

No. 692,530.

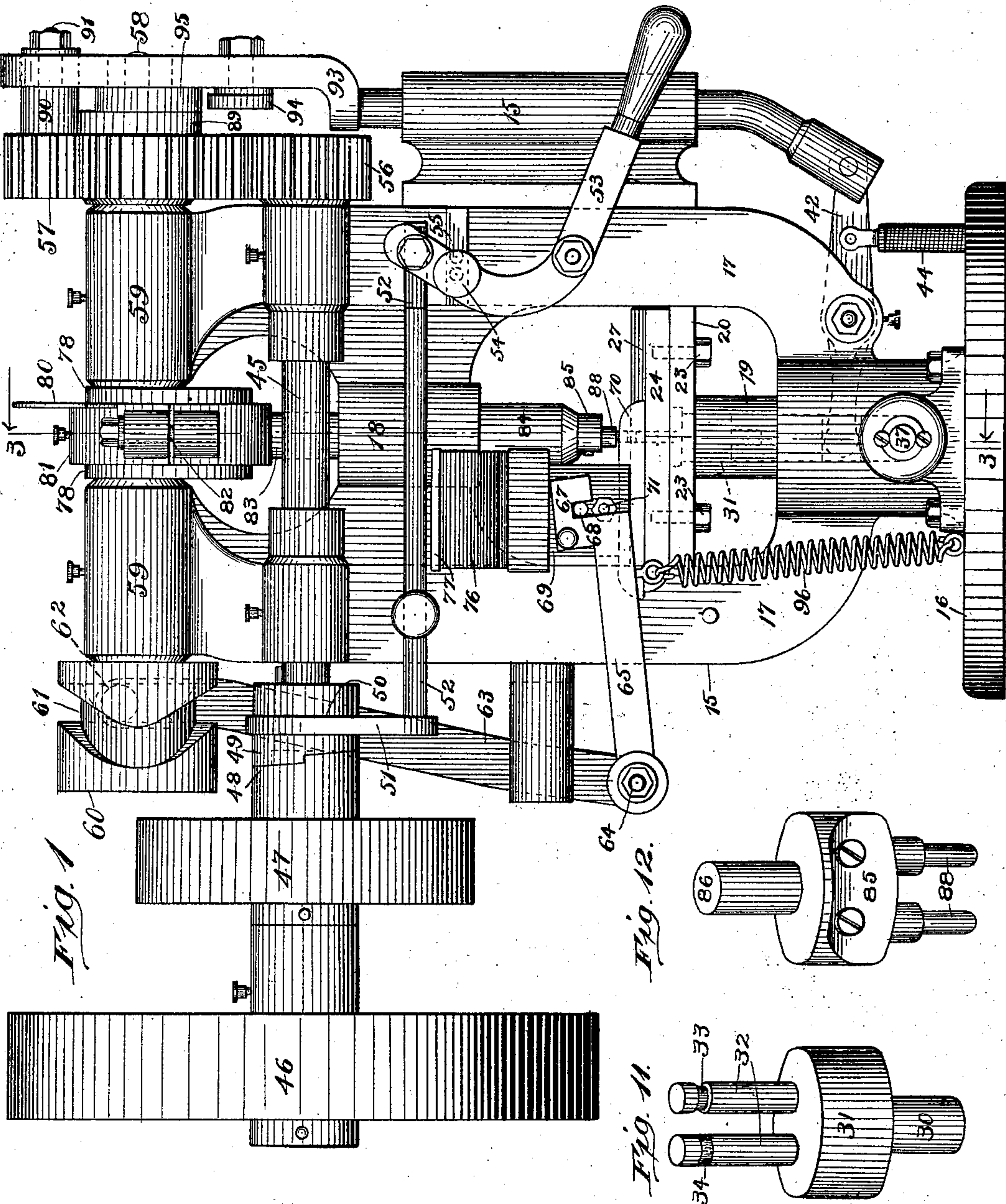
Patented Feb. 4, 1902.

W. KRAEMER.
STAMPING MACHINE.

(Application filed July 1, 1901.)

(No Model.)

4 Sheets—Sheet I.



Witnesses:

Chas. E. Gordon,
A. Gustafson

Inventor:

William Kraemer
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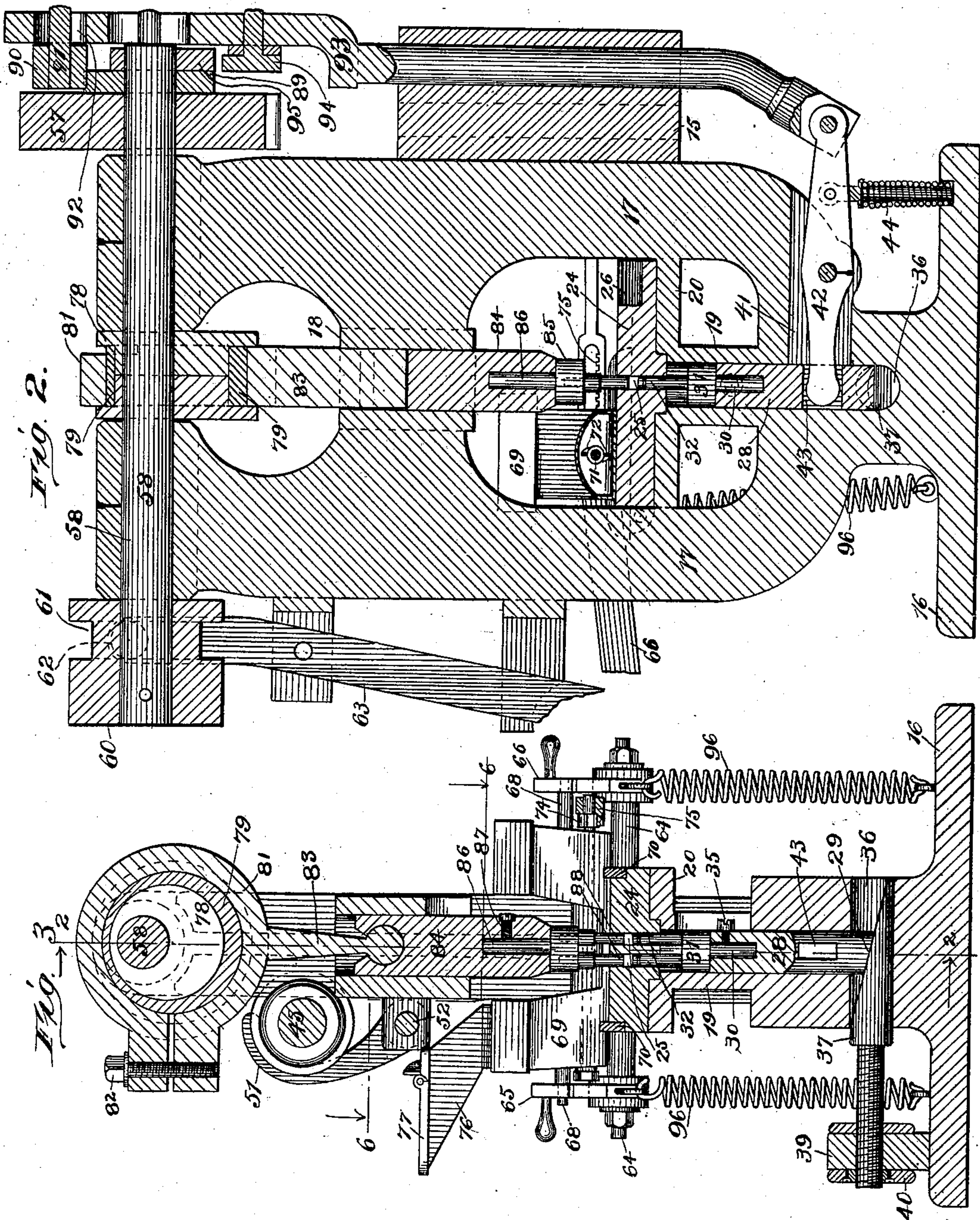
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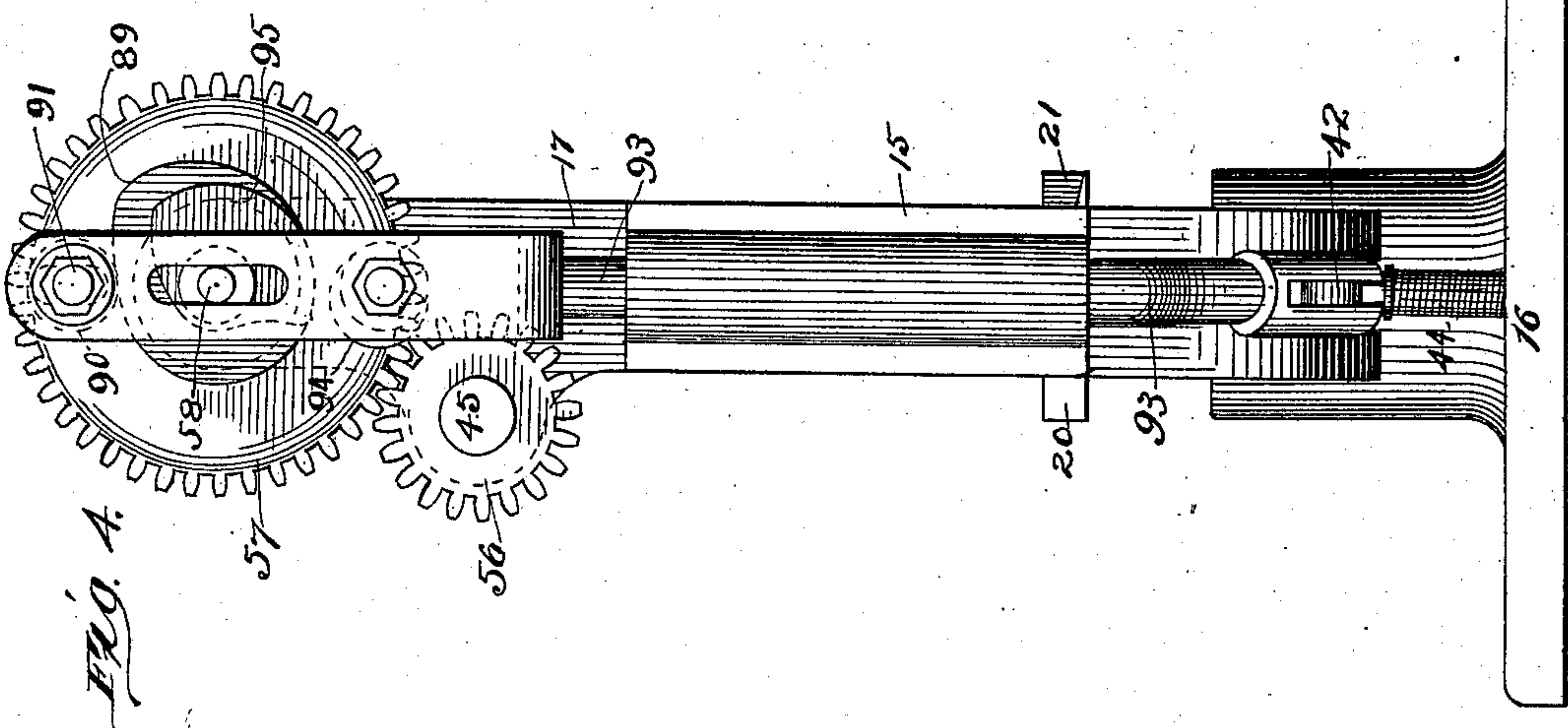
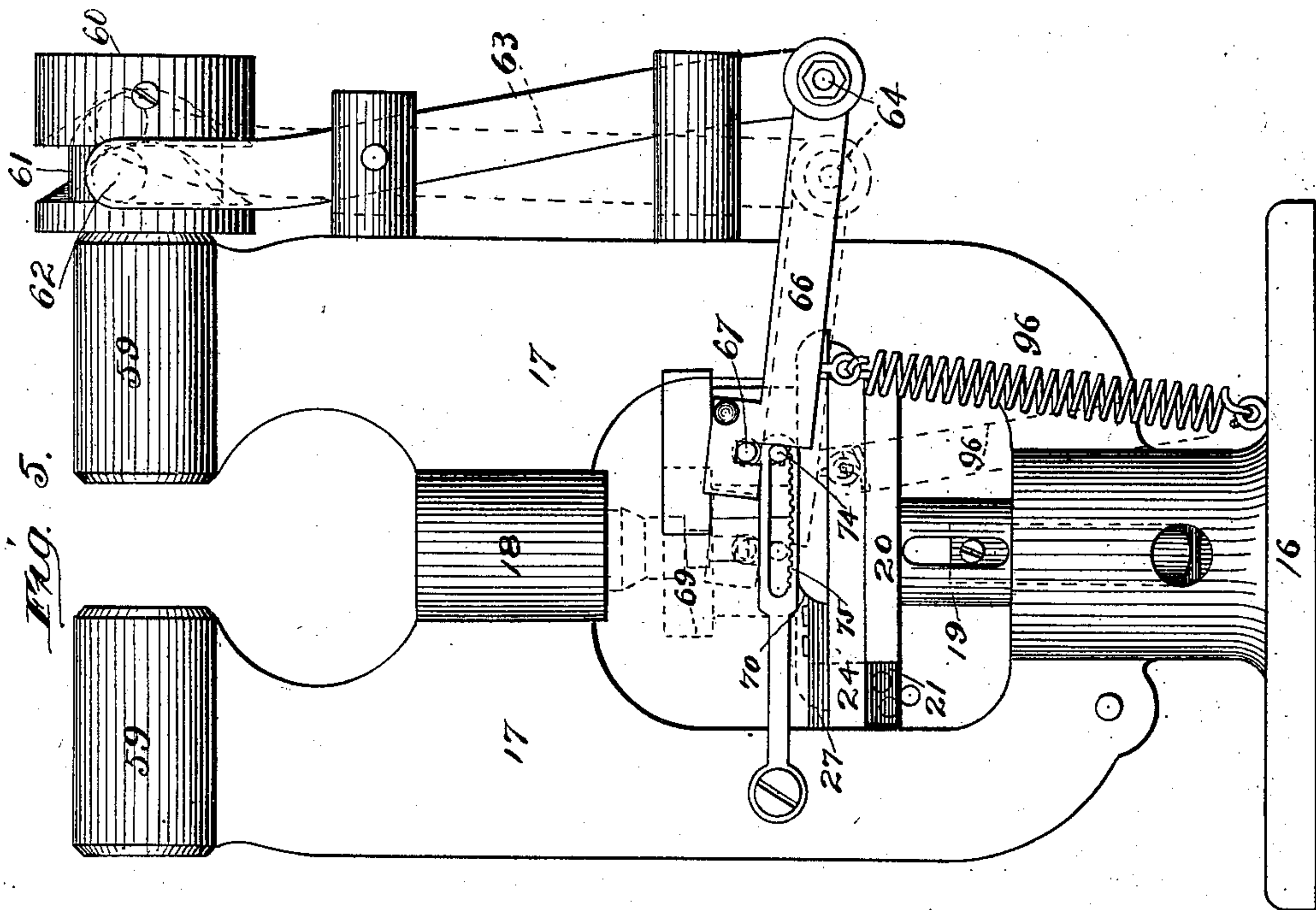
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4 Sheets—Sheet 4.

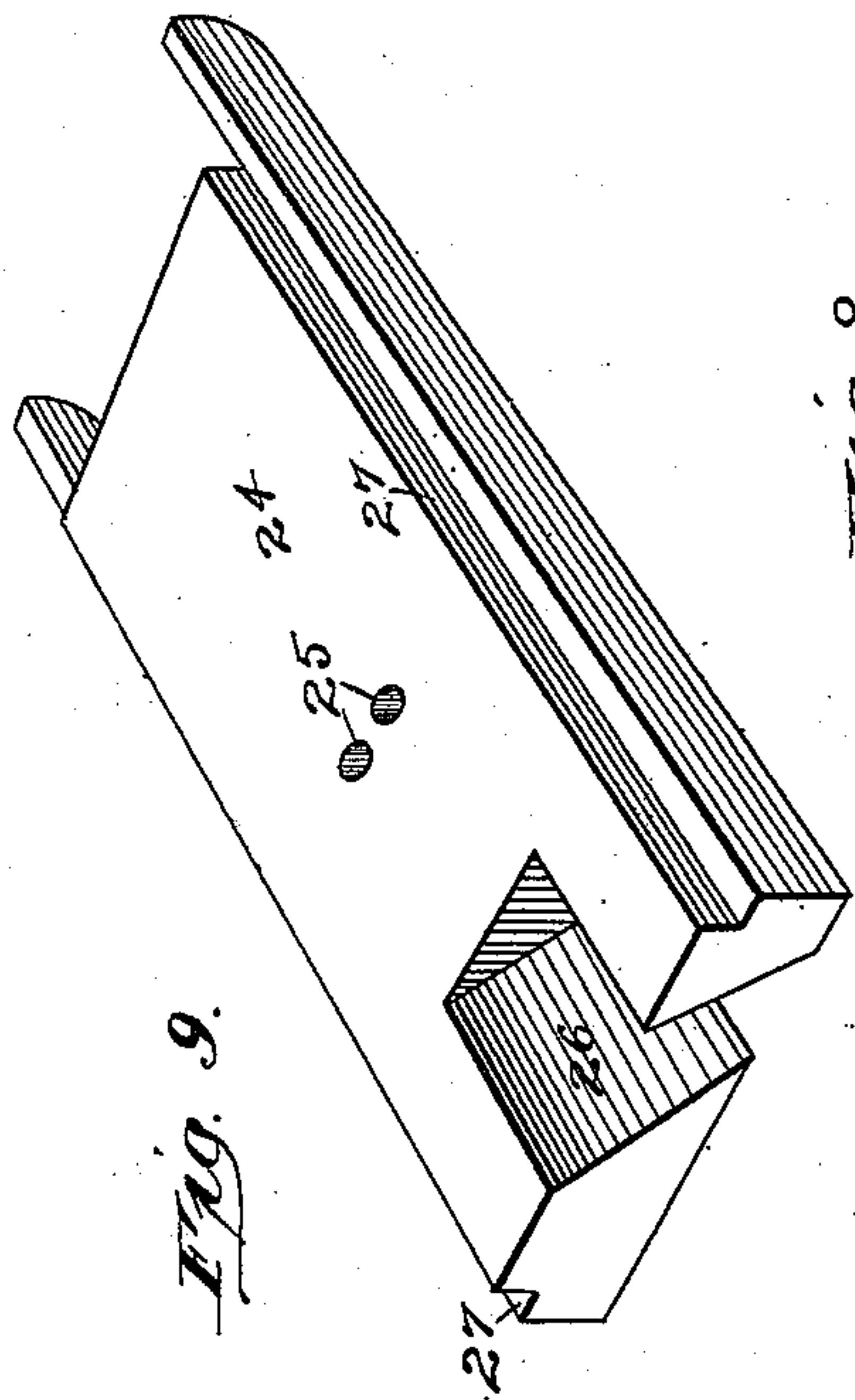


Fig. 8.

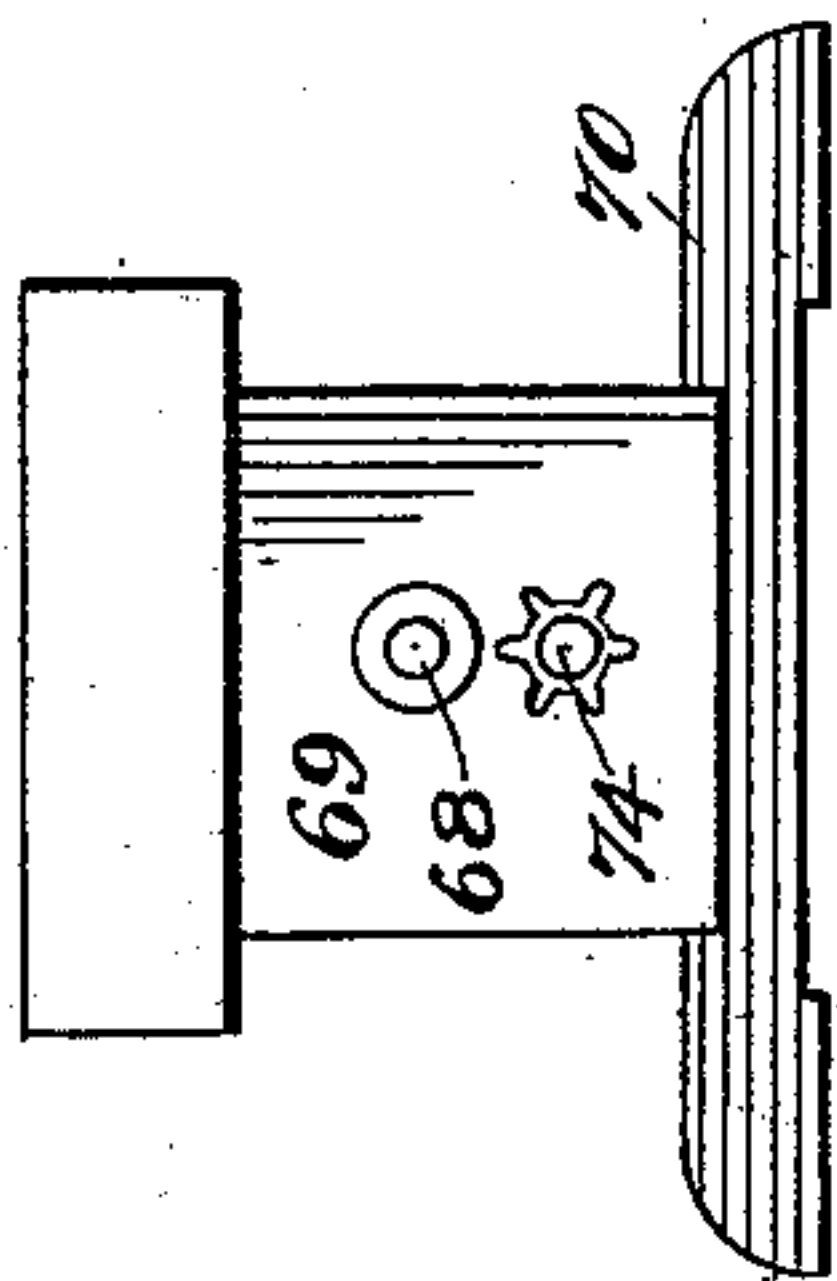


Fig. 7.

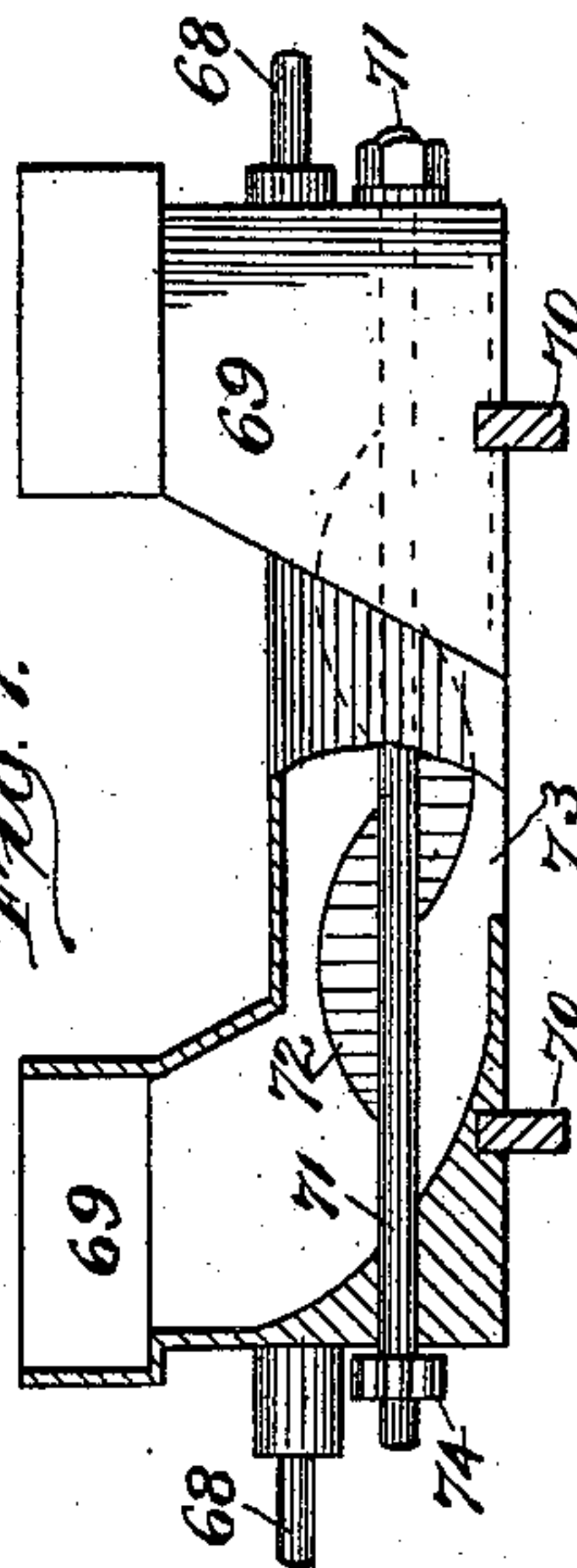


Fig. 6.

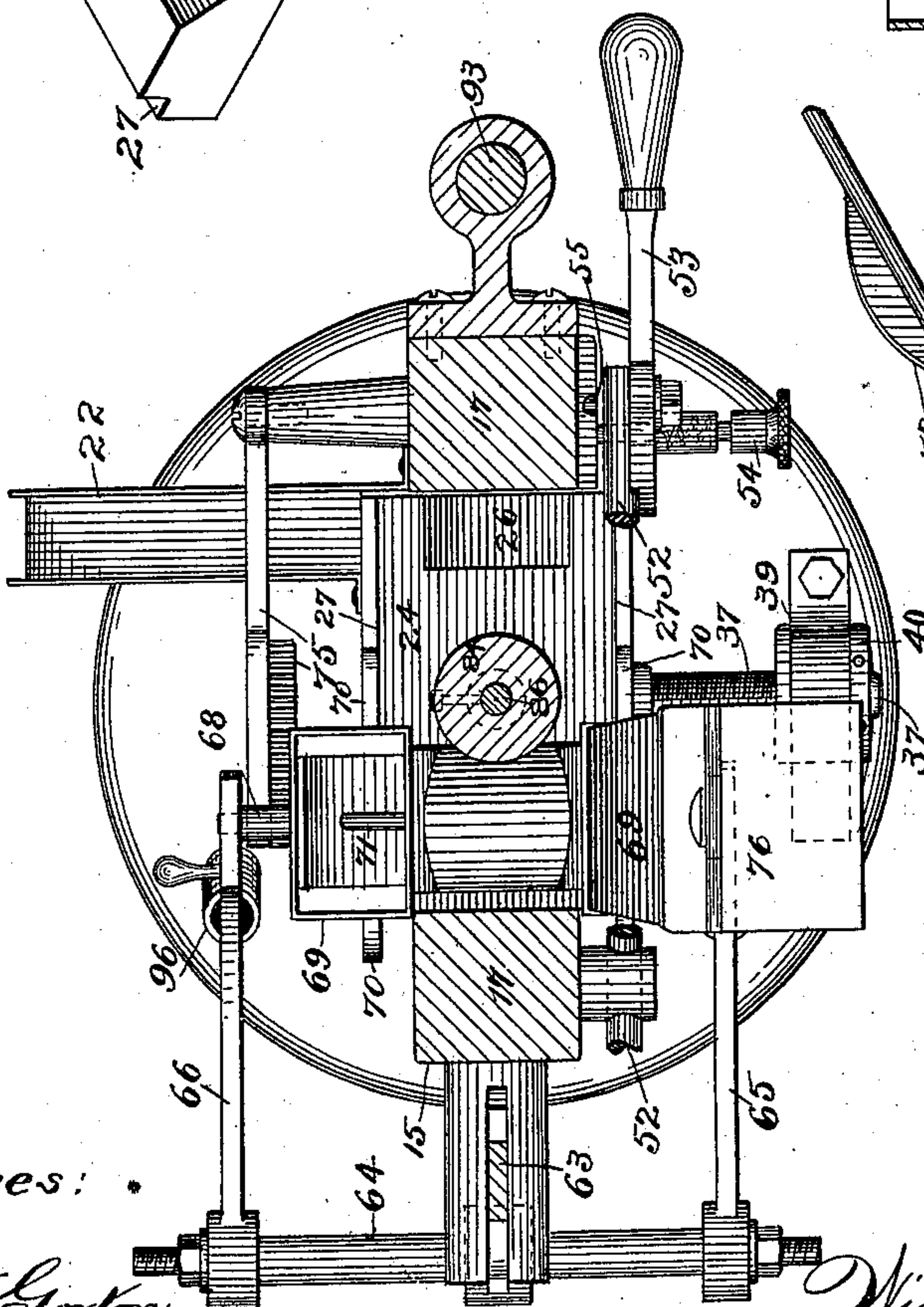
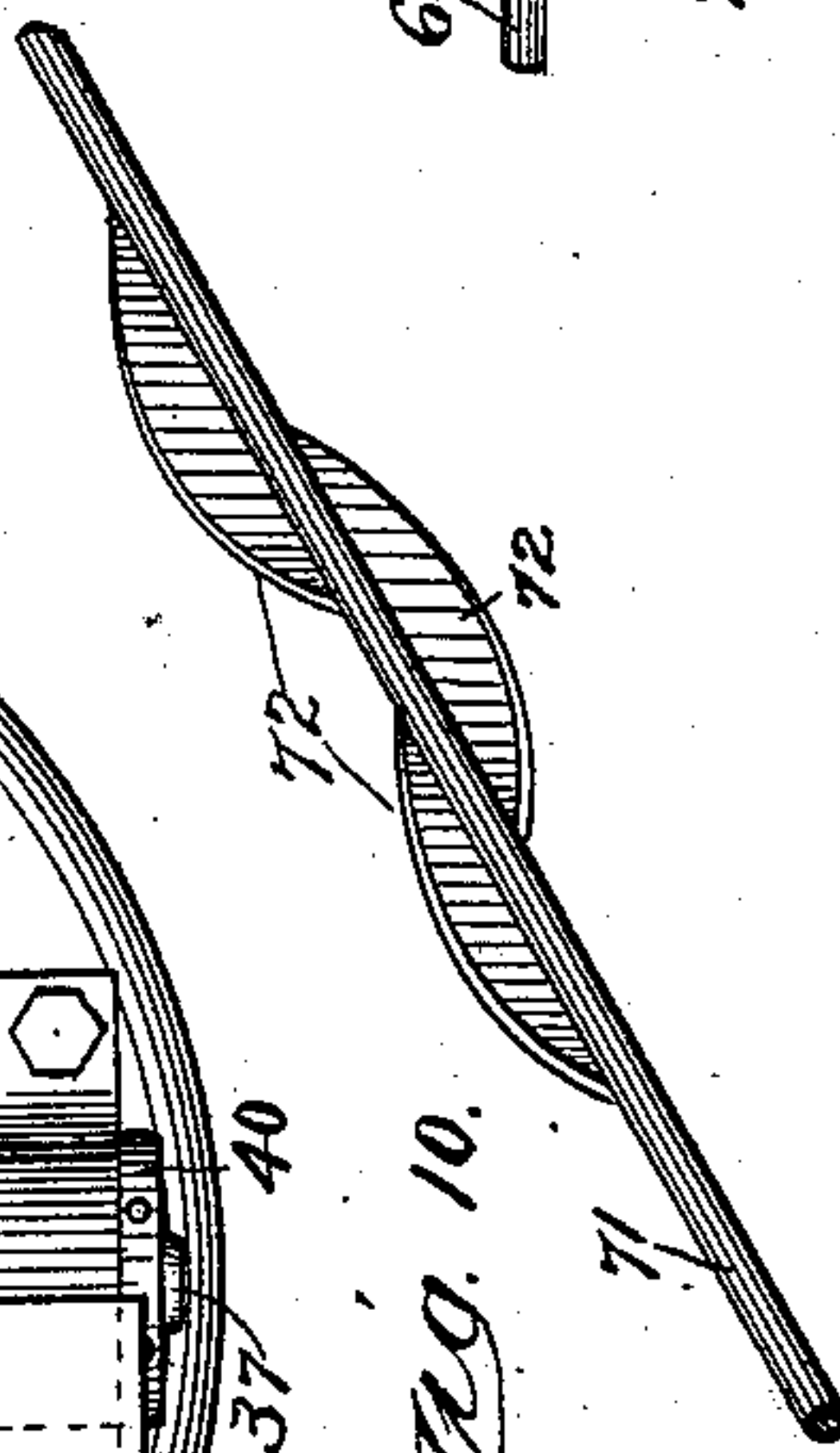


Fig. 10.



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UNITED STATES PATENT OFFICE.

WILLIAM KRAEMER, OF CHICAGO, ILLINOIS.

STAMPING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 692,530, dated February 4, 1902.

Application filed July 1, 1901. Serial No. 66,689. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM KRAEMER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Stamping-Machines, of which the following is a specification.

This invention relates to improvements in machines of the class or type employed for forming plastic material or comminuted particles into variously-shaped pieces, such as tablets, disks, spheres, buttons, small cakes, and like articles; and it consists in certain peculiarities of the construction, novel arrangement, and operation of the various parts thereof, as will be hereinafter more fully set forth and specifically claimed.

The object of the invention is to provide a machine of the above-named character which shall be simple in construction and efficient in operation.

In order to enable others skilled in the art to which my invention pertains to make and use the same, I will now proceed to describe it, referring to the accompanying drawings, in which—

Figure 1 is a face or front view in elevation of a stamping-machine embodying my invention, showing the parts in position ready for operation and in the act of compressing or forming the material into tablets. Fig. 2 is a central sectional view taken on line 2 2 of Fig. 3. Fig. 3 is a vertical sectional view taken on line 3 3 of Fig. 1. Fig. 4 is a side view in elevation. Fig. 5 is a rear or back view in elevation of the machine, or the opposite side thereof from that shown in Fig. 1, and illustrating by dotted lines the advanced position of the feed-box and other parts. Fig. 6 is a plan view, partly in section and partly in elevation, taken on line 6 6 of Fig. 3, looking in the direction indicated by the arrows. Fig. 7 is a side view, partly in elevation and partly in section, of the feed-box. Fig. 8 is an end view in elevation thereof. Fig. 9 is a perspective view of the matrix-plate. Fig. 10 is a detached perspective view of the mixing-conveyer. Fig. 11 is a perspective view of the ejectors and their head, and Fig. 12 is a similar view of the dies and their head.

Similar numerals of reference indicate like

parts throughout the different views of the drawings.

The numeral 15 represents the main frame of the machine, which is preferably of the form shown in the drawings and is provided with a base 16 to rest on the floor or other suitable support. As shown, the frame is composed of two upright portions 17, which are jointed together about their middle by means of a portion 18, having a vertical opening for the reception and operation of the die-plunger, as will be presently explained. The lower portion of the frame is formed or provided with a cylindrical extension 19, which extends from the base 16 upwardly between the portions 17 of the main frame and has on its upper end a horizontal platform 20, which is provided with an opening or inclined chute 21, to register with a similar chute or opening in the matrix-plate, and also with a trough 22, employed for conveying the pressed or formed pieces or tablets from the machine. Secured on the upper surface of the platform 20 by means of bolts 23 or otherwise is the matrix-plate 24, which has one or more matrices or openings 25 vertically therethrough at about its middle. One end of the plate 24 is provided with an inclined chute 26, which registers with the opening or chute 21 in the platform 20, as before explained. The upper surface of the plate 24 is provided at its edges with angular grooves 27 to serve as guideways for the slides on the feed-box. The lower portion of the frame is provided with a vertical opening which extends through the platform 20 and extension 19 and is for the reception and operation of the ejector-plunger 28, the lower end of which is beveled, as at 29. (See Fig. 3.) The upper end of the plunger 28 is provided with a socket to receive a pin 30 on the lower portion of the ejector-head 31, which head carries on its upper surface a number of ejectors 32 to correspond with the number of openings or matrices 25 in the matrix-plate, in which openings the said ejectors are located and operate. Each of the ejectors is provided near its upper end with an annular groove 33 to receive a band 34 of felt or other suitable absorbent material, which bands are employed for retaining a sufficient

quantity of oil to lubricate the matrices and to clean the same.

The pin 30 of the ejector-head is held in the socket of the plunger 28 therefor by means of a set-screw 35, which passes through the upper portion of the plunger. The lower portion of the frame is provided with a horizontal opening 36, which intersects the vertical opening in which the plunger 28 is located and is for the reception of an adjusting-rod 37, which is screw-threaded on its outer portion and has its inner part beveled to contact with the beveled portion 29 of the plunger. The screw-threaded part of the rod 37 passes through a bracket 39 on the base 16 and has on its outer end a nut 40 to be used for advancing or retracting said bolt. The lower portion of the frame is also provided with a horizontal opening 41, which intersects the vertical opening in which the plunger 28 is located and is for the reception and operation of a lever 42, which is fulcrumed in said opening and has its inner end in engagement with the lower portion of the plunger, which for this purpose is provided with an opening 43 to receive the inner end of said lever. Connected at one of its ends to the base 16 and at its other end to the lever 42 is an expanding-spring 44, which assists in raising the outer end of the said lever, so that the plunger 28 is normally held in its lowered position.

Journalled on the upper portion of the main frame is the power-shaft 45, on one end of which is mounted a fly-wheel 46 and near said wheel a pulley 47, to which power may be applied.

The inner portion of the hub of the pulley 47 is provided with a clutch-face 48, with which engages a clutch 49, mounted on the power-shaft, so as to move longitudinally thereon. This clutch is provided on its outer surface with an annular groove 50 to receive the curved shoe 51, which is connected at its lower end to a sliding bar or rod 52, which has its bearings on the main frame. Pivotaly secured at the other end of the rod or bar 52 is one end of a hand-lever 53, which is fulcrumed on the main frame and carries near its end which is connected to the rod 52 a spring-actuated bolt 54, the inner end of which is adapted to engage an opening 55 in the main frame to hold the clutch out of engagement with the clutch-face of the pulley. On the opposite end of the power-shaft 45 from that on which the fly-wheel 46 is located is mounted a cogged gear 56, which meshes with a gear 57 on one end of the main shaft 58, which is journaled in suitable bearings 59 on the upper end of the main frame. On the opposite end of the shaft 58 from that on which the gear 57 is located is mounted a pulley 60, having a cam-groove 61 for the reception of a roller 62, journaled on the upper end of the lever 63, which is fulcrumed on the main frame and is connected at its lower end to a horizontal rod 64. Pivotaly secured at one

of their ends on the rod 64, near its ends, are arms 65 and 66, each of which is provided at its other end with a slot 67 to engage projections 68 on the ends of the feed-box 69, which is preferably of the shape shown in Figs. 7 and 8 of the drawings and has on its lower surface near its ends rails 70 to fit in the guideways 27 of the matrix-plate, thus holding it in position thereon, with its bottom close to or in contact with the upper surface of said plate.

As shown in Figs. 7 and 8 of the drawings, the feed-box 69 is formed with a recess between its end portions and has journaled in its lower portion a shaft 71, which carries a screw-blade 72 to convey the material from the end portions of the box toward the opening 73 in the bottom thereof. On one end of the shaft 71 is a pinion 74, which engages a rack-bar 75, pivotaly secured at one of its ends on the main frame.

It will be observed by reference to Fig. 10 that the blade 72 is pitched toward the middle of its shaft 71, so that in its rotation within the feed-box the material will be carried from the end portions thereof toward its middle and forced out through the opening in the bottom.

In Figs. 1, 2, and 6 of the drawings I have shown one of the ends of the feed-box provided with a hopper 76, having a lid or cover 77 hinged to its upper portion, so as to close the opening therein, and it is apparent that both of said end portions may be provided with such a hopper.

Keyed to the middle of the shaft 58 is an eccentric 78, surrounding which and movable therewith is another eccentric 79, which is provided with an extension or projection 80, to be used for shifting the position of the last-named eccentric when it is desired to regulate the stroke of the die-carrying plunger. On the periphery of the eccentric 79 is located a clamping-band 81, in the ends of which is a screw 82, used for securing said band by clamping the same on the outer eccentric. The band 81 is provided with a projection 83, rounded in its free portion, which projection oscillates in a suitable opening in the upper part of the plunger 84, which carries the die-head 85, which head is provided on its upper portion with a stem 86 to fit in a suitable socket in the lower portion of the plunger 84, where it is held by means of a set-screw 87. The lower portion of the die-head 85 is provided with dies 88 to correspond in number with the openings or matrices in the matrix-plate. As shown in Figs. 2 and 3 of the drawings, the plunger 84 is located in the vertical opening of the portion 18 of the main frame.

On the end of the shaft 58 adjacent to the gear 57 is mounted an eccentric 89, which impinges a roller 90, journaled on a shaft 91, adjustably secured in a slot 92 in the rod or bar 93, which is pivotaly connected at its lower end to the outer end of the lever 42, which operates the ejector-plunger. Adjust-

ably journaled on the upper portion of the rod 93 and below the shaft 58 is an eccentric 94, which is adapted to impinge an eccentric 95 on the shaft 58, as is clearly shown in Fig. 2 of the drawings.

It will be understood that changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

From the foregoing and by reference to the drawings it will be seen and clearly understood that by placing the material from which the tablets and other articles are to be formed in the feed-box or hoppers thereof when the parts are in the positions shown by continuous lines in Figs. 1, 2, and 3 of the drawings, and by applying power to the pulley on the power-shaft 45 the shaft 58 will be caused to rotate, in which operation the die-carrying plunger 84 will be raised through the medium of the eccentrics 78 and 79 and the connecting-bar 83, thus removing the dies 88 from the matrices or openings in the matrix-plate. At the same time the feed-box 69 will be advanced through the medium of its connections with the cam-groove of the pulley 60 on the shaft 58, so that the opening in the bottom of the feed-box will be over the openings 25 in the matrix-plate, thus depositing the material in said openings, as will be understood by reference to Fig. 5 of the drawings, which shows by dotted lines the advanced positions of the parts. As the shaft 58 continues to rotate the feed-box will be retracted to its initial position and the die-carrying plunger 84 will be forced downward, causing the dies 88 to enter the openings 25 and compress the material against the upper ends of the ejectors 32. As the shaft 58 is further rotated the plunger 84 and its dies will be raised through its connection with the said shaft, and at the same time the ejectors 32 will be raised through the instrumentality of the lever 42, rod 93, eccentric 89, and roller 90, thus lifting or ejecting the tablets or other pieces from the openings 25 to the surface of the matrix-plate, from which they will be removed by the advancing feed-box to and through the chutes 26 and 21 and trough 22 to a suitable receptacle. During the advancement of the feed-box the rack-bar 75 engaging the pinion 74 on the conveyer-shaft 71 will rotate said shaft and cause the material to be carried toward the opening 73 in the bottom of the feed-box. The arms 65 and 66 are held in engagement with the projections 68 on the ends of the feed-box by means of

springs 96, which are secured at one of their ends to said arms and at their other ends to the base of the main frame.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a stamping-machine, the combination with a main or supporting frame, of a matrix-plate horizontally located in its lower portion, a slidable feed-box on said plate and communicating with the matrices thereof, a rotatable conveyer comprising a shaft with blades oppositely pitched and horizontally journaled in said box and means to advance and retract the box and rotate the conveyer, substantially as described.

2. In a stamping-machine, the combination with a main or supporting frame, of a matrix-plate horizontally located in its lower portion, a slidable feed-box on said plate and communicating with the matrices thereof, a rotatable conveyer horizontally journaled in the feed-box, the said conveyer comprising a shaft with blades thereon oppositely pitched, a die-carrying plunger vertically movable above the matrix-plate, an adjustable ejector-carrying plunger vertically movable below said plate, and means to advance and retract the feed-box to rotate the conveyer therein and to raise and lower said plungers, substantially as described.

3. In a stamping-machine, the combination with a main or supporting frame, of a matrix-plate horizontally located in its lower portion, a slidable feed-box on said plate and communicating with the matrices thereof, a rotatable conveyer horizontally journaled in the feed-box, said conveyer comprising a shaft carrying oppositely-pitched blades, a shaft horizontally journaled on the upper portion of the main frame, a die-carrying plunger vertically movable above the matrix-plate, an ejector-carrying plunger vertically movable below said plate, eccentric connections uniting said shaft and plungers, a lever fulcrumed on the main frame and connected at one of its ends to the feed-box, a cam-grooved pulley on the said shaft, a roller on the upper end of the said lever and located in the groove of the said pulley, a rack-bar pivotally secured to the main frame and engaging the shaft of the rotatable conveyer, substantially as described.

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