

(No Model.)

3 Sheets—Sheet 1.

C. P. OLDHAM.
BRICK PRESS.

No. 445,732.

Patented Feb. 3, 1891.

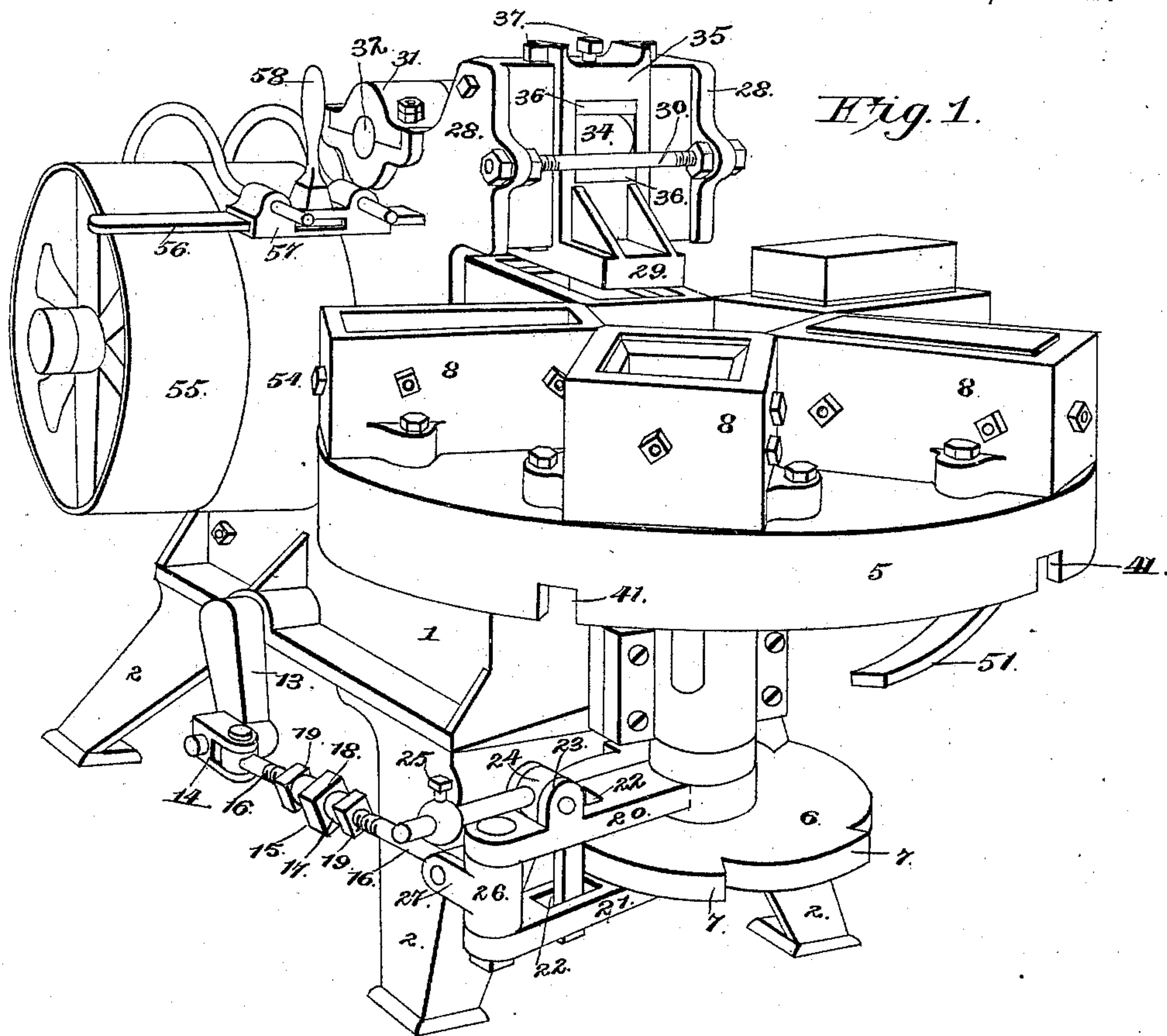


Fig. 1.

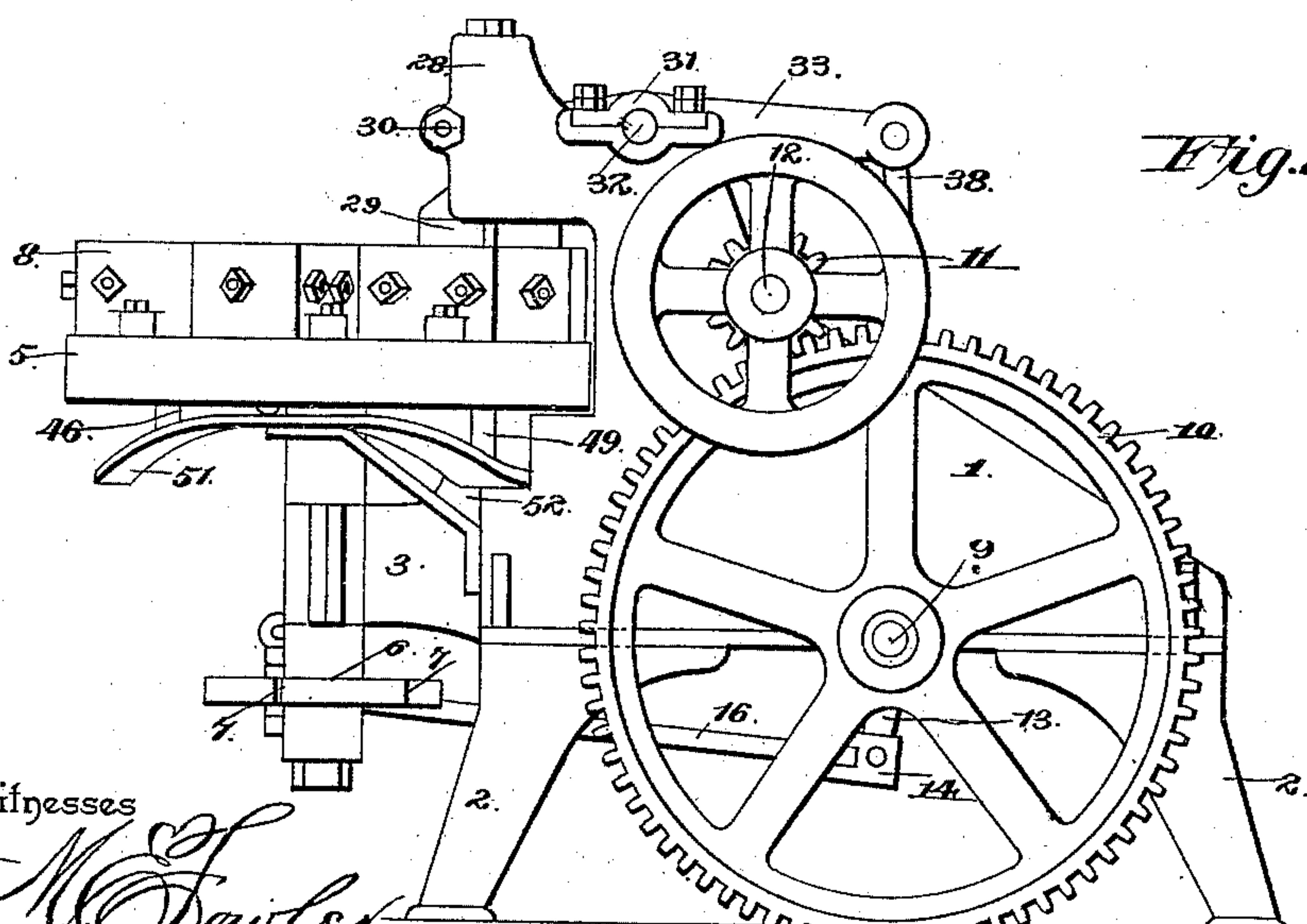


Fig. 2.

Witnesses

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C. A. Snow & Co.

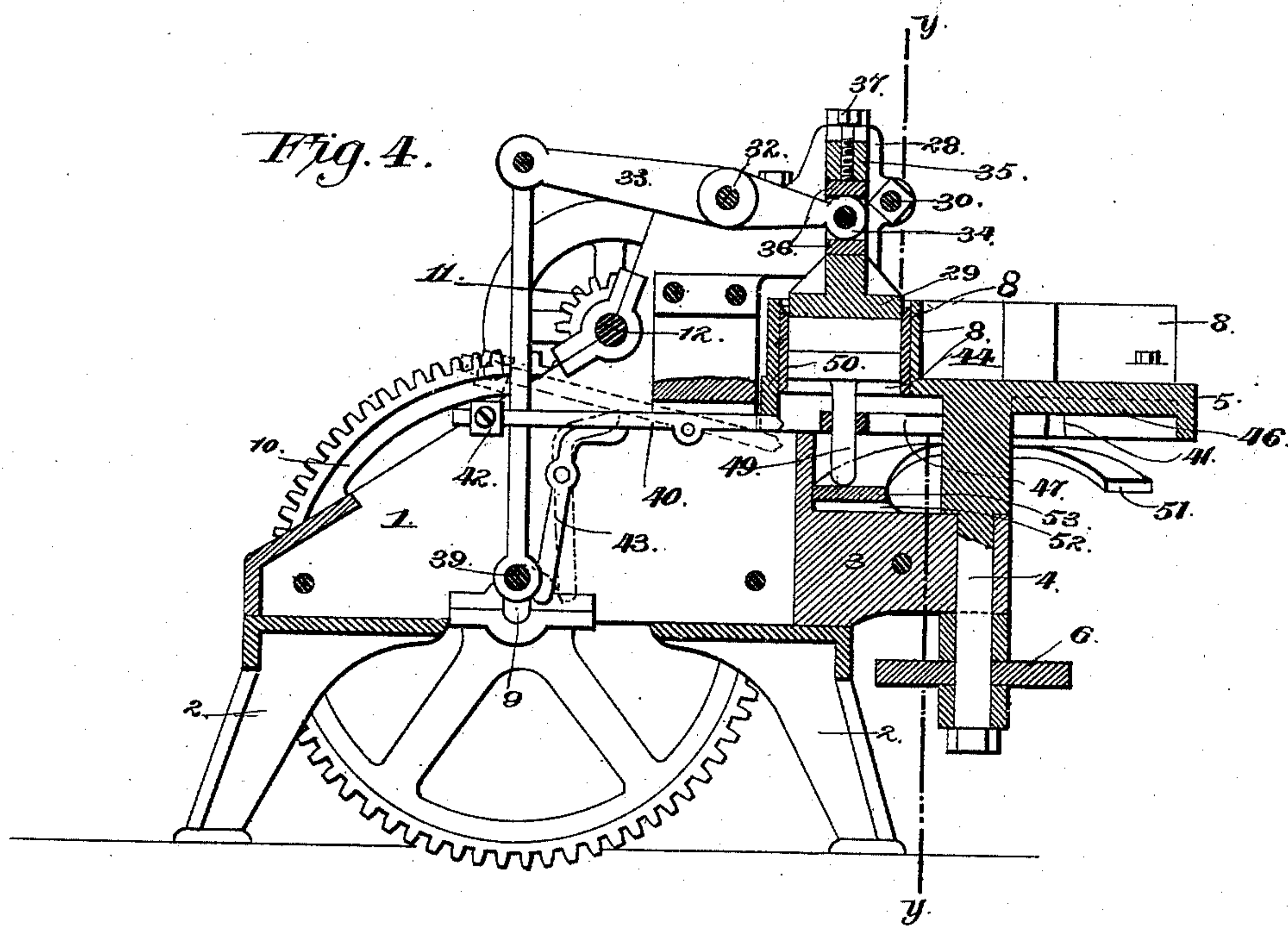
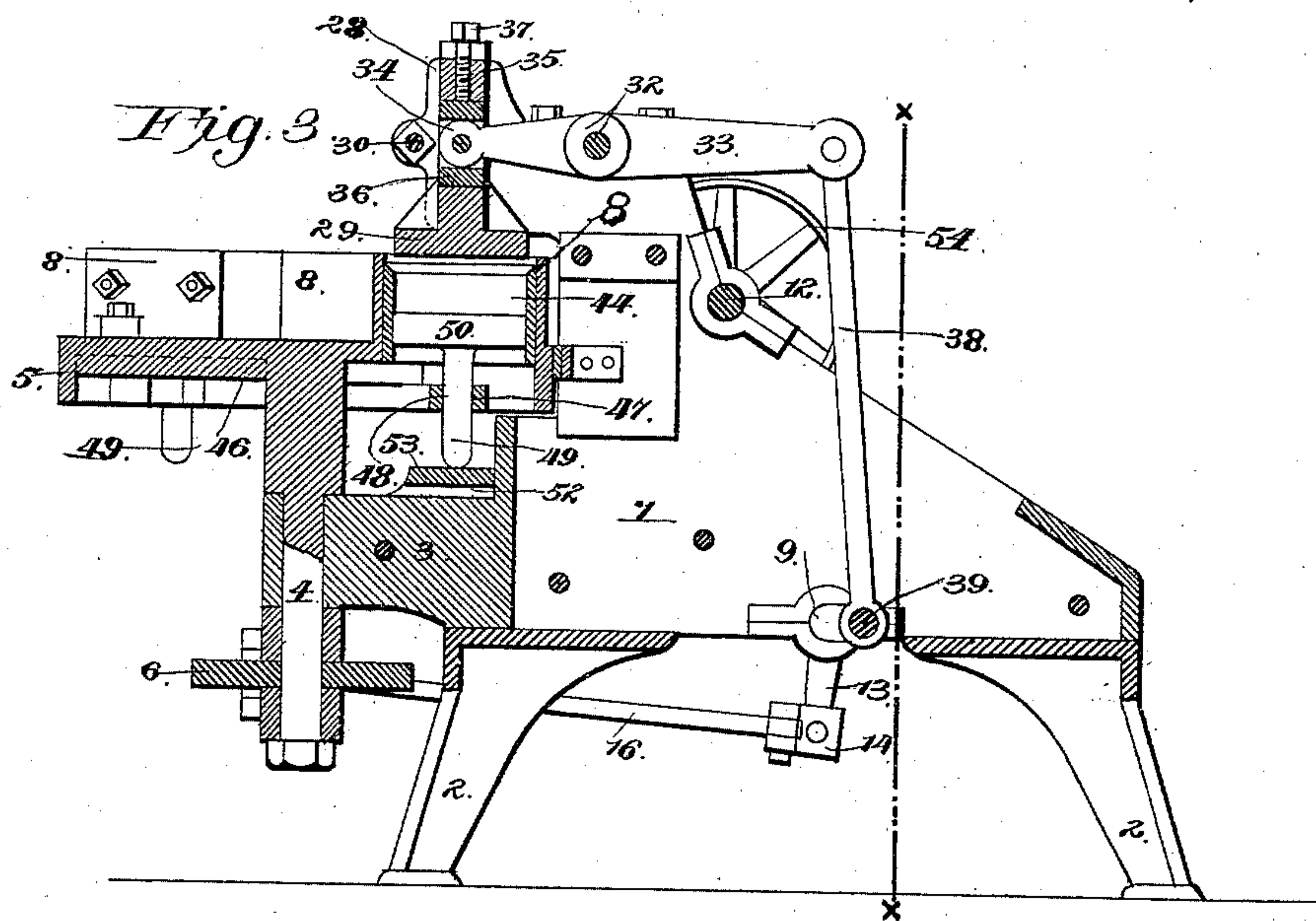
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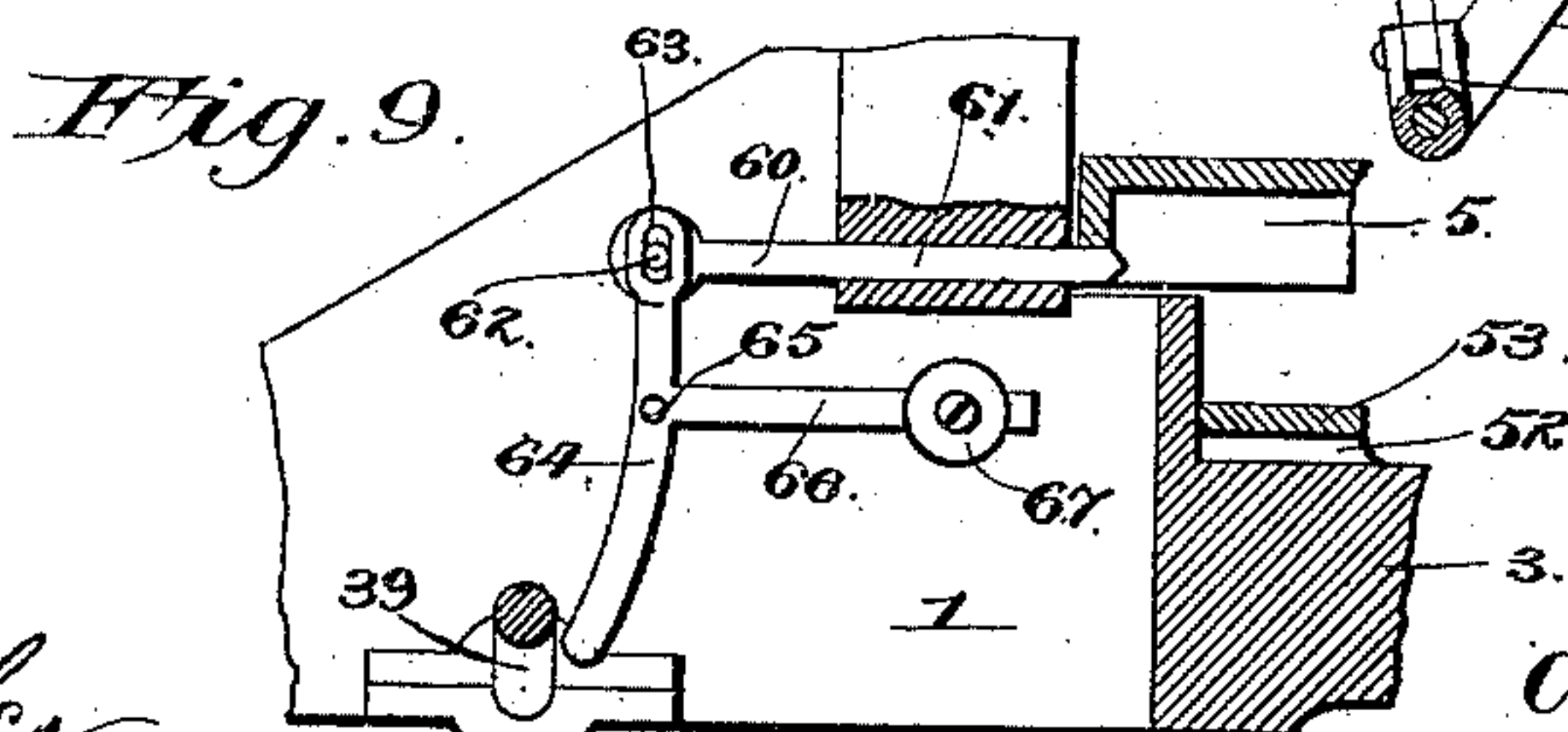
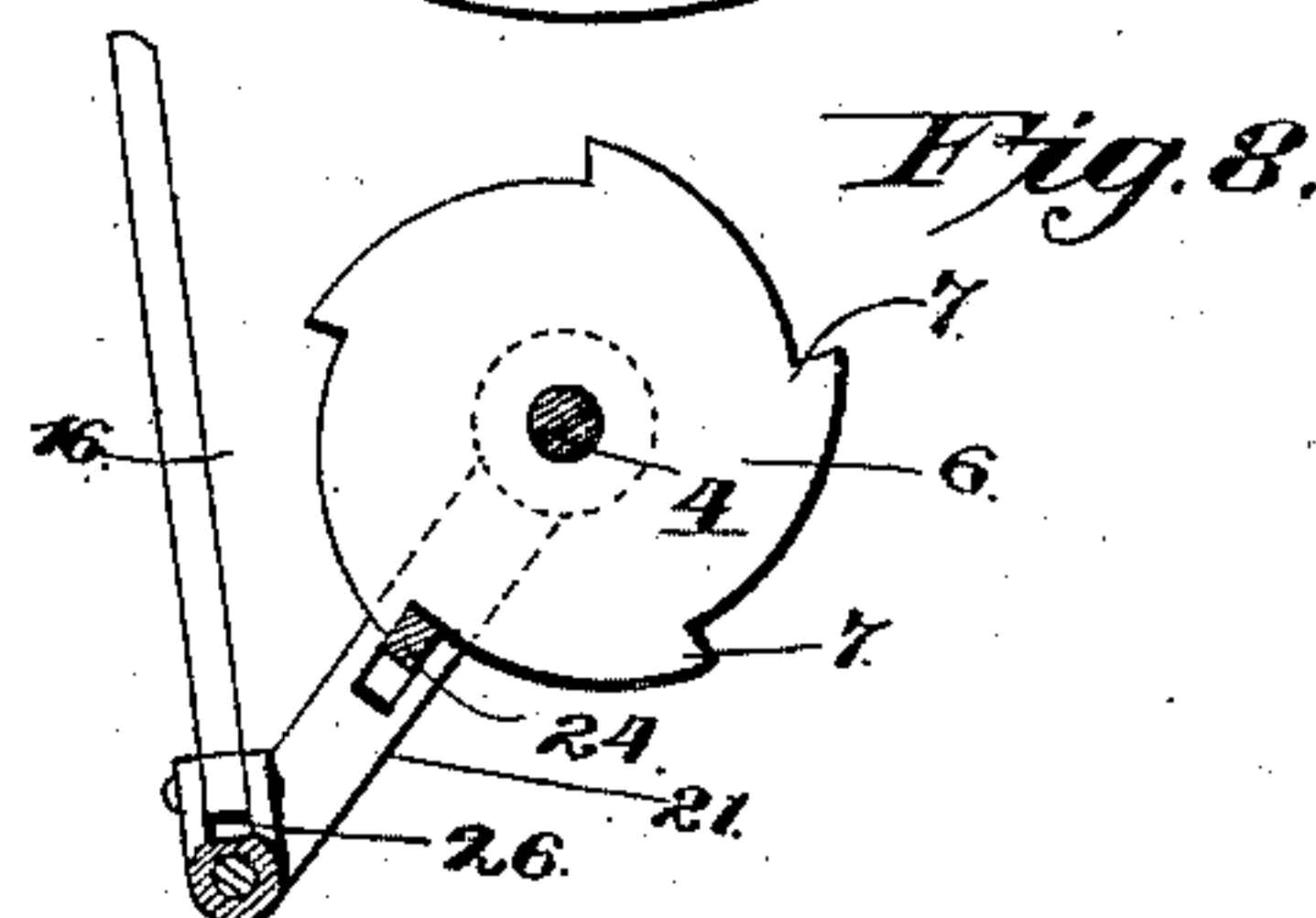
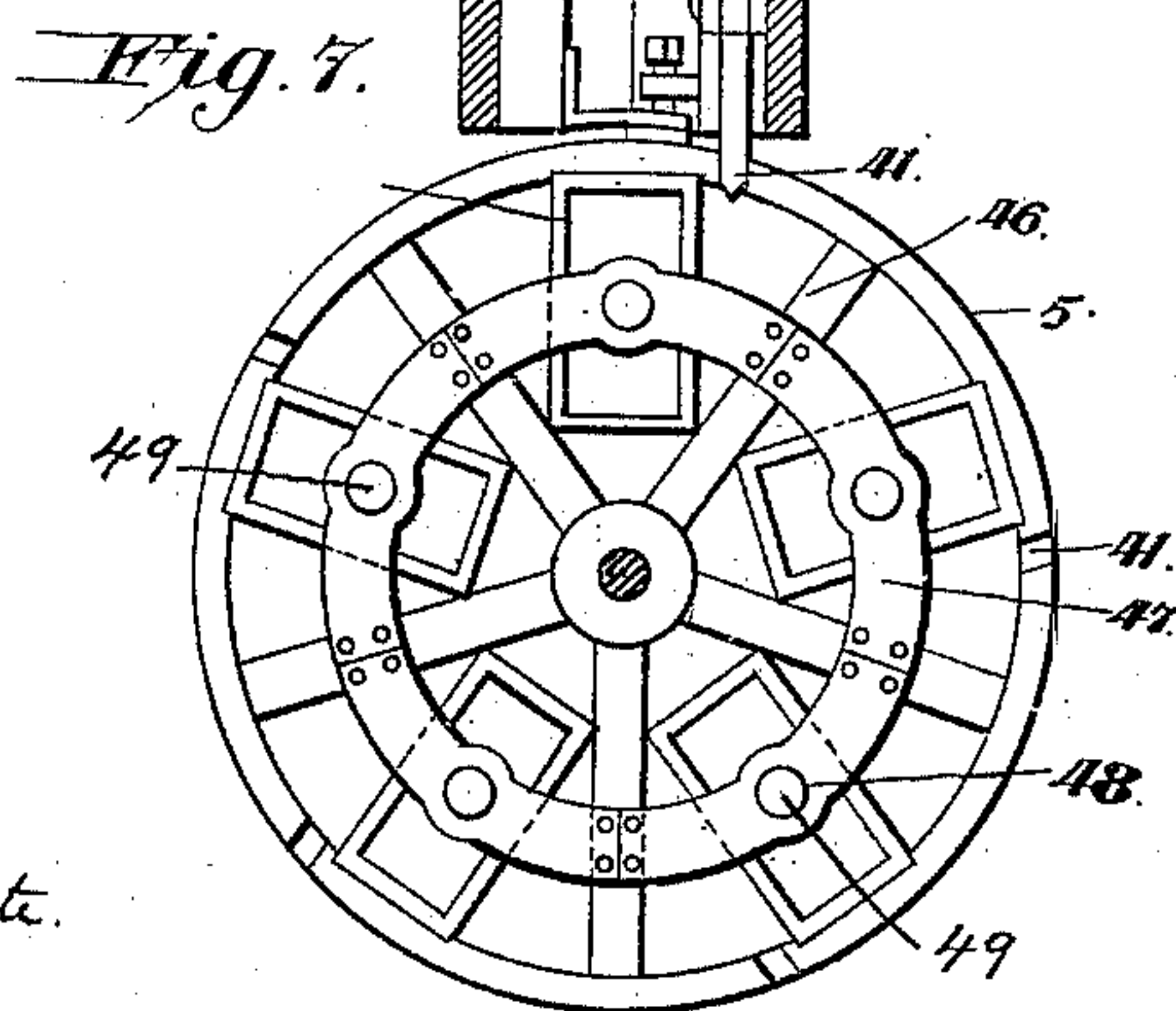
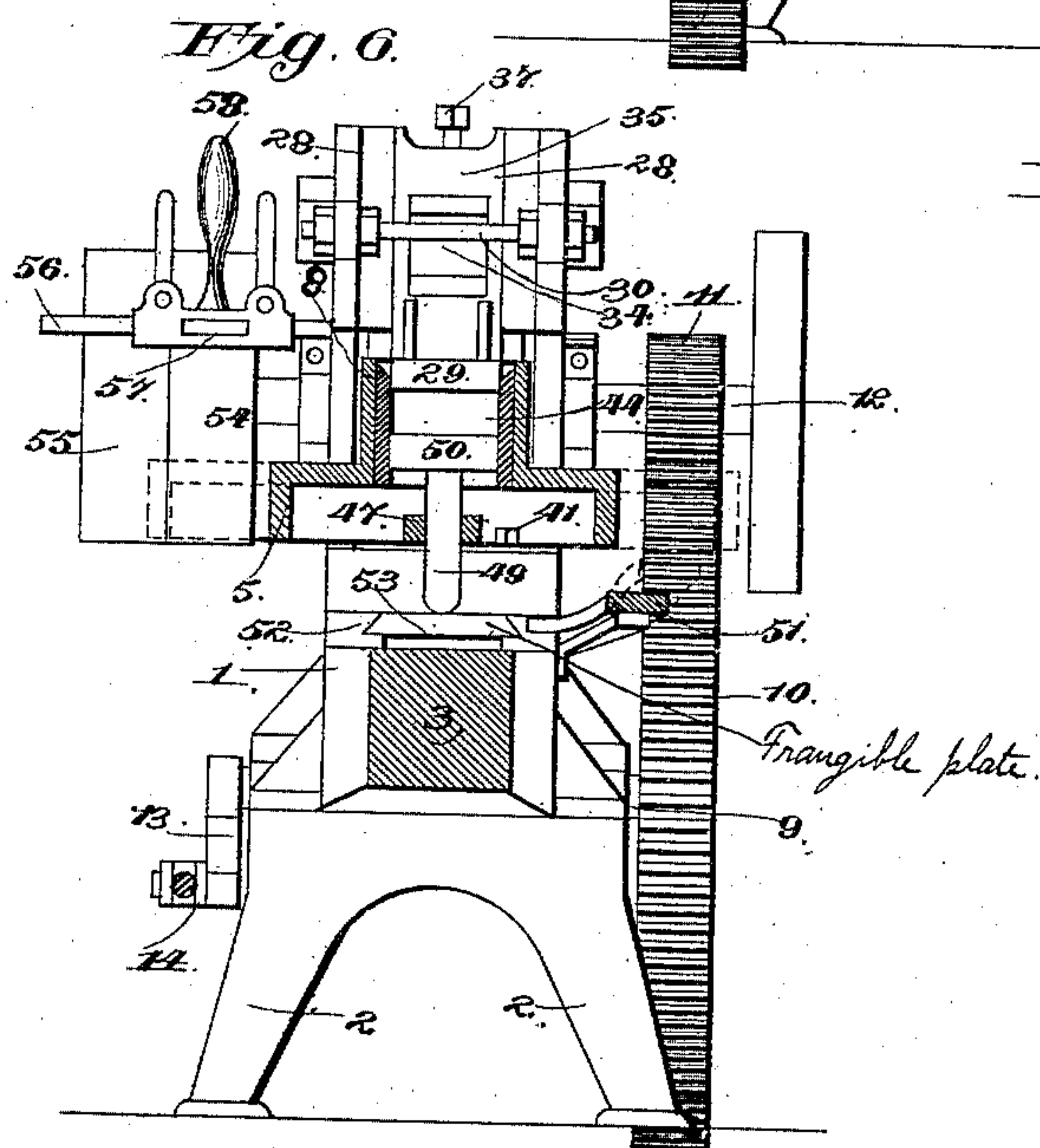
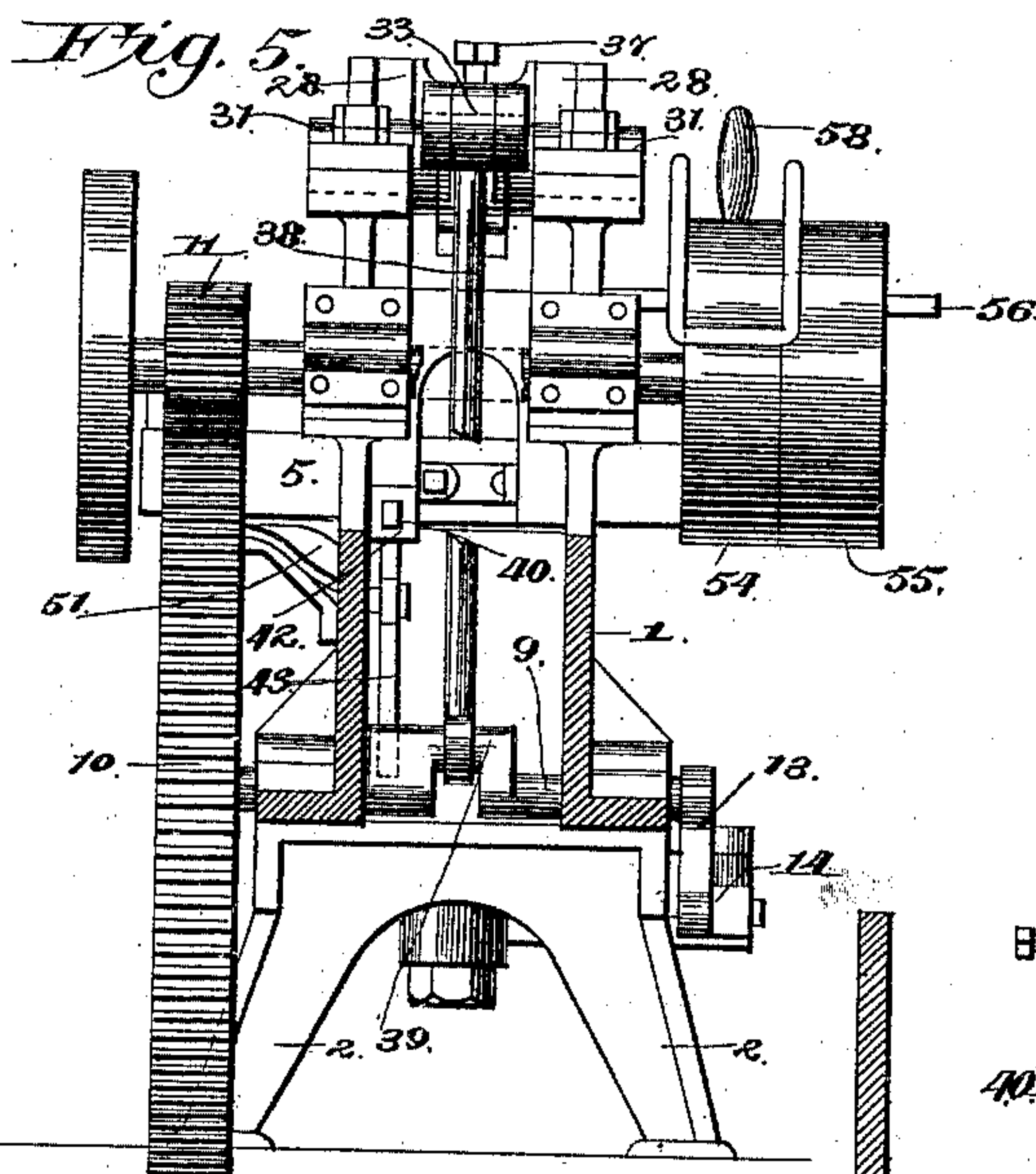
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Witnesses

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UNITED STATES PATENT OFFICE.

CARRICK P. OLDHAM, OF KNOXVILLE, TENNESSEE.

BRICK-PRESS.

SPECIFICATION forming part of Letters Patent No. 445,732, dated February 3, 1891.

Application filed January 4, 1890. Serial No. 335,899. (No model.)

To all whom it may concern:

Be it known that I, CARRICK P. OLDHAM, a citizen of the United States, residing at Knoxville, in the county of Knox and State of Tennessee, have invented a new and useful Brick-Press, of which the following is a specification.

This invention relates to that class of brick-presses which are used for re-pressing brick for the purpose of converting that article which is known to the trade as "common bricks" into high-class pressed bricks.

The invention has for its object to construct a continuously-operating machine which shall be simple, compact, and very powerful; and the invention consists in the improved construction, arrangement, and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings hereto annexed, Figure 1 is a perspective view of my improved brick-press. Fig. 2 is a side elevation of the same. Fig. 3 is a central longitudinal sectional view. Fig. 4 is a central longitudinal sectional view looking in the opposite direction. Fig. 5 is a transverse sectional view taken on the line *x x* in Fig. 3. Fig. 6 is a transverse sectional view taken on the line *y y* in Fig. 4. Fig. 7 is a bottom plan view of the die-table, showing also the locking mechanism for the same. Fig. 8 is a detail view of the feed mechanism for rotating the die-table. Fig. 9 is a detail view illustrating a modification in the construction of the mechanism for locking the die-table in position.

Like numerals of reference indicate like parts in all the figures of the drawings.

1 designates the frame of the machine, which is mounted upon suitable feet or supports 2 2 and is provided with forwardly-extending brackets 3, having bearings for a vertical shaft 4, carrying at its upper end the circular die-table or revolving platform 5.

Securely mounted upon the lower end of the shaft 4 is a ratchet-wheel 6, having a number of peripheral teeth 7, which is equal to the number of the dies or boxes 8 which are mounted upon the table or revolving platform. The latter is adapted to be intermittently rotated by mechanism as follows: 9 is a crank-shaft which is journaled transversely

in suitable bearings in the frame 1. Said crank-shaft is provided at one end with a spur-wheel 10, meshing with a pinion 11 upon the main shaft 12, which latter is likewise journaled in suitable boxes or bearings transversely in the frame. The crank-shaft 9 is provided at its opposite end with a crank 13, the outer end of which is connected by a knuckle-joint 14 with one end of a compound connecting-rod 15, which is composed of two parts or sections 16 16, the inner ends of which are provided with right and left hand screw-threads and connecting by means of the correspondingly-threaded coupling-sleeve 17, having a square portion or wrench-seat 18 to enable it to be conveniently adjusted, as occasion may demand. Jam-nuts 19 are arranged to be tightened up against the ends of the coupling-sleeve for the purpose of preventing the latter from being accidentally displaced.

Journaled loosely upon the lower end of the shaft 4, above and below the ratchet-wheel 6, are the links 20 21, each of which is provided with a slot 22, and the upper one of which 20 is provided adjacent to the said slot with ears or lugs 23, in which is pivoted a bell-crank lever 24, one arm of which extends downwardly through the slot 22 in the link 21 and the other horizontal arm of which carries an adjustable weight 24, having a set-screw 25, by means of which it may be secured in any desired position upon the said bell-crank lever. The lower end or arm of the latter under the impulse of the weight 24 will be forced against the periphery of the ratchet wheel or disk 6 and engage the teeth 7 of the latter. The outer ends of the links 20 and 21 are provided with bearings for a rock-shaft 26, having laterally-extending brackets 27, between which the outer end of the compound connecting-rod 15 is pivotally mounted. It will be seen that by the operation of the crank-shaft 9 an oscillating motion will be imparted to the links 20 and 21 upon the shaft 4. During the forward movement of the said links the vertical arm of the bell-crank lever 24 will slip idly over the periphery of the ratchet-wheel 6. During the reverse movement of the said links the vertical arm of the bell-crank lever will engage one of the teeth or notches of the said

ratchet-wheel and consequently partially rotate the shaft 4 and its attachments.

The frame 1 is provided with vertical guides 28, having bearings for the vertically-sliding die 29, which may be of any suitable construction. The outer ends of the guideways 28 are connected by a transverse brace-rod 30. Journaled transversely in the frame in suitable boxes 31, which are arranged in rear of the guides 28, is a shaft 32, having an arm or lever 33, the front end of which is extended into an opening or recess 34 in the shank 35 of the vertically-sliding die 29. Wear-plates 36 are arranged in the recess 34 above and below the end of the lever 33, and a set-screw 37 is arranged to bear against the upper wear-plate. It will be seen that by tightening the said set-screw wear may be compensated for and the vertically-movable die be caused to operate smoothly and accurately. The rear end of the arm or lever 33 is connected by a pitman 38 with a crank 39, formed centrally upon the crank-shaft 9, from which motion will thus be communicated to the vertically-reciprocating die.

Suitably pivoted to the frame 1 of the machine in rear of the rotating die-table is the locking-lever 40, the front end of which is adapted to engage any one of a series of notches 41 in the rim of the said rotating table. The rear end of the lever 40 has an adjustable weight 42, by means of which its front end will be thrown into engagement with the notches 41 as the latter successively present themselves for engagement with the locking-lever. Connected pivotally to the frame below the locking-lever 40 and in rear of the fulcrum of the latter is an L-shaped lever 43, the upper end of which is adapted to bear against the underside of the locking-lever 40. The lower end of the L-shaped lever 43 lies in the path of the crank 39 of the shaft 9, so that when the latter rotates in a forward direction it will operate the said lever 43, thus disengaging the locking-lever from the notch 41, with which at the time it is in engagement, and thus permit the die-table to be rotated.

The die-table is provided with a series of openings 44, above which are secured the die-boxes 8, which may be of any suitable construction. The under side of the die-table is provided with radial braces 46, to which is secured a ring or band 47, which may be constructed of one or more sections, and which is provided with bearings 48 for the shanks 49 of the bottom dies 50. The latter are arranged to reciprocate vertically in the bottoms of the die-boxes and the lower ends of the shanks are adapted to bear against the upper side of an inclined track 51, which may be suitably attached to the bracket 3 and to other parts of the frame of the machine. The said inclined track is provided at its lowest point directly above the bracket 3 with a dovetailed recess 52, in which is mounted detachably a frangible or breakable plate 53,

which may be constructed of any suitable material and of any desired thickness. This plate, which is mounted detachably in the dovetailed recess 52, performs the twofold function of regulating the thickness of the bricks that are pressed in the die and of preventing breakage of and injury to any of the more important parts of the machine, for the reason that in case the contents of the die-box or press-box shall be incapable of being compressed between the two dies the shank 49 of the lower die will be forced against the said plate 53 with such violence as to break the said plate. In this manner injury to the machine will be prevented beyond the breakage of the said plate 52, which may be very easily and quickly replaced at a trifling expense.

The main shaft of the machine is provided with pulleys 54 and 55, one of which is fast upon the shaft, while the other is loose. A bar or bracket 56 projects from the side of the frame directly in front of the said band-wheels or pulleys, and upon the said bracket is mounted a belt-shifter 57, having a handle 58, by means of which it may be conveniently manipulated.

The machine is driven by means of a belt or band from any suitable source of power, and by the shifting mechanism just described the said belt may be readily adjusted upon either the fast or the loose pulley, as occasion may demand.

The operation of this invention and its advantages will be readily understood from the foregoing description, taken in connection with the drawings hereto annexed. Normally and at the initial position of the machine the locking-lever 40 engages one of the notches 41 in the rotating die-table, which is thus held securely in position while the vertically-movable upper die 29 descends into the press-box, which is at the time located below it. At this point the bottom die is stationary, and the lower end of its shank rests upon the frangible plate 53. It is obvious that by the thickness of the latter, as already described, the thickness of the brick which is to be pressed may be very accurately regulated, the extent of the downward movement of the upper die being always the same. The upper die is operated by means of the arm or lever 33, pitman 38, and crank-shaft 9 in the manner described. When the crank 39 of the shaft 9 moves in a forward and downward direction, the upper die recedes from the press-box, and at the same time the crank 39 actuates the bell-crank lever 43, which disengages the locking-lever 40 from the notch 41 in the rotating die-table. At the same time the links 20 and 21, which up to this time have been moving outwardly, begin to move in a reverse direction, the bell-crank lever 24 will engage one of the notches 7 in the ratchet-wheel 6, and the shaft 4, carrying the die table or platform 5, will thus be rotated the space of one notch or until the locking-lever 40 engages

the next notch 41 in the rim of the said table. The shank 49 of the bottom die 50 has meanwhile been traveling upwardly upon the inclined track 51, thus moving the die 50 upwardly in the press-box and expelling the finished brick, which may now be readily removed. When the rotary table or platform rotates still farther, the bottom die will re-enter the press-box, thus making room for the next brick which is to be compressed and which may be placed in the press-box by hand or in any suitable manner. If at any time it should be found desirable to stop the operation of the machine, this may be accomplished by shifting the driving-belt from the fixed to the loose pulley. The operation of the rotary table or platform, however, may be stopped instantaneously and at any time by simply manipulating the bell-crank lever 24 to disengage its downwardly-extending vertical arm from the teeth or notches of the ratchet-wheel 6. This mechanism for operating the rotary die-table is exceedingly simple in construction and durable, and it possesses an additional advantage which is thought to be of great importance in a machine of this class, in this, that it presents no place upon which scraps of clay or the like might lodge and interfere with the operation of the machine. Anything that might drop upon the upper surface of the ratchet-wheel 6 will be swept off the latter by the action of the oscillating link 20, and no obstructions can possibly lodge in the teeth of the ratchet-wheel, the edges of which are vertical, as shown.

In Fig. 9 of the drawings I have illustrated a modification in the construction of the locking mechanism for the rotary die-table, which consists in substituting for the locking-lever 40 a longitudinally-sliding rod 60, which is mounted in an opening or recess 61 in the frame of the machine, and the outer or front end of which is adapted to engage the notches or openings 41 in the rim of the table. The rear end of the rod 60 is connected by a transverse pin 62 with a vertical slot 63 in the upper end of the lever 64, which is fulcrumed at 65, and the lower end of which lies in the path of the crank 39. The lever 64 is provided with a forwardly-extending arm 66, having a weight 67, the pressure of which tends to throw the upper end of said lever 64 and the locking-rod 60 normally in a forward direction to engage the rim of the rotary die-table. When, during the operation of the machine, the crank 39 moves in a forward and downward direction, it will actuate the lever 64, and thus temporarily disengage the locking-rod and the rotary die-table.

Having thus described my invention, what I claim is—

1. The combination of the rotary die-table, a ratchet-wheel mounted upon the lower end of the shaft carrying the said table, the links mounted loosely upon the said shaft above and below the said ratchet-wheel and having longitudinal slots, the bell-crank lever

pivoted in the upper link and adapted to engage the rim of the ratchet-wheel, the adjustable weight upon the horizontal arm of said bell-crank lever, and mechanism for operating the said links, substantially as and for the purpose set forth.

2. The combination of the vertical shaft carrying the rotary die-table and having a ratchet-wheel at its lower end, the longitudinally-slotted links mounted loosely upon said shaft above and below the ratchet-wheel, the bell-crank lever pivoted in the upper link and engaging the rim of the ratchet-wheel, the adjustable weight upon the horizontal arm of said bell-crank lever, a rock-shaft journaled in and connecting the outer ends of the said links, a pitman connected pivotally with said rock-shaft, and suitable operating mechanism, substantially as and for the purpose set forth.

3. The combination of the shaft having the ratchet-wheel, the loosely-journaled links, a rock-shaft connecting the outer ends of said links, and a bell-crank lever pivoted in the upper link and having a weight on its horizontal arm, substantially as set forth.

4. The combination of the vertical shaft carrying a rotary die-table at its upper end and having a ratchet-wheel at its lower end, the links journaled loosely upon said shaft, the bell-crank lever pivoted in the upper link, engaging the said ratchet-wheel and having an adjustable weight on its horizontal arm, the rock shaft connecting the outer ends of the links and having laterally-extending lugs, a transverse crank-shaft, and a connecting-rod connected pivotally with the lugs of the rock-shaft connecting the oscillating links and connected by a knuckle-joint with a crank upon the outer end of said transverse crank-shaft, substantially as set forth.

5. The combination of the oscillating links having the bell-crank lever to engage a ratchet-wheel upon the lower end of the vertical shaft carrying the rotary die-table, a transverse shaft having a crank at its outer end, and a compound connecting-rod composed of two parts having right and left hand threaded ends connected by a right and left hand threaded coupling-sleeve, said connecting-rods being connected to the crank-shaft by means of a universal joint and to the oscillating links by means of a rock-shaft journaled in and connecting the outer ends of said links, substantially as set forth.

6. A brick-press comprising the rotary die-table, a ratchet-wheel upon the lower end of the vertical shaft carrying the rotary die-table, the links mounted loosely upon said shaft above and below said ratchet-wheel, the bell-crank lever pivoted in the upper link and engaging the ratchet-wheel, the rock-shaft connecting the outer ends of said links, a compound connecting-rod connecting said rock-shaft with a crank upon the outer end of the crank-shaft, a locking device adapted to engage any one of a series of notches in the rim

of the rotary die-table, mechanism for holding the said locking device normally in engagement with the rim of the die-table, and an operating-lever adapted to disengage said
5 locking device, said operating-lever being extended into the path of the crank-shaft, substantially as and for the purpose herein set forth.

7. The rotary die-wheel having the press-
10 boxes, in combination with the vertically-movable bottom dies having downwardly-extending shanks and a permanently-arranged inclined track for the said shanks, said track being provided with a recess in which a
15 frangible plate is detachably mounted, substantially as and for the purpose set forth.

8. In a brick-press, the combination, with the vertically-movable bottom dies, of a dove-tailed frangible supporting-plate or break-plate mounted detachably in a suitable dove- 20
tailed recess provided for its reception directly below the top die, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in 25
presence of two witnesses.

CARRICK P. OLDHAM.

Witnesses:

ROY W. DAYTON,
R. J. MARSHALL.