

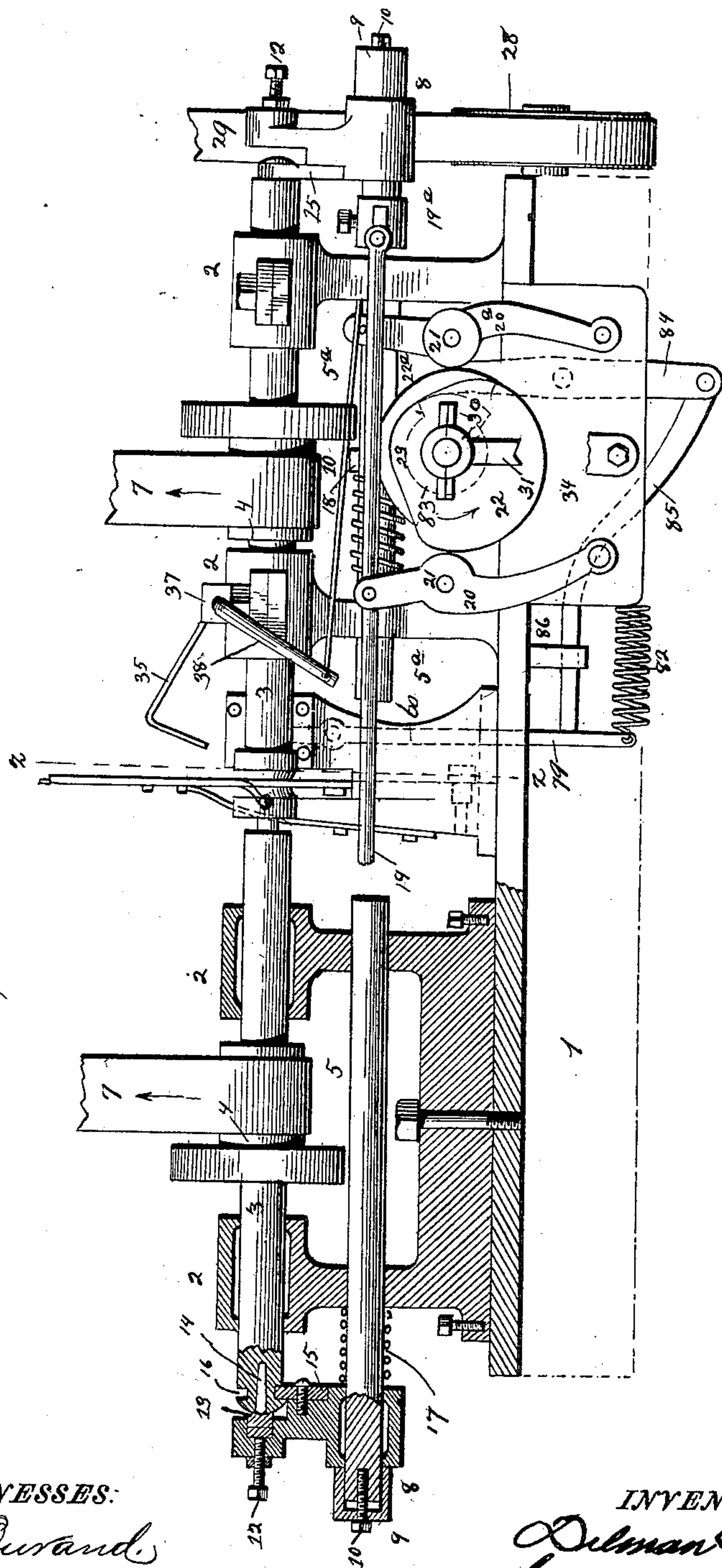
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5 Sheets—Sheet 1.

D. B. SHANTZ.
LATHE FOR TURNING BUTTONS.

No. 427,920.

Patented May 13, 1890.



WITNESSES:

J. L. Curand.
J. L. Cooney

INVENTOR:

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J. Lewis Rogers & Co.
Attorneys

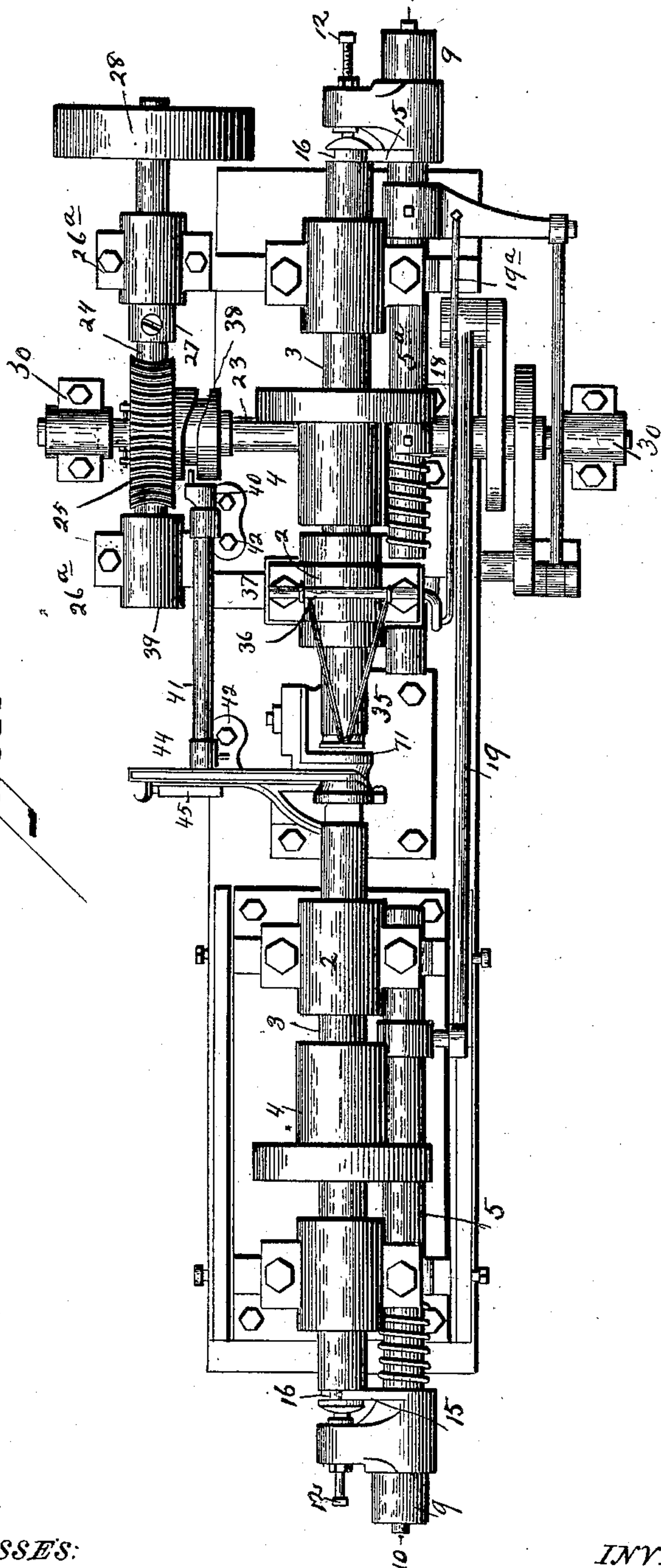
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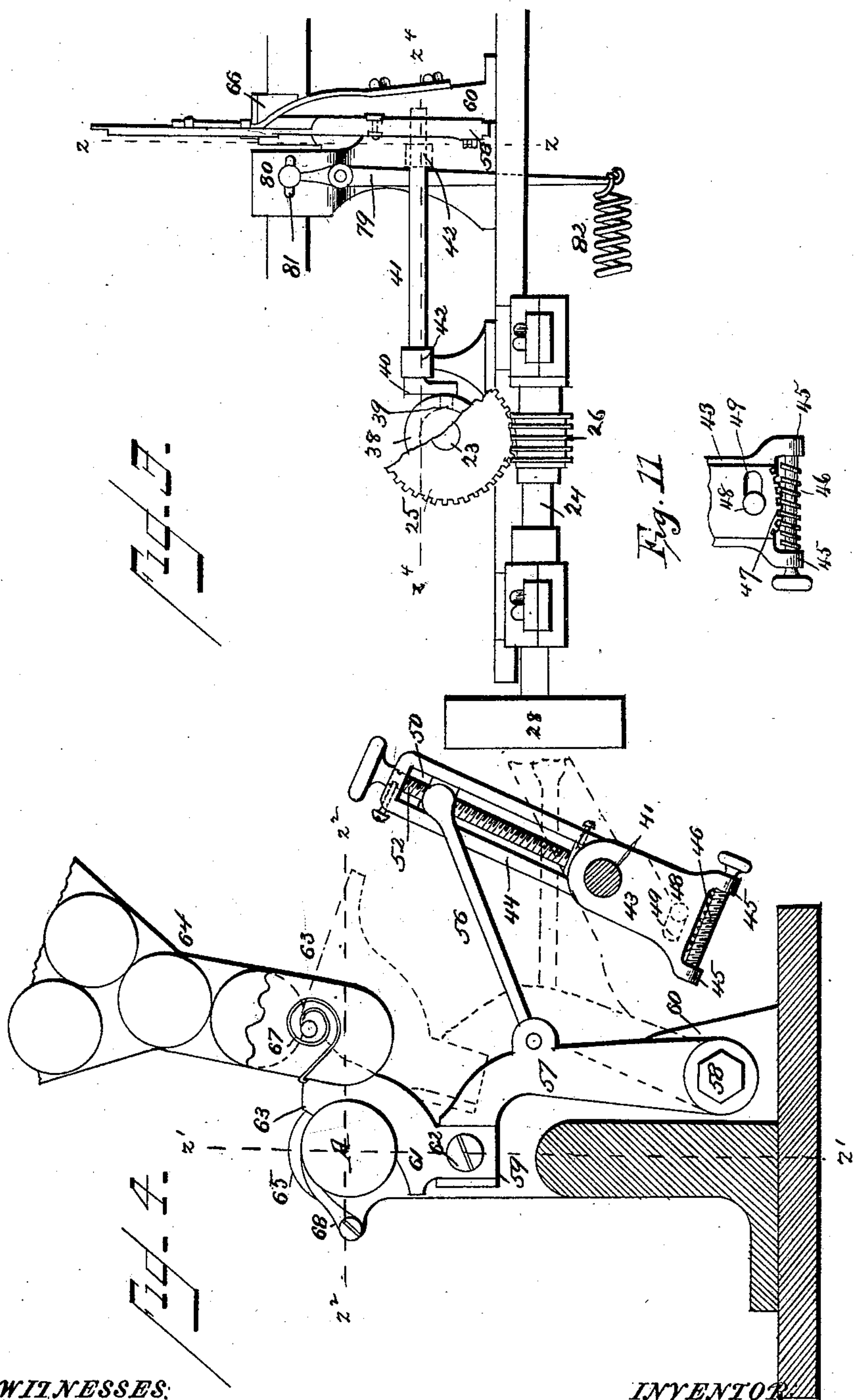
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(No Model.)

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Fig. 5.

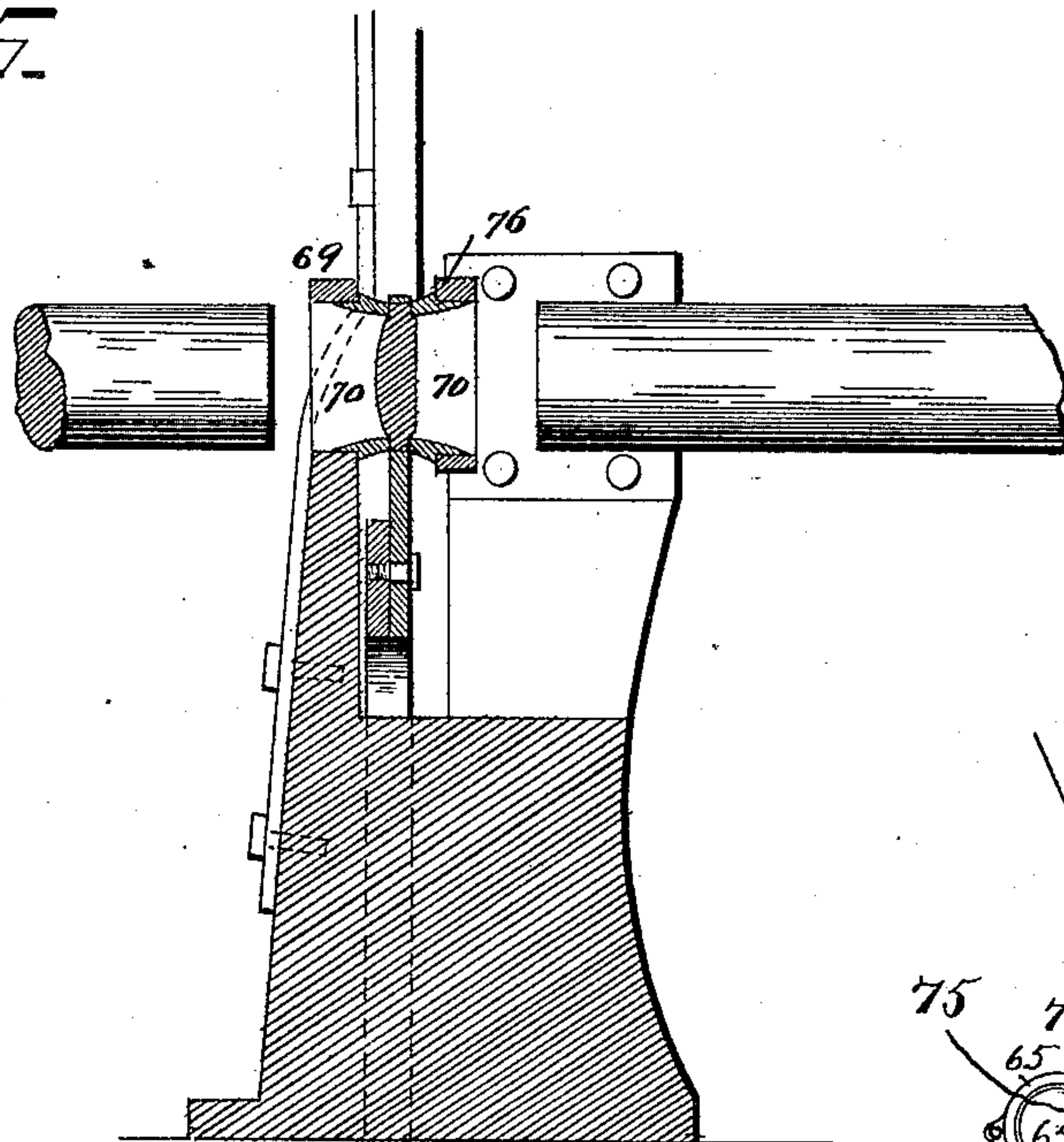


Fig. 6.

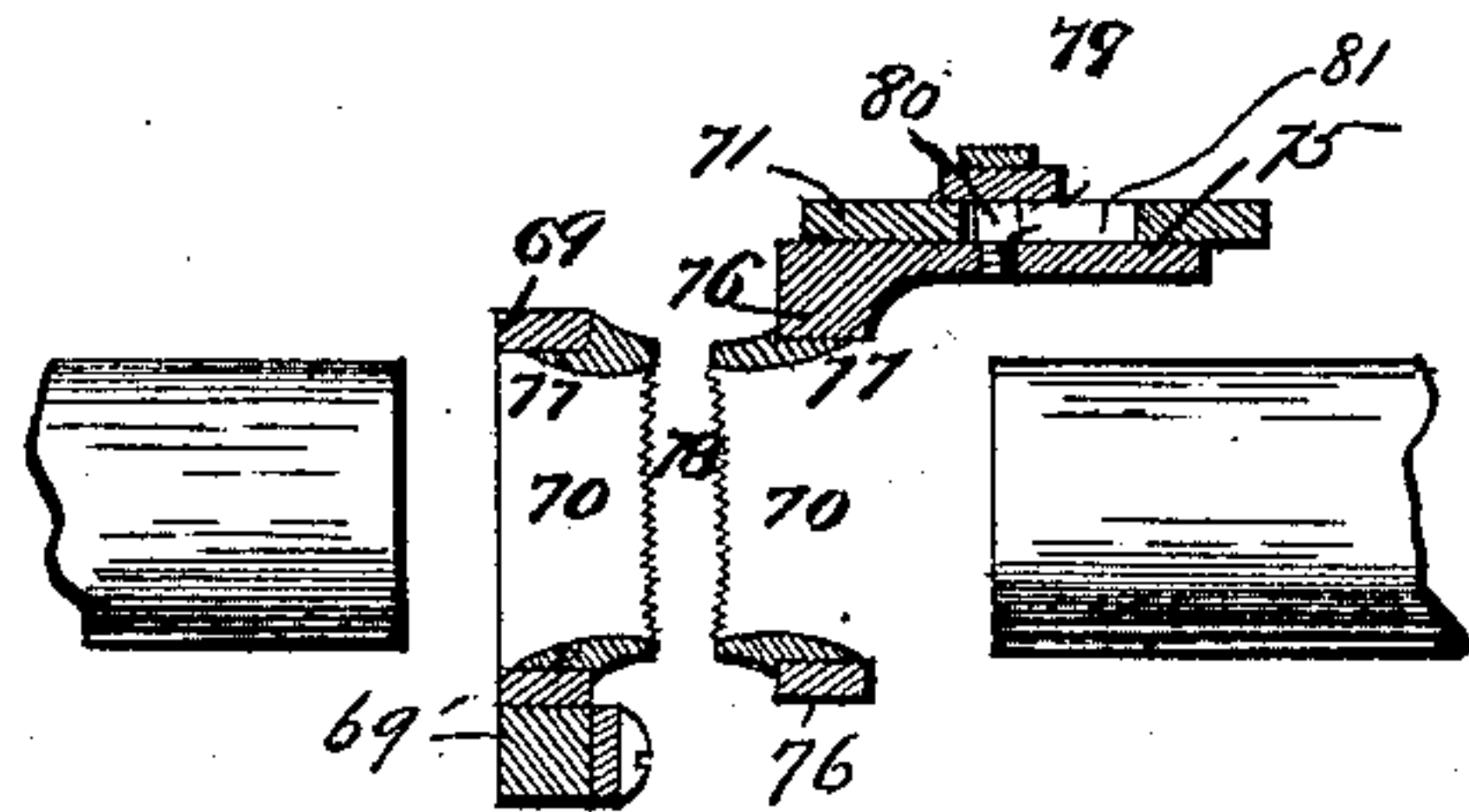
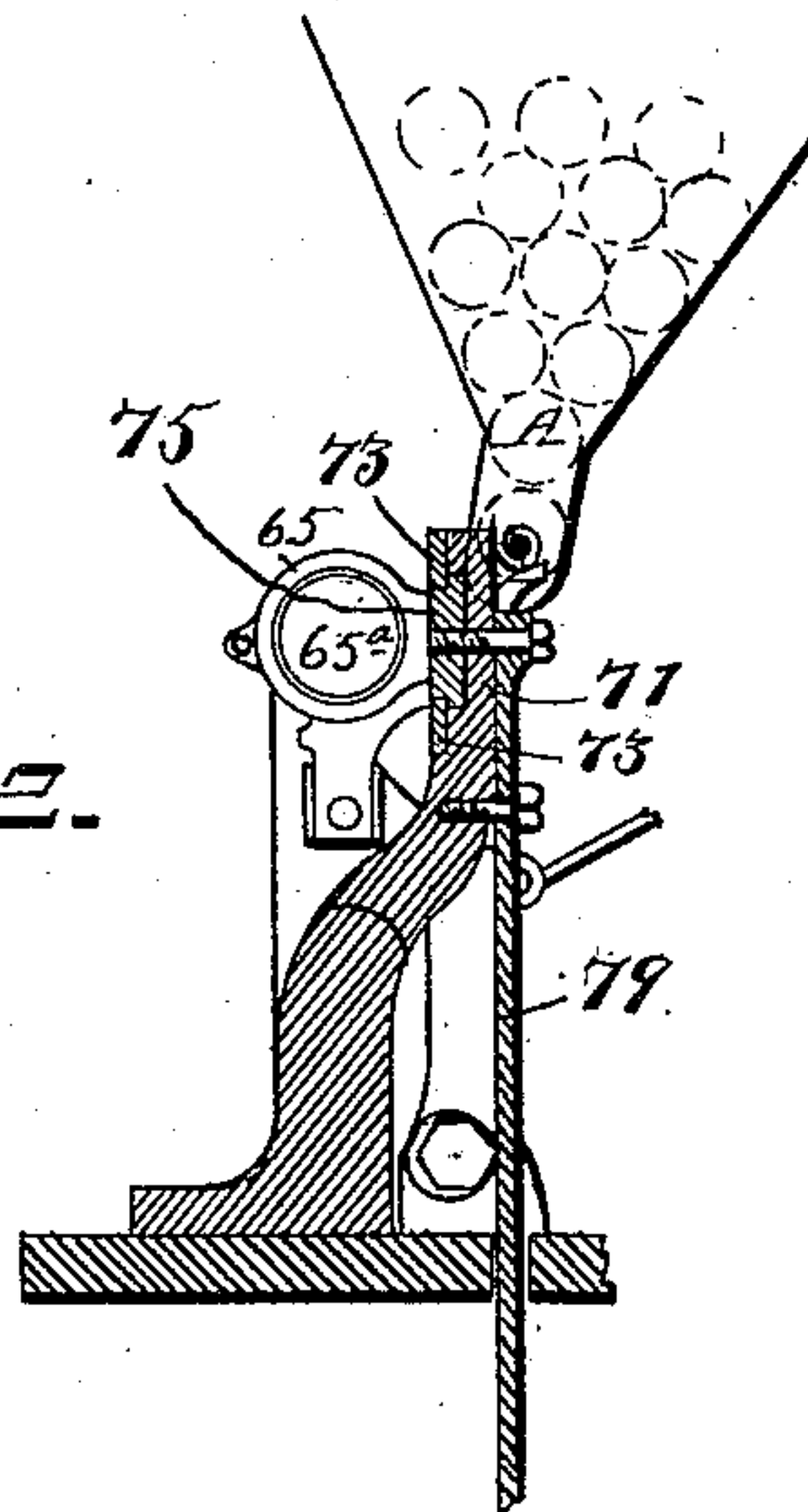


Fig. 12.



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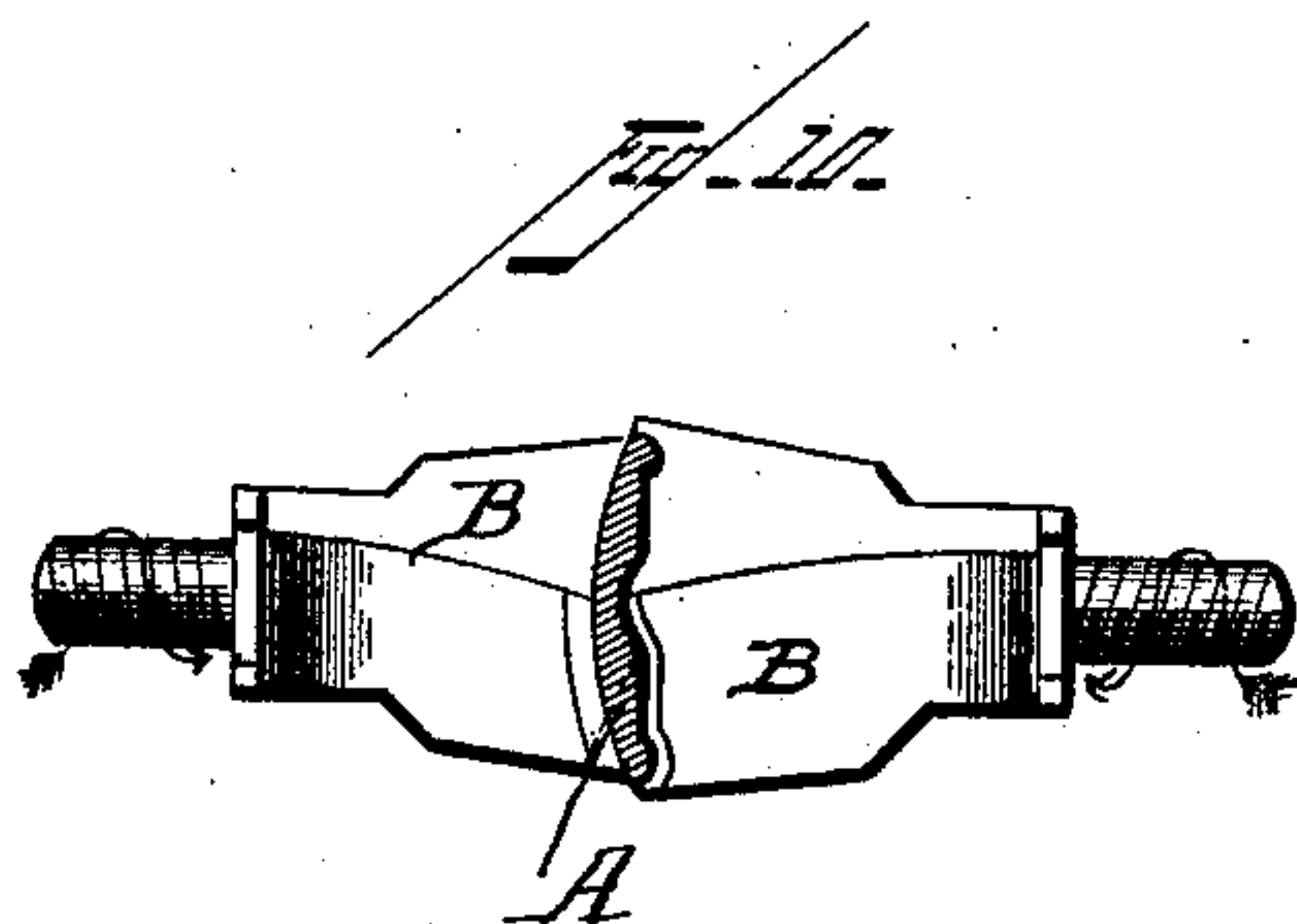
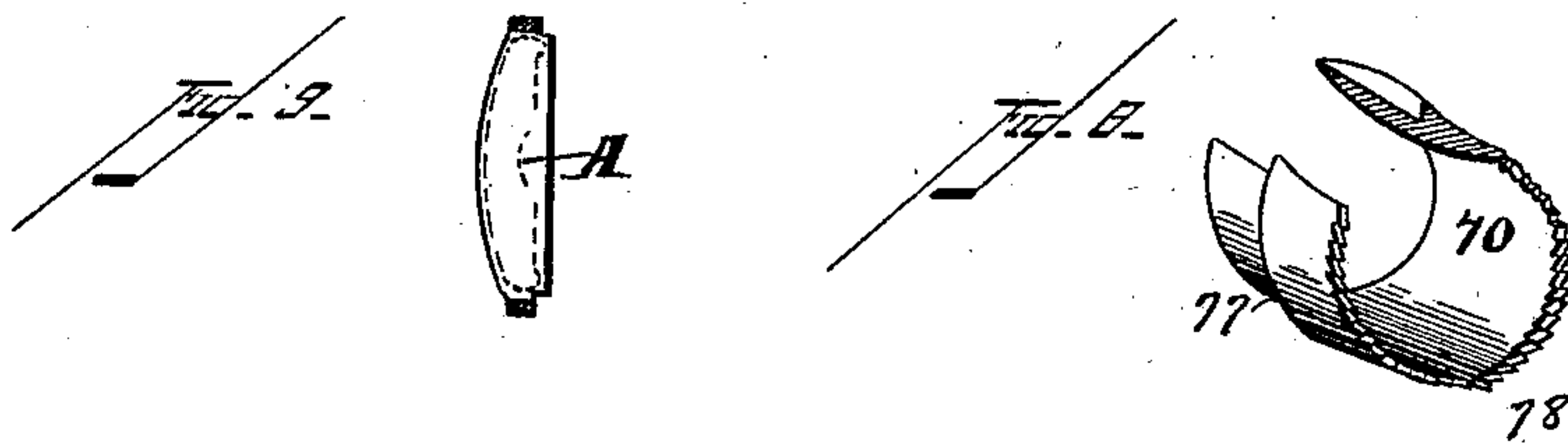
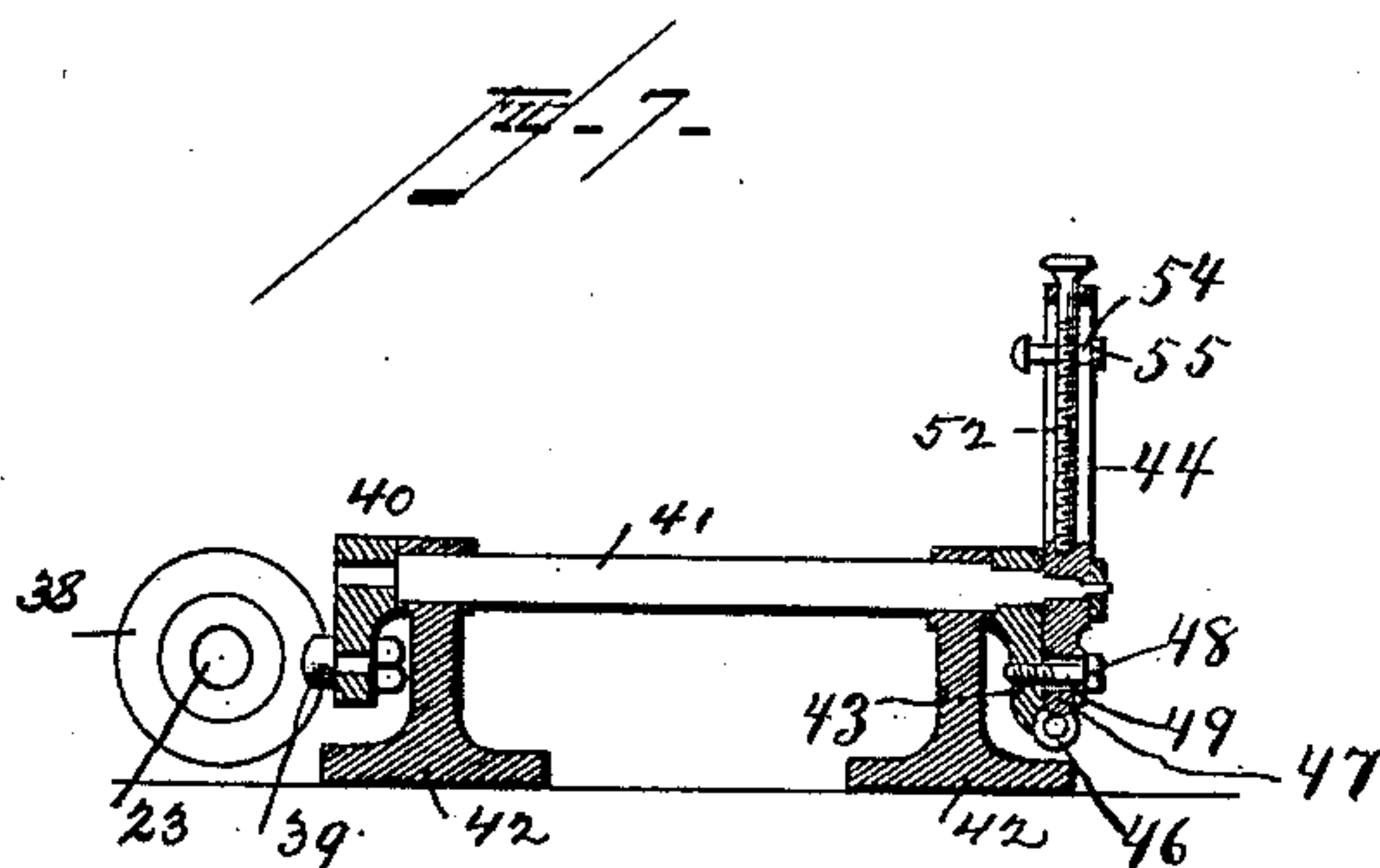
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UNITED STATES PATENT OFFICE.

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

LATHE FOR TURNING BUTTONS.

SPECIFICATION forming part of Letters Patent No. 427,920, dated May 13, 1890.

Application filed January 8, 1890. Serial No. 336,251. (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.

This invention relates to improvements in lathes for turning buttons and similar articles, and is designed to carry into effect the method disclosed in an application of even date herewith, Serial No. 336,252. The method described and claimed in said application consists in first subjecting a piece of proper material in which a button-blank has been partly formed to the action of a cutting-tool, whereby the button-blank is completed and detached from said piece of material, and then automatically feeding said blank to cutting-tools, by which the blank is formed into a finished button, as clearly set forth in said application.

The object of the present invention more particularly is to provide means for feeding the button-blanks to the cutters which finish and complete the article, as in the final step of the above-mentioned method, and also means for gripping the partly-formed blank and subjecting it to the action of the cutter, which completes the blank and severs and detaches it from the material, as in the intermediate stage of said method.

In an application of even date herewith, Serial No. 336,250, I have shown and described a machine in which grips are employed to hold a piece of material while it is subjected to the action of revolving cutters, which successively operate thereupon to form a button and sever and detach it from the said material. In this invention the grips automatically close to retain in position the material inserted therebetween, and open to discharge the material after the button has been completed. The cutters are also automatically and successively fed or advanced to the material to be operated upon and withdrawn at the proper times after they have completed

their work. Said features therefore will not be claimed in this application.

The present invention consists in the novel combinations of parts hereinafter fully described, and then definitely pointed out in the claims.

In the accompanying drawings, Figure 1 represents a front elevation of a lathe constructed in accordance with my invention. Fig. 2 is a plan view of the same. Fig. 3 is a partial rear elevation, the head-stocks being removed. Fig. 4 is a cross-section on the line $z z$, Fig. 3, on an enlarged scale. Fig. 5 is a vertical longitudinal section on line $z' z'$, Fig. 4. Fig. 6 is a horizontal longitudinal section on line $z^2 z^2$, Fig. 4. Fig. 7 is a longitudinal section on line $z^4 z^4$, Fig. 3. Fig. 8 is a detail perspective view of the tubular grip. Fig. 9 is a section of a button-blank. Fig. 10 is a detail view of the cutters and button-blank between them. Fig. 11 is a detail view of the crank and bracket shown in Fig. 4, looking from the opposite side. Fig. 12 is a sectional view of the hopper and connections shown in Fig. 4.

I will first describe the machinery for forming the completed article according to the final stage of the method above set forth, and referring to Figs. 1 to 10, inclusive.

The reference-numeral 1 designates the bed or frame of the machine, and 2 2, Figs. 1 and 2, are the head-stocks secured to said bed, each having a mandrel 3, with pulley 4 journaled in it, to which a longitudinal motion is given by the slide-rods 5 5^a, and which carries the cutting-tools B B, one for the face of the button and one for the back. Each mandrel is driven by a belt 7, passing over pulley 4 and connected with any suitable motor. Each slide-rod 5 5^a is connected with the mandrels 3 by brackets 8, secured to said rods by caps 9 and set-screws 10, and are adjustably placed against the ends of the mandrels by tail-screws 12, passing into the heads of said brackets and holding pieces of hide 13 against tail-pins 14 in the ends of the mandrels. A forked bracket 15, secured to the bracket 8, holds the mandrel by the groove 16. A spring 17, coiled upon the rod 5, is placed between the outer bearing of the head-stock and the bracket 15, or, as in the right-hand head-

stock, between a collar 18 and the inner face of the inner bearing of the head-stock, in each case drawing the slide-rods 5 5^a toward the end and away from the center of the lathe, so as to retract the cutting-tools. The rods 5 5^a are connected with rods 19 and 19^a, respectively pivoted to levers 20 and 20^a, with friction-bowls 21, which latter are operated by cams 22 and 22^a. These are secured upon a cross-shaft 23, which is geared to a short driving-shaft 24 by a worm-wheel 25 and worm 26, said shaft 24 being journaled at the rear in bearings 26^a 26^b, and held therein by collars 27, and carrying a pulley 28, driven by a belt 29.

The cross-shaft is journaled in bearings 30 upon brackets 31, which may be integral with the bed-plate or attached to it, a downward extension 34 being provided in front on the bed, to which one of said brackets 31 is secured, and to which the levers 20 and 20^a are pivoted. To the right-hand head-stock is attached a tool-guard consisting of the wire 35 on shaft 36 in the bracket 37 and worked by the rod 38, connected with the slide-rod 5^a.

To the cross-shaft 23 is secured a grooved cam 38, Fig. 2, engaging the crank-pin 39 of the crank 40 on the shaft 41, journaled at the rear of the bed in two brackets 42, and carrying at its end the crank 43 and the bracket 44.

The crank 43 is keyed or otherwise made fast to the shaft, and the bracket 44 is pivotally centered upon it and secured by a nut. At the lower end of the crank are two projecting lugs 45, in which is journaled the screw 46, with a milled head, which screw engages the female-threaded edge 47 of the bracket 44, by means of which the position of said bracket on said crank is adjusted, the set-screw 48, passing through a slot 49 in said bracket and screwed into the crank, holding the said bracket securely in position on said crank. The upper part of said bracket, Fig. 4, has a long slot 50, acting as a guide to a slide-nut 51, through which passes an adjusting-screw 52, having a milled head journaled in the top and bottom of the bracket at each end of the slot 50 and held by pins 53, engaging a circular groove. To the adjustable slide-block 54, which is further secured by a nut 55, is pivoted a short pitman 56, connected to a rocker 57, pivotally secured by a screw-stud 58 to the bracket 60, which is secured to the lathe-bed. The rocker 57 has at its upper end a rimmed facing 59, in which is secured an interchangeable feed-hook 61 by a screw 62. Said feed-hook is of about the thickness of one of the blanks A. Its front edge is concaved to a part of the circle of the blank to be worked, and its upwardly rearwardly-extended edge 63 is curved to a circle struck from the pivot-center 58, in line with the lowermost point, or nearly so, of the lowermost blank in the hopper. The shapes of the replaceable feed-hooks 61 on the rocker 57 are so adapted to the different sizes and shapes of the blanks A that by the adjusting-screw 52, pitman 56, and bracket 44 the most forward position of the hook 61 will

place the blanks A exactly in the center of the lathe opposite the cutting-tools and the grips, and by the adjusting-screw 46 on the crank 43, the circular slot 49 in the bracket 44, and set-screw 48 the feed-hook 61 is so adjustable that the most backward position will always allow the blanks A in the feed-hopper 64 to fall into the feed-hook, a spring-pawl 68, secured to the fast grip-ring, pressing the blank into the cavity of the hook and preventing it from falling off, while the upper curved edge 63 keeps or retains the remainder of the blanks in the hopper.

64 designates the feed-hopper secured to the bracket 60 by a bracket 66, fastened to the rear. It consists of a receptacle having flat parallel sides sufficiently wide apart for accommodating one blank flat between them and allowing it to move freely, and with edges tapering from a considerable width at the top to a neck at the bottom, which is only wide enough to allow one blank at a time to pass. The bottom is open at the edges opposite the lowest blank.

67 designates a fine spring secured near the open bottom and having its free end turned across the open edge by which the blank takes its exit. The feed-hook 61 passes through the open bottom of said hopper between the front and back plates. It recedes only so far as to allow a blank to drop into its cavity, which is then held at the other edge by the spring 67. The hook sweeping forward pushes out the blank, the spring 67 giving way until it is caught by the spring-pawl 68.

The bracket 60 has a gap or opening 65^a formed in the top of it, in the place where the material is held when being operated upon by the cutting-tools. At the left side of the gap the top of the bracket is formed into a ring 65, large enough to allow a cutting-tool to pass through, and adapted to hold a grip 70, the spring-pawl 68 being pivoted to the front of said ring. On the right-hand side of the gap the top of the bracket is formed into a wide plate 71, having a longitudinal slide-bed formed in it. In said bed is placed and held by guide-strips 73, secured by screws, the slide 75, which carries a ring 76, similar to ring 69. In the rings 69 and 76, opposite each other, are placed the grips 70, which consist of short barrels fitting snugly in said rings and having a flange 77 fitting against the edges of said ring and having a projecting serrated edge 78. These grips have a sufficient internal diameter to allow the operating or cutting tools to pass through them without touching, and the serrated edges of both engage and hold the material A close to the edge on opposite sides.

The numeral 79 designates a lever pivoted to the back of the bracket 60 below the slide-bed 71 and extends upward opposite the center of the slide 75, a screw-stud 80 passing through the head of said lever and a longitudinal slot 81 in the plate 71 into the slide 75. Said lever 79 projects downward, and its

lower end is engaged by a coiled spring 82 and drawn toward the right hand, thus projecting the slide 75, with the ring 76, toward the left hand and toward the opposite grip.

5 Upon the cam-shaft 23 is secured a cam 83, actuating the upper end of a lever 84, pivoted below and to the right hand and having its lower end pivotally connected to a curved pusher-bar 85, the end of which is held in a
10 guide 86 and placed against the lever 79. Thus when the cam 83 forces the upper end of lever 84 toward the right hand the bar 85 slides toward the left, pushing against the lower end of lever 79 and drawing the slide
15 75, with its ring and its grip 70, toward the right and away from the stationary grip and out of engagement with the button, which has now been finished or completed by the cutting-tools and is allowed to drop and make
20 room for a fresh blank, which is automatically fed thereto by the feed-hook 61.

The cams which control the longitudinal movement of the mandrels can be so timed that both cutting-tools may operate simulta-
25 neously or alternately upon the blank, as may be desired, by adjusting or regulating the cams which control their movement.

The hopper is filled with blanks previously formed, as hereinafter described, of the proper
30 shape and size, the lowermost one resting in the cavity of the feed-hook 61, and is held by the spring 67. The feed-hook is then actuated by the pitman 56 and the bracket 44, which in its turn receives motion from the
35 shaft 41, and this from the cam 38 upon the shaft 33 moves forward and pushes a blank out of the hopper and presents it between the grips 70, sliding in close before the stationary grip and being prevented from falling by the
40 spring-pawl 68. As soon as the blank is in its proper position the cam 83 releases the lever 79, and the spring 82 moves the lever 79 and slide 75 and the grip against the blank, holding it in position, the feed-hook 61 receding and engaging a fresh blank. The cams
45 22 and 22^a now move the mandrels by means of the levers 20 20^a, rods 19 19^a, and slides 5 5^a, and bring the cutting-tools to operate upon the blank. After finishing the button the
50 mandrels recede in the manner above described, and also the slide, thus allowing the button to drop and make room for a fresh

blank. For different diameters of blanks different feed-hooks, in the concave edge of which the edge of the blank fits, must be used, 55 and hence the throw of the bracket 44 is adjustable by means of the screws 46 and 52.

Having thus described my invention, what I claim is—

1. In a button-turning lathe, the combination of the shaft 23, cam 38, crank-shaft 41 in bearings 42, with crank 40 and crank-pin 39, crank 43, with lugs 45, adjusting-screw 46, slot 49, set-screw 48, bracket 44, female screw 47, slot 50, slide-nut 51, and adjusting- 65 screw 52, substantially as described.

2. The combination of bracket 44, having screw 52 and slide 54, the rocker 57, having facing 59, pitman 56, and feed-hook 61, substantially as described. 70

3. The combination of bracket 60, having ring 69, spring-pawl 68, slide-bed 71, guides 73, slide 75, ring 76, and grip 70, substantially as described.

4. The combination of bracket 60, having 75 ring 69, spring-pawl 68, slide-bed 71, slide 75, ring 76, grips 70, lever 79, hopper 64, spring 67, rocker 57, feed-hook 61, pitman 56, bracket 44, slide-block 54, and adjusting-screws 46 and 52, substantially as described. 80

5. The combination, with cam 83, pivoted lever 84, engaging therewith, the bar 85, connected with lower end of lever 84, the lever 79, pivoted to bracket 60, and the spring 82, secured to lever 79, of the plate 71, having 85 slot 81, the slide 75, the pin 80, connecting slide 75 and lever 79 and working in slot 81, the ring 76, and grip 70, substantially as described.

6. In a button-turning lathe, the combination of the shaft 23, cam 38, crank-shaft 41 in bearings 42 with crank 40 and crank-pin 39, crank 43, with lugs 45, adjusting-screw 46, radial slot 49, set-screw 48, bracket 44, female screw 47, slot 50, slide-nut 51, and ad- 95 justing-screw 52, 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:

WM. F. FOLKS,
BENNETT S. JONES.