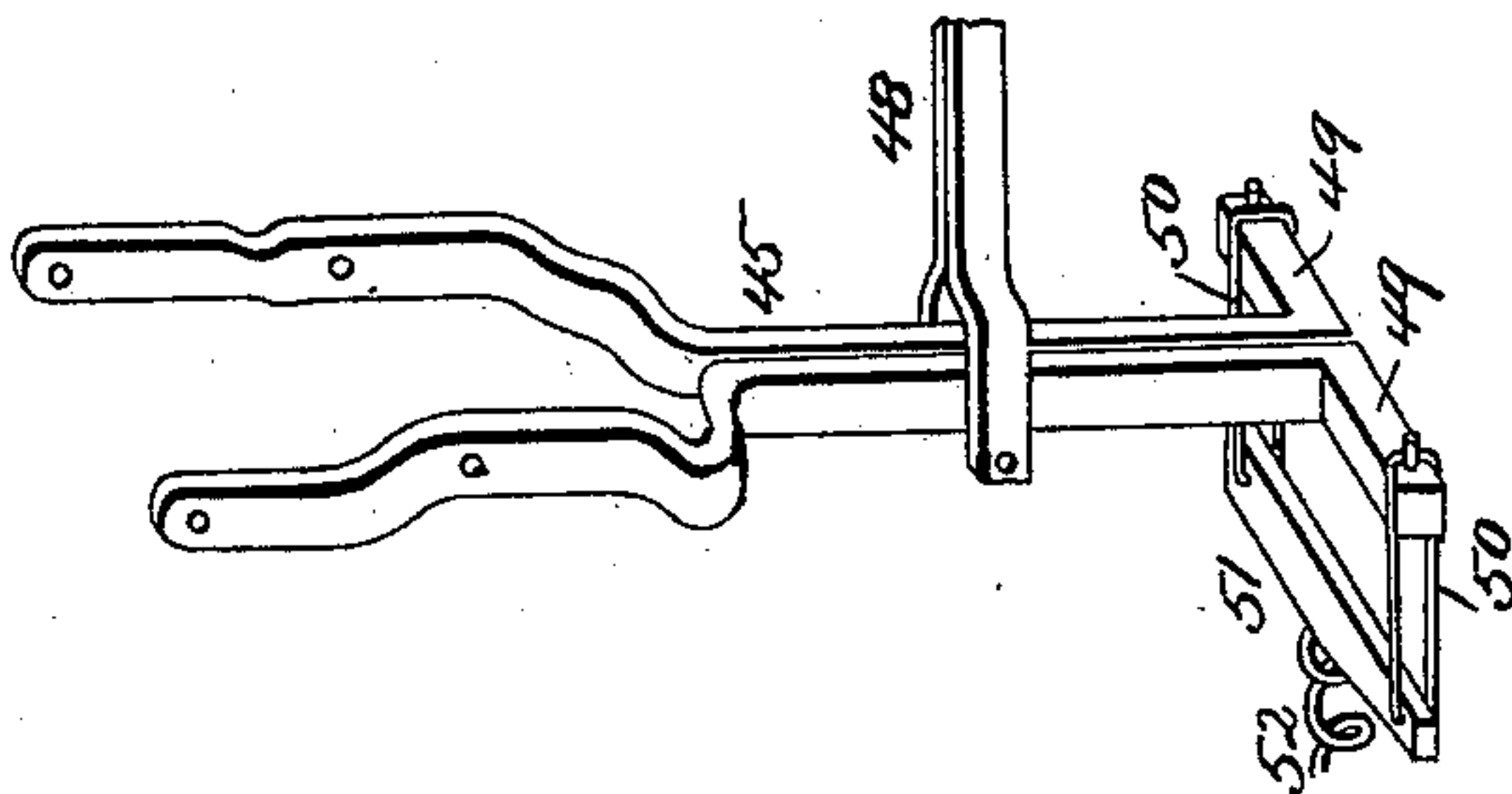
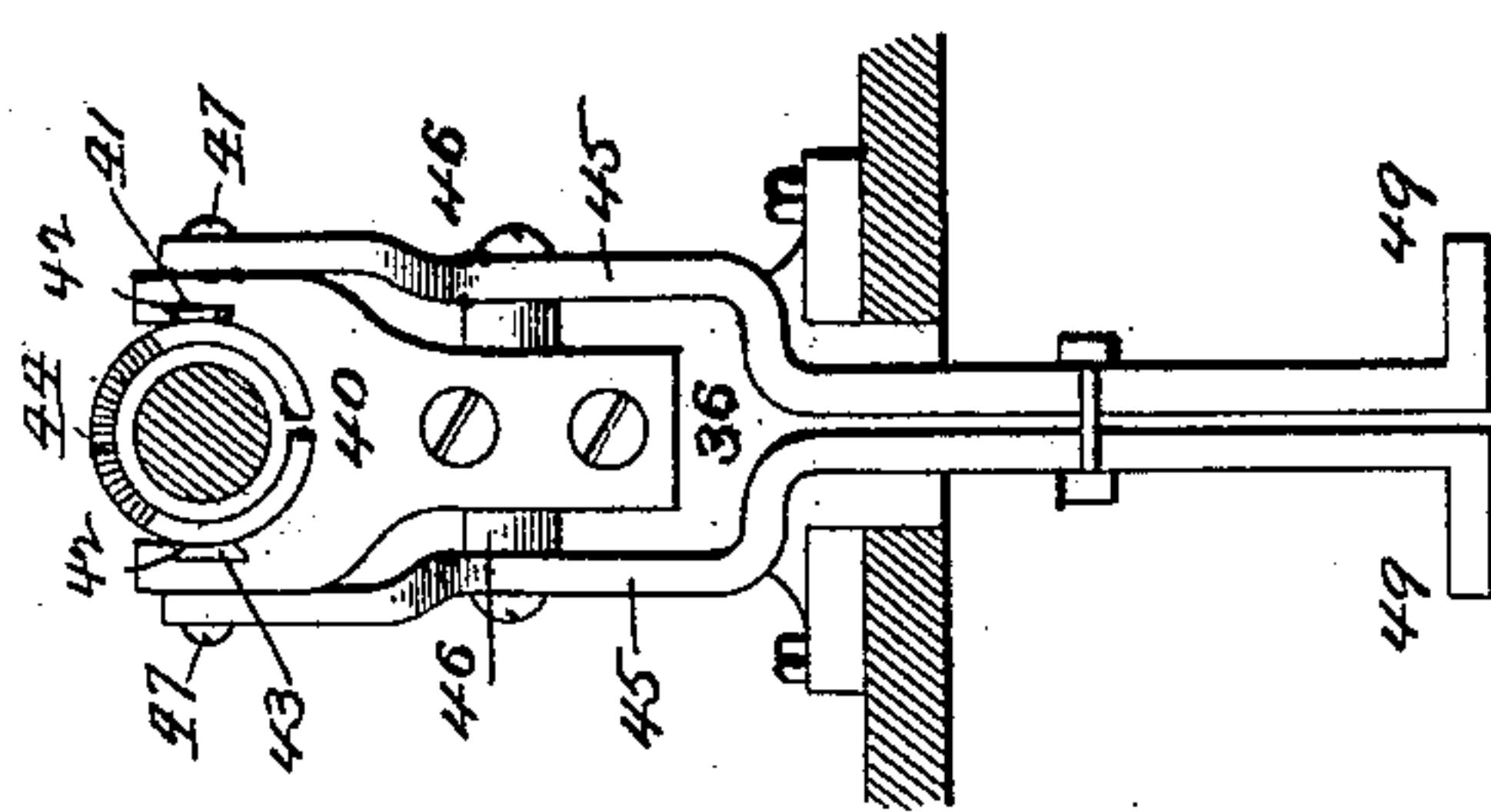


Fig. 3.



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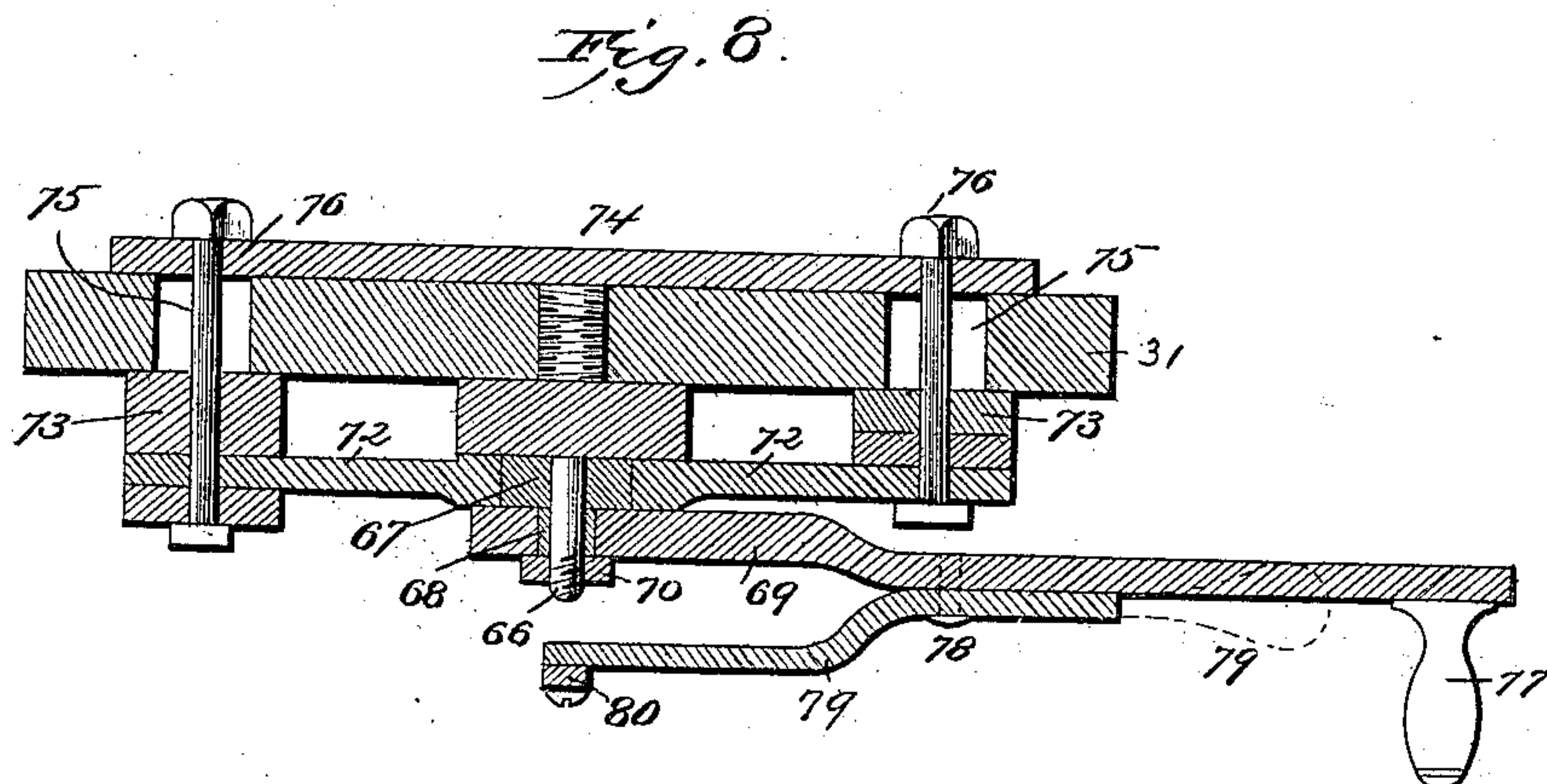
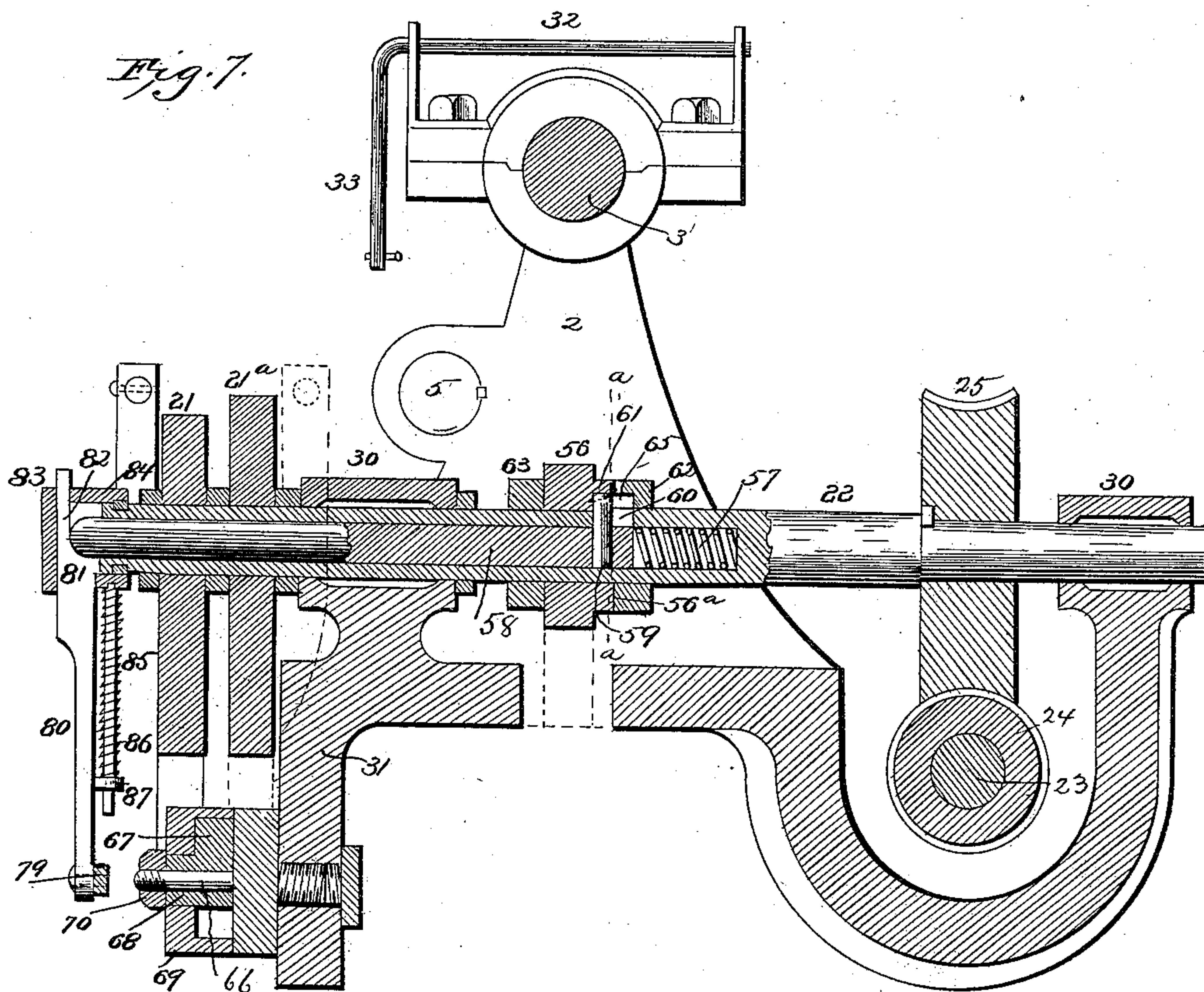
(No Model.)

5 Sheets—Sheet 4.

D. B. SHANTZ.
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(No Model.)

5 Sheets—Sheet 5.

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Fig. 9.

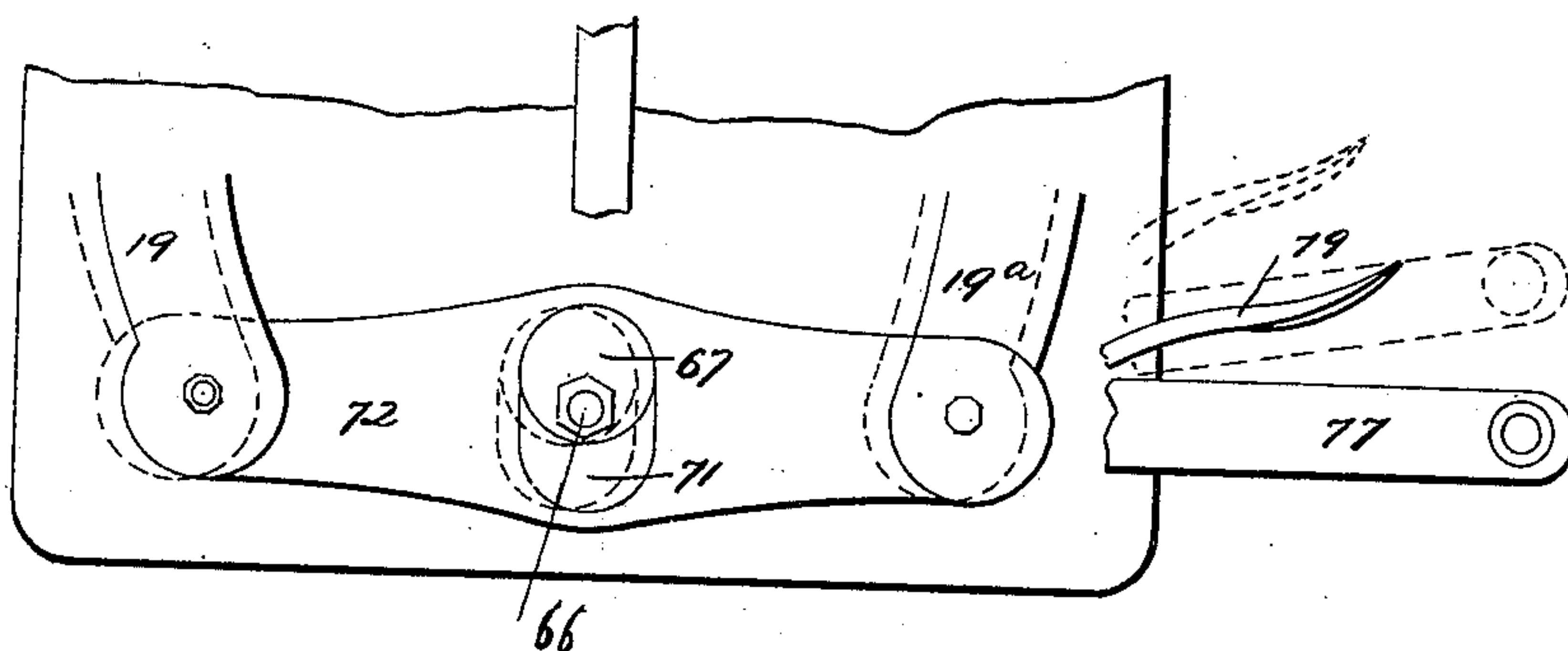


Fig. 10.

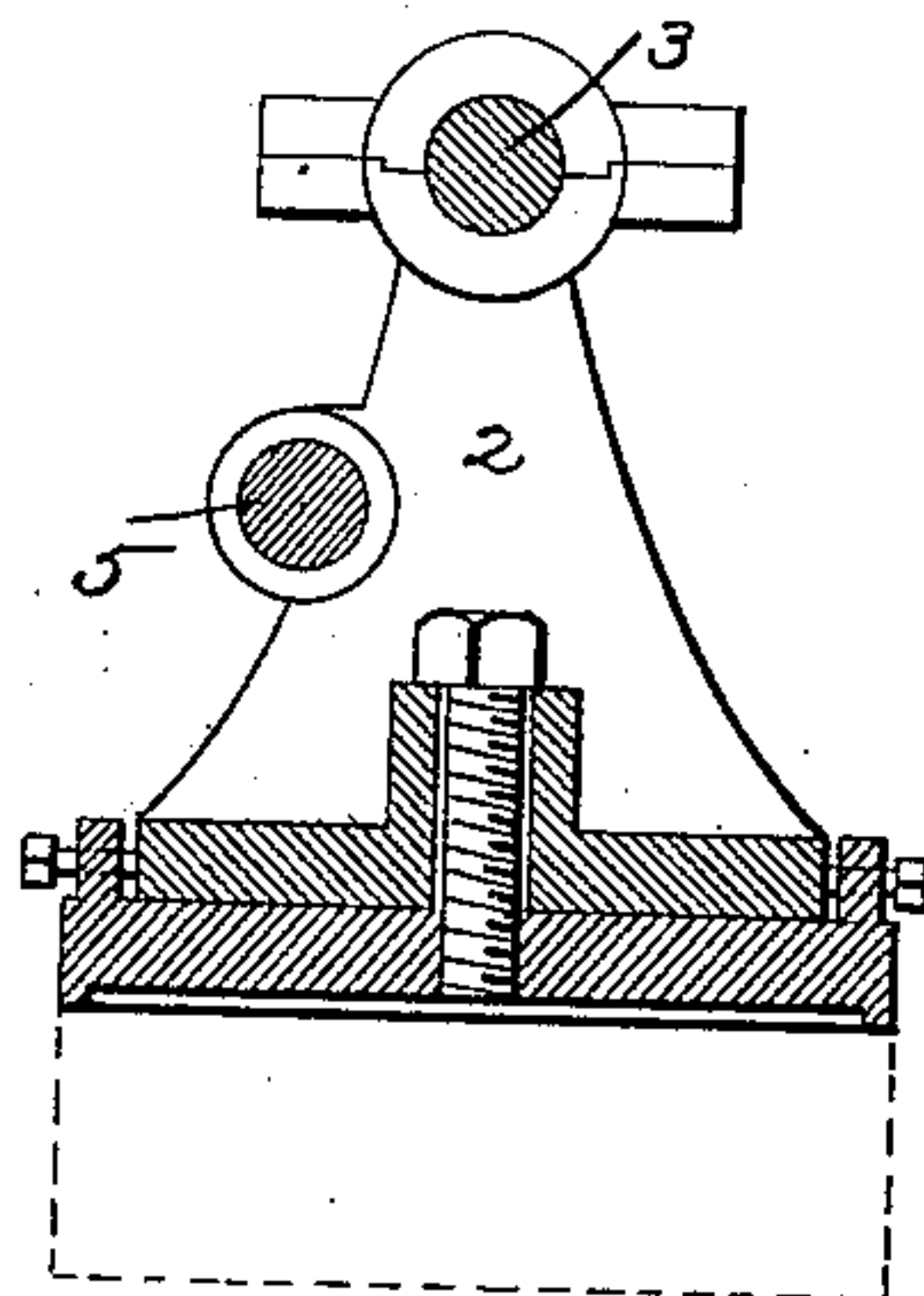


Fig. 11.

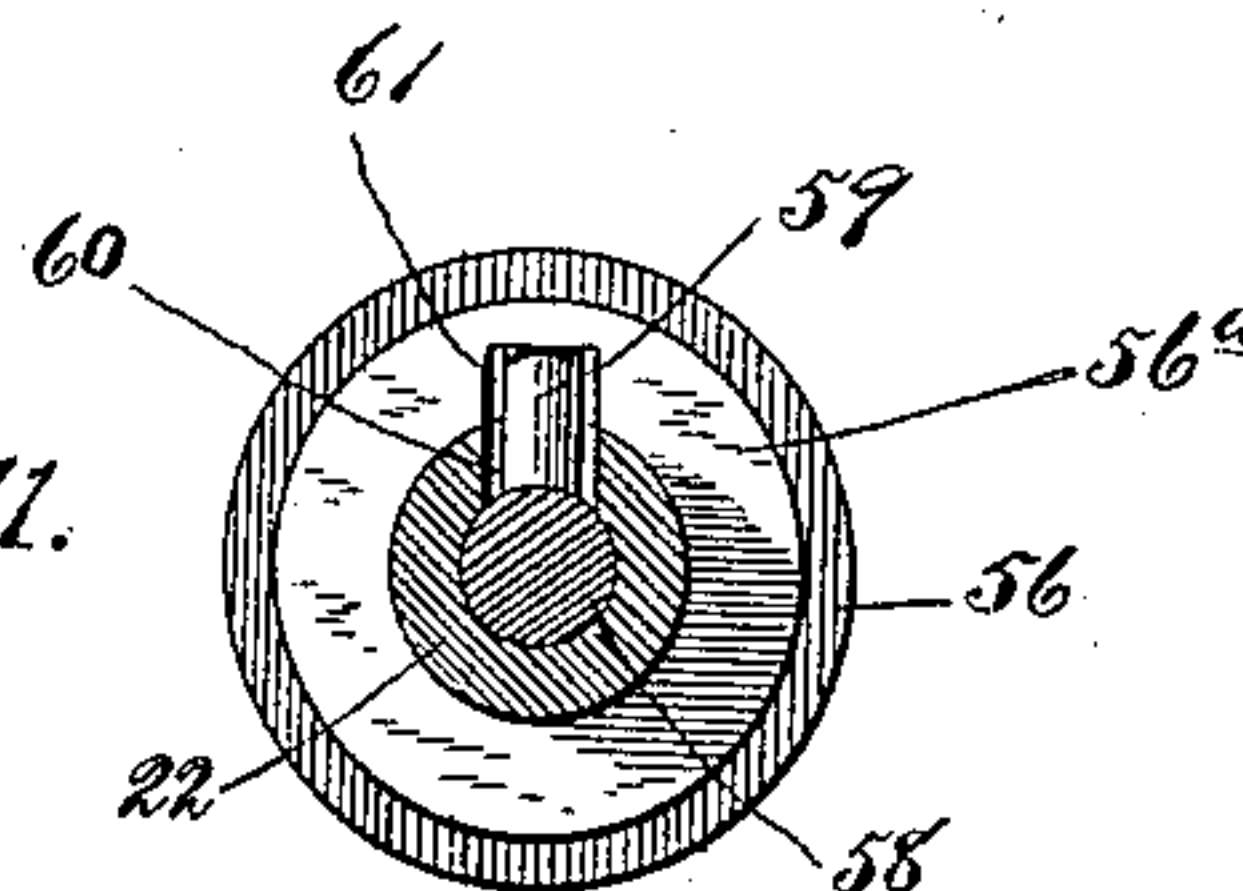
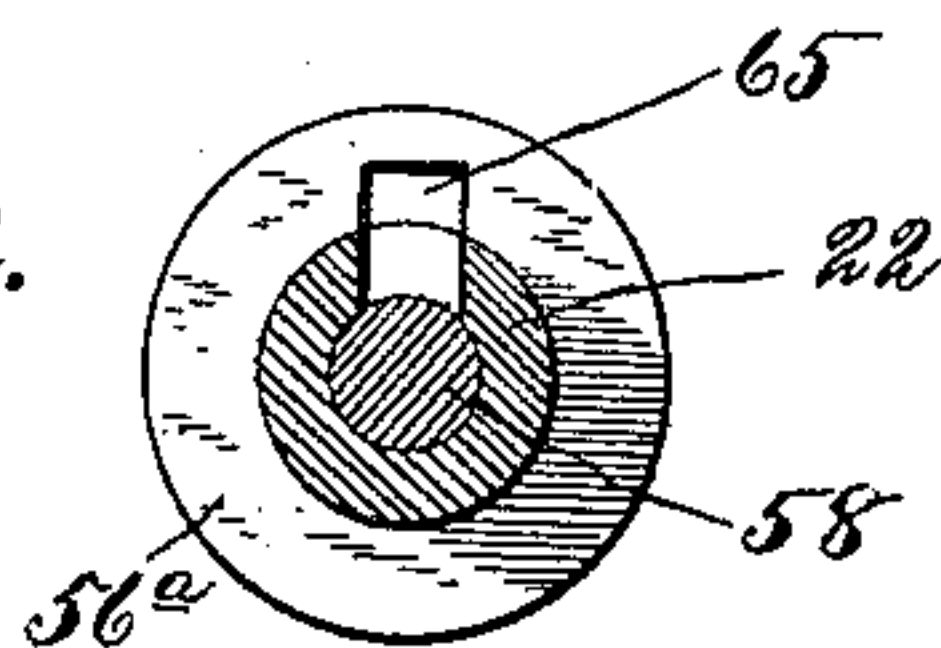


Fig. 12.



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UNITED STATES PATENT OFFICE.

DILMAN B. SHANTZ, OF BERLIN, ONTARIO, CANADA.

LATHE FOR TURNING BUTTONS.

SPECIFICATION forming part of Letters Patent No. 427,919, dated May 13, 1890.

Application filed January 8, 1890. Serial No. 336,250. (No model.)

To all whom it may concern:

Be it known that I, DILMAN B. SHANTZ, a subject of the Queen of Great Britain, and a resident of Berlin, in the Province of Ontario and Dominion of Canada, have invented certain new and useful Improvements in Lathes for Turning Buttons; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in lathes for turning buttons and other similar articles of that class in which two oppositely arranged revolving cutters operate upon a blank of suitable material, the first cutter partly forming and detaching the button, while the other finishes the work and severs the completed article from the blank. These cutters act alternately upon the blank, being fed forward the proper distance and then withdrawn automatically. In practice it frequently happens that some of the blanks are not of the proper thickness, or that their faces are defective or imperfect from various causes. This would result in the production of a worthless button if some means were not provided for compensating for such irregularities. This is accomplished by causing the cutters to be advanced either to the right or left, and thus make a deeper or shallower cut.

The object of my invention is a lathe for the above purpose which shall be simple in construction and effective in operation, and in which means are provided under the control of the operator for delaying the discharge of the blank from the grips and causing the cutters to be advanced to the right or left, so that they will make a deeper cut than they otherwise would.

The invention consists in the novel features of construction and new combinations of parts hereinafter fully described, and specifically defined in the appended claims.

In the accompanying drawings, Figure 1 is a front elevation, partly in section, of a lathe constructed according to my invention. Fig. 2 is a rear elevation of the same. Fig. 3 is a cross-section on the line $y y$, Fig. 1. Fig. 4 is a perspective view of the yoke shown in Fig. 3. Fig. 5 is a top view of the grips, showing a blank inserted therein. Fig. 6 is an

elevation of the stationary grip. Fig. 7 is a cross-section on line $x x$, Figs. 1 and 2, on a larger scale. Fig. 8 is a horizontal section on the line $z z$, Figs. 1 and 7. Fig. 9 is an elevation of the parts shown in Fig. 8. Fig. 10 is a cross-section on line $x' x'$, Fig. 1. Figs. 11 and 12 are detail sectional views of the hub and collar shown in Fig. 7.

In the said drawings, the reference-numeral 1 designates the bed of the machine, and 2 2, Figs. 1, 2, 7, and 10, are two head-stocks secured to said bed, each having a mandrel 3, with pulley 4, journaled in it. Longitudinal movement is imparted to said mandrels by slide-rods 5. Each mandrel is provided with a cutter 6, which may be of any ordinary or suitable construction, and is revolved with its mandrel by means of belt 7 and pulley 4, said belts being connected with any suitable driving-shaft. The slide-rods 5 5^a are connected with the mandrels 3 by a bracket 8, secured to the rods by caps 9 and set-screws 10, being adjustably held to the ends of the mandrels by tail-screws 11, passing into the heads of said brackets and holding the washers 12 against tail-pins 13 in the ends of the mandrels. Forked brackets 14, secured to the brackets 8, hold the mandrels by engaging with grooves 15 in the mandrels.

Coiled upon the rod 5 is a coiled spring 16, secured between the outer bearing of the head-stock and the bracket 8. A similar spring 16^a is coiled upon the rod 5^a, but is secured between the head-stock and a collar 17 on the rod. The object of both these springs, however, is the same—that is, to draw the slide-rods 5 and 5^a toward the ends of the machine and away from the center thereof, so as to retract the cutters from the work. The rods 5 and 5^a are connected with rods 18 and 18^a, respectively pivoted to levers 19 and 19^a, having friction-bowls 20 near their upper ends, which bowls, by coming in contact with the cams 21 and 21^a, actuate said levers. These cams are secured upon a transverse shaft 22, having its bearings in the frame of the machine, said shaft being geared to a short driving-shaft 23 by a worm 24 and worm-wheel 25, (see Fig. 2,) said shaft 23 being journaled in bearings 26 and held therein by collars 27, and provided with a pulley 28, driven by belt 29. The bearings 30 of shaft 22 may be formed inte-

gral with the bed or frame of the machine, as shown in Fig. 7, or attached thereto by brackets, as may be found most desirable or convenient.

5 At the front of the bed or frame of the machine beneath shaft 22 is formed or provided a downward extension 31, to which certain mechanism, to be hereinafter described, is connected, said mechanism being under the
10 control of the operator, and by means of which and the levers 19 and 19^a and their connections the automatic feed of the cutters may be stopped and the said cutters be advanced nearer to each other, so as to make a deeper
15 cut.

To the right-hand head-stock of the machine which carries the first cutter is attached the tool-guard, consisting of the wire 32 on the crank-shaft 33 in the bracket 34, which is
20 attached to the inner bearings of the head-stock, said crank-shaft being actuated by a rod 35, connected with slide-rod 5^a, so that as said rod and its connected mandrel and cutter are withdrawn from their work the said
25 guard will be caused to fall down in front of said cutter and prevent the finished button cut and detached from the blank by the second cutter from coming in contact with and being injured or damaged by the first cutter.

30 In Figs. 1 and 3 the numeral 36 designates a bracket secured to the bed 1 approximately in the center intermediate of the ends of the mandrels. To this bracket is secured at the right hand the stationary grip or jaw 37, Figs.
35 1, 3, 5, and 6, consisting of a shank 38, carrying a ring 39, with a serrated edge, adapted to engage the flat face of the blank A. At the other or left side of said bracket is secured the bracket 40, having a Y-shaped top,
40 the upper limbs of which are elongated rearwardly or to the left, and provided at the center line of the mandrel with an inwardly-facing dovetail sectioned slide-groove 41, with a longitudinal slot 42. The dovetail groove of
45 each limb receives the dovetail sectioned slide 43 of the grip or jaw 44, forming one-half of a barrel with serrated edge, the two halves when placed together in their slides 41 forming a complete barrel, each half of
50 which may move independently of the other.

45 45, Figs. 1, 3, and 4, are two levers pivoted to hubs 46 of the bracket 36, each of which has its upper end pivotally attached to one of the slide-grips 44 by a screw-stud 47, which
55 passes through the head of the lever and the slot 42 in the bracket 40 into the slide 43. Below the pivotal supports or hubs 46 the levers are curved inwardly, so as to come close to each other and be held in a stirrup in the
60 end of a draw-rod 48. The lower end 49 of each lever is turned outward and connected by a link 50 to a yoke 51, to the center of which is attached a spring 52, which draws the same to the left in opposite direction to
65 the draw-rod 48 and presses the jaws 44 against the blank A. The yoke 51, adapted to turn to one side or the other, may draw

one or the other of the levers more forward than the other, and thus enables an irregularly-shaped blank to be gripped and held
70 more securely by the grips or jaws 44, as illustrated in Fig. 5.

The draw-rod 48 is pivoted to one end of lever 48^a, which is pivoted at 48^b to a lug 52 on the lathe-bed 1. The other end of said lever
75 is connected by a link 53 with one end of a lever 54, also pivoted to the lathe-bed at the right of the shaft 22. This lever 54 is provided at its upper end with a friction-bowl 55, which is acted upon by a cam 56 on the shaft
80 22. This cam is so arranged on said shaft that the latter may, if desired, rotate without rotating the cam. For this purpose the shaft (see Fig. 7) is provided with a central aperture or bored out from the front to a point a
85 little beyond where said cam is secured. In the bore or barrel thus formed is placed a spiral spring 57, and in front thereof is fitted or located a rod 58, compressing said spring. The front end of rod 58 is rounded and pro-
90 jects a short distance outside the barrel. Near the rear or inner end of said rod 58 is secured a pin 59, projecting through a slot 60 in the shaft 22 and engaging in a notch 61 in the hub 56^a of the cam 56. The latter is inserted
95 between two collars 62 and 63, secured to shaft 22 by set-screws. (Not shown.)

In the collar 62, which adjoins the hub 56^a of the cam 56, is formed a notch 65, similar to the notch 61 in said hub and long enough to
100 contain the pin 59 without the latter projecting into notch 61. This pin 59 acts as a key or feather in the shaft of the cam 56, and is pressed into the notch 61 by the spring 57, so that said cam will revolve with the shaft 22.
105 If the rod 58 be pressed inward against spring 57, the pin 59 is thrown out of engagement with the notch 61 and enters the notch 65 in the collar 62. Shaft 22 will then rotate without rotating cam 56.

On the extension 31, Figs. 7, 8, and 9, is secured a large stud 66, with a large washer or shoulder placed vertically below the shaft 22. Upon said stud is journaled the eccentric 67,
110 having a neck 68, which is adapted to be engaged and firmly held by an eye in a lever 69, secured thereon by a nut 70. The eccentric 67 fits in a vertical slot 71 of a link 72, placed against the head of the stud 66, to the ends of
115 which link are pivoted the lower ends of the levers 19 and 19^a, washers 73 being placed between the ends of said link and the front of the extension 31, and a long washer or link 74 being placed at the back of said extension 31.

75 designates slots in the extension 31, and
120 76 bolts which serve as pivots for the levers 19 and 19^a, said bolts also passing through washers 73, slots 75, and links 74 and 72. When the lever 69 is in its normal position, as in Figs. 1, 7, 8, and 9, the eccentric 67 holds
125 the link 72 in a central position. If, however, it be raised or depressed, it forces the link to the left or right, respectively.

The lever 69 is provided with a handle 77,

and there is also pivoted to it at 78 a thumb-lever 79, one end of which extends over the top of said lever and reaches near the handle 77. To the other end of said lever 79 is pivoted an upright bar 80, Figs. 1, 7, 8, and 9, near the top of which on its inner face is an inclined plane 81, terminating in a vertical face 82, said top part projecting through a slot in a cap 83, which is secured to a sectional collar 84, placed in a groove near the end of shaft 22, the end 82 being placed between the inner end of said collar and the end of the rod, the rounded end of the latter bearing against the face 81 82. A spring 85, coiled on a rod 86, which is secured to the under side of said cap and passes through a lug 87 on said bar 80, bears against said cap and lug and keeps said bar down. If the thumb end of lever 79 is depressed, the bar 80 is projected upward, and the inclined plane or wedge 81 presses rod 58 back into the shaft, thereby disengaging the cam 56, thus preventing the retraction of the sliding grip and keeping the blank A in position. By raising or depressing the lever 69 the link 72 is pushed to the right or left, thereby shifting the lower ends of the levers 19 and 19^a in the same direction, thus increasing the leverage of one of said levers and decreasing that of the other, and with them correspondingly the motion of the slides 5 5^a, the position of the mandrels, and the depth of the cutting-tools in the blank A. Thus when the operator sees that the face of the button will not be or is not clear cut, but that there is still a speck of rough surface, he may in his discretion cause the cutting-tool to cut deeper on that side of the face by raising or depressing the lever 69, as above described. The blanks are fed by hand, being held by the fingers with the flat face against the stationary grip until the sliding grip moves up against it. The cams 21 and 21^a are so shaped and timed as to cause the tools to act simultaneously, but to withdraw the face-tool first and dropping the tool-guard. Then a slight bulge 88 on the cam 21 causes the rear tool to cut through with a jerk and throw the finished button out of the waste-rim. The grips are then opened by the sliding grip being caused to recede by the cam and connections.

Having thus described my invention, what I claim is—

1. In a machine for turning buttons and similar articles, the combination of cutting-tools having means for revolving them and for automatically and alternately bringing them forward and drawing them back, and grips provided with means for automatically opening and closing them for the purpose of receiving, holding, and allowing the discharge of the material operated upon, and provided with means under the control of the operator for preventing the opening of the grips, substantially as described.

2. In a lathe for turning buttons and similar articles, the combination of cutting-tools

having means for revolving them and for automatically and alternately bringing them forward and drawing them back, and provided with means for changing simultaneously the position of the cutting-tools and connections to the right or left, as may be desired, substantially as described.

3. In a lathe for turning buttons and similar articles, the combination of grips for holding the material operated upon, and provided with means for automatically opening and closing the same, and with means under control of the operator for preventing the opening of the grips when desired, substantially as described.

4. In a lathe for turning buttons and similar articles, the combination of cutting-tools having means for revolving them and for automatically and alternately bringing them forward and drawing them back, and provided with means for changing the position of the cutting-tools and connections simultaneously to the right or left, and grips having means for automatically opening and closing them, and with means under control of the operator for preventing the opening of the grips when desired, substantially as described.

5. In a lathe for turning buttons and similar articles, the combination, with cutters and means for operating the same, of a grip for holding the material to be operated upon, a cam for actuating said grips through suitable connections, and means for throwing said cam into and out of engagement with said connections, substantially as described.

6. In a lathe for turning buttons and similar articles, the combination, with revolving cutters and means for operating the same, of a grip for holding the material to be operated upon, consisting of a stationary jaw and a movable jaw, connections between the movable jaw and an operating-lever, a cam for actuating said lever, mounted upon a driving-shaft, a shaft or rod in said driving-shaft, a pin on said rod engaging in a notch in the cam, and means for reciprocating said rod, whereby the cam is engaged and disengaged from the driving-shaft, substantially as described.

7. In a lathe for turning buttons and similar articles, the combination, with revolving cutters and means for operating the same, of a grip for holding the material to be operated upon, consisting of a movable and a stationary jaw, connections between said movable jaw and an operating-lever, a cam mounted on a hollow driving-shaft for actuating said lever, a slidable rod fitting in said shaft, having a projecting pin extending through a slot in said shaft and engaging with a notch in the cam, a spring bearing against said rod, and a rod and lever for operating said sliding rod, substantially as described.

8. In a lathe for turning buttons and similar articles, the combination, with revolving cutters, mandrels, and connected slide-rods, of levers connected with said slide-rods,

cams mounted on a drive-shaft for actuating said levers and connections, and means for shifting said levers to change the position of the cutters, substantially as and for the purpose described.

9. In a lathe for turning buttons and similar articles, the combination, with revolving cutters, reciprocating mandrels, and slide-rods, pivoted levers connected with said slide-rods, cams mounted on a driving-shaft for actuating said levers, and means for shifting the levers to change the positions of the cut-

ters, of a grip consisting of a movable and a stationary jaw, connections between the movable jaw and an operating-lever, and a cam for actuating said lever, substantially as described.

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

DILMAN B. SHANTZ.

Witnesses:

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