

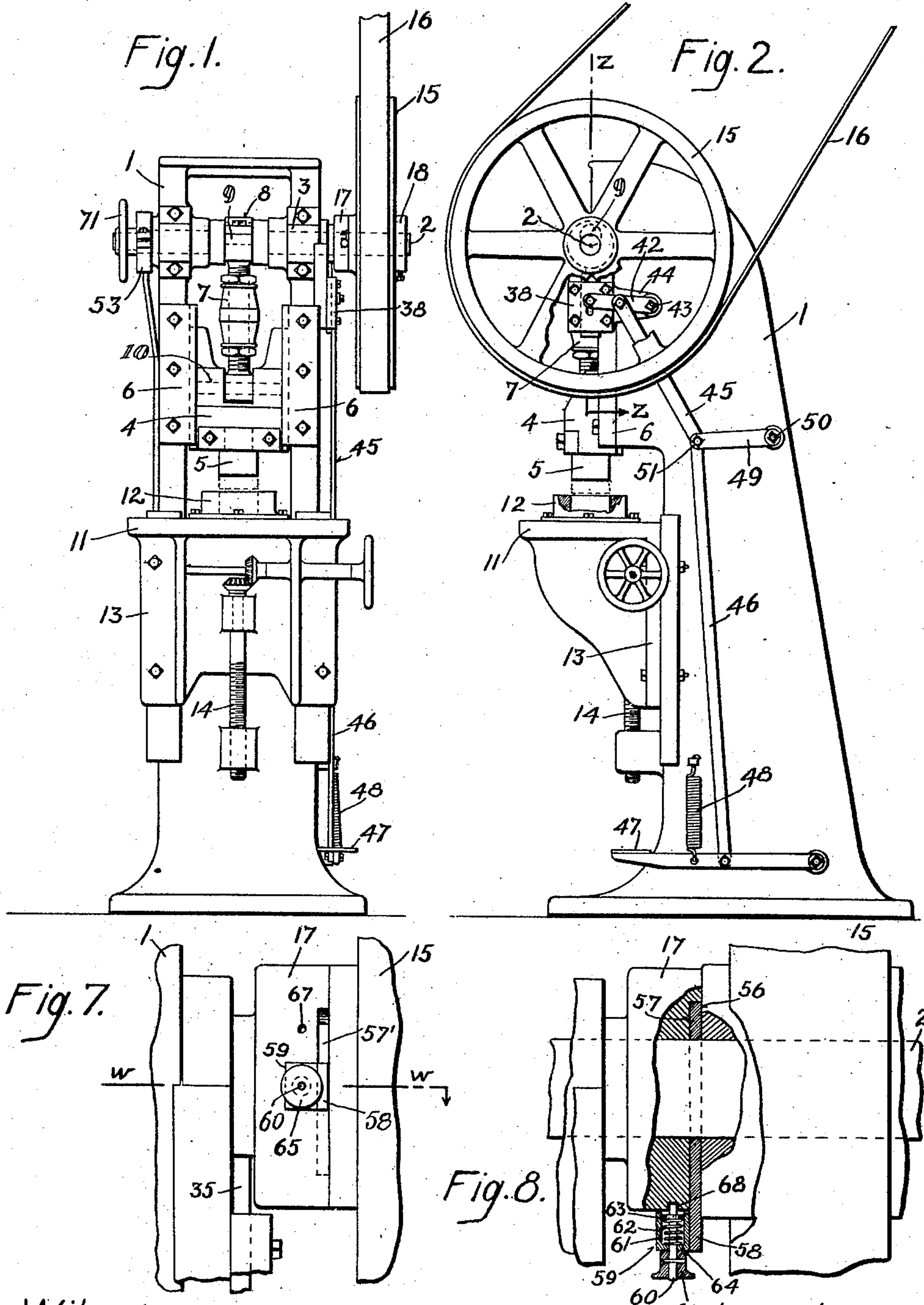
C. N. FREY.
PRESS.

APPLICATION FILED AUG. 11, 1909.

986,628.

Patented Mar. 14, 1911.

2 SHEETS—SHEET 1.



Witnesses:
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Jacob A. Hollander

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2 SHEETS—SHEET 2.

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Fig. 3.

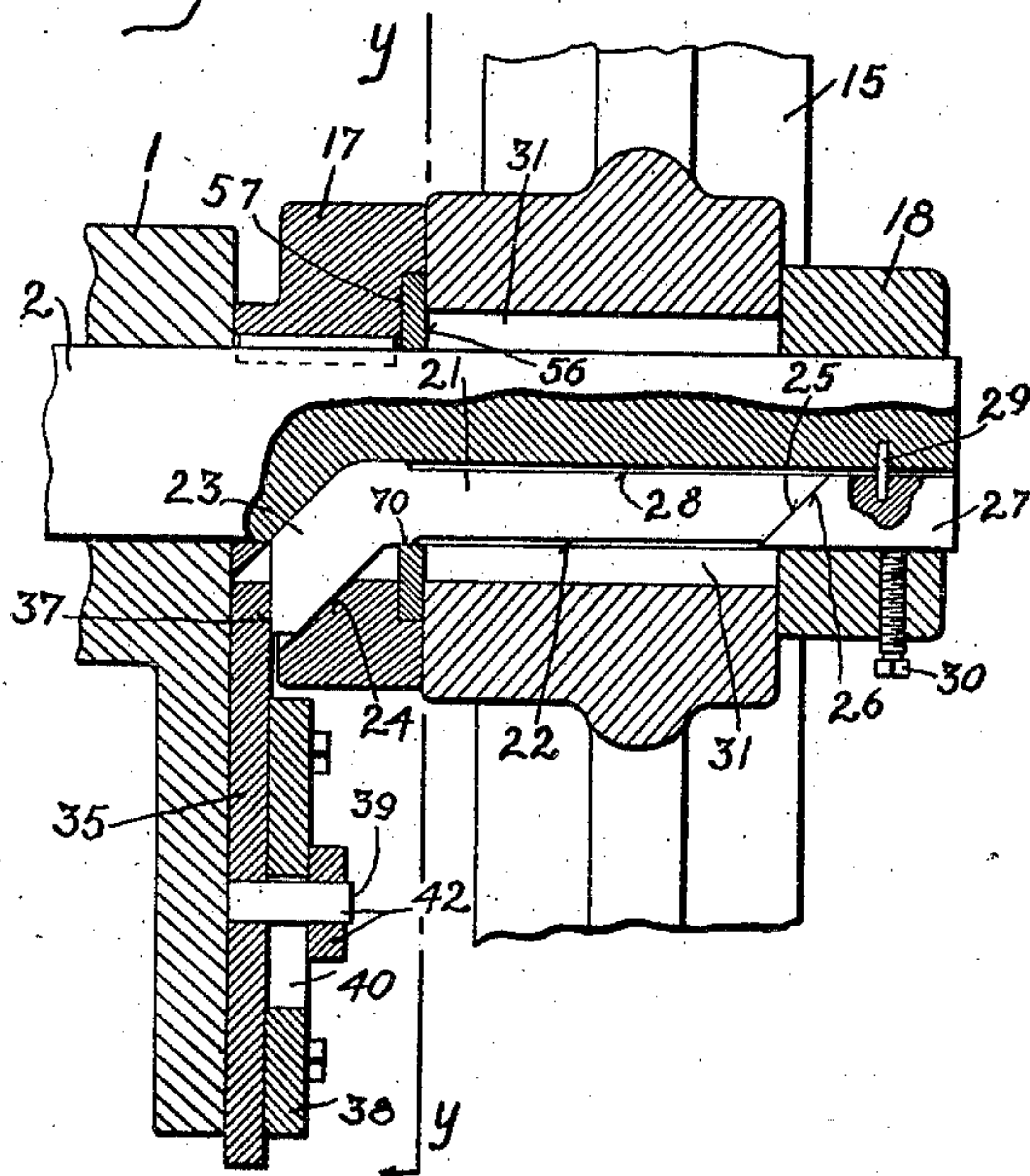


Fig. 4.

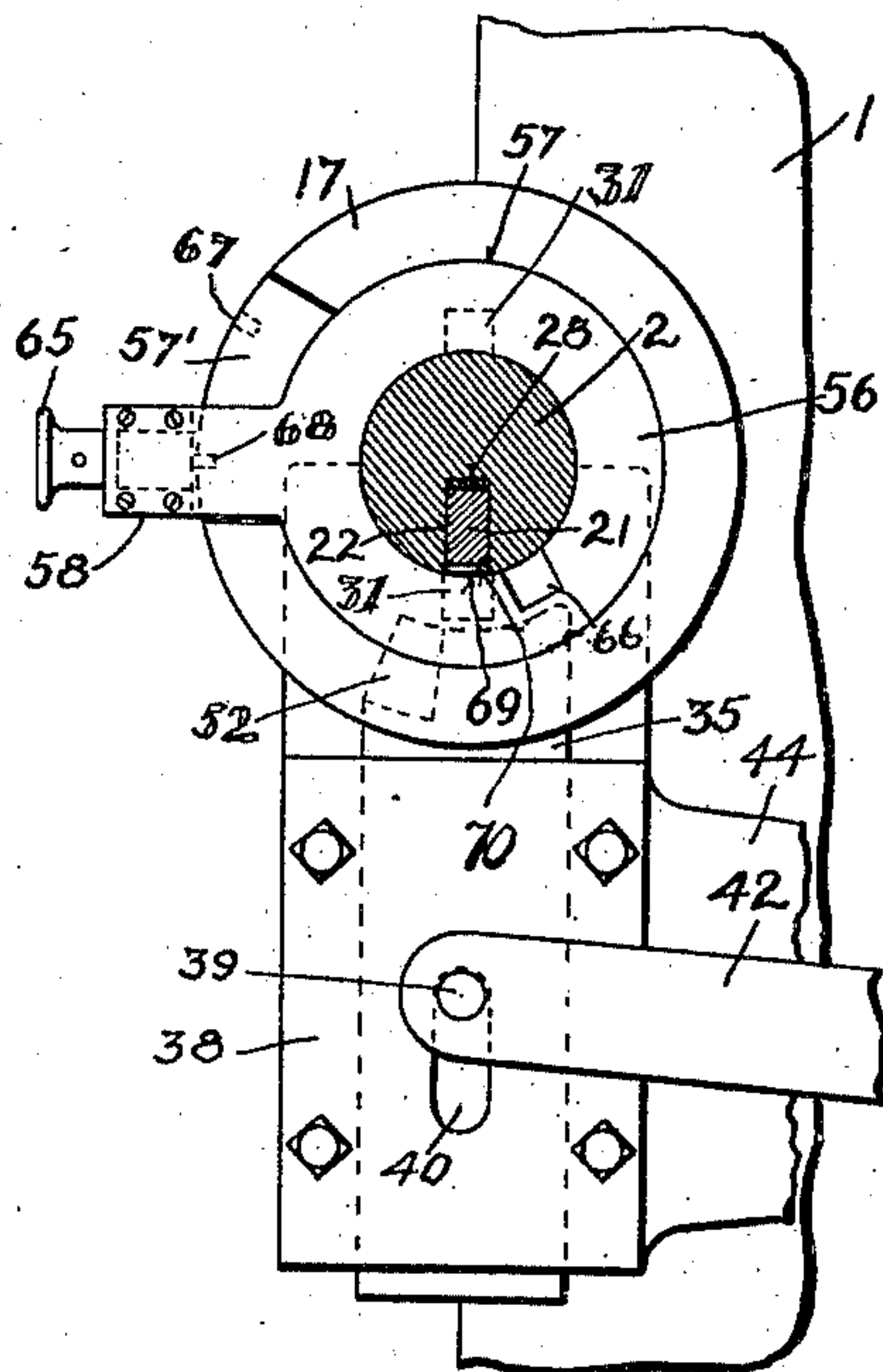


Fig. 6.

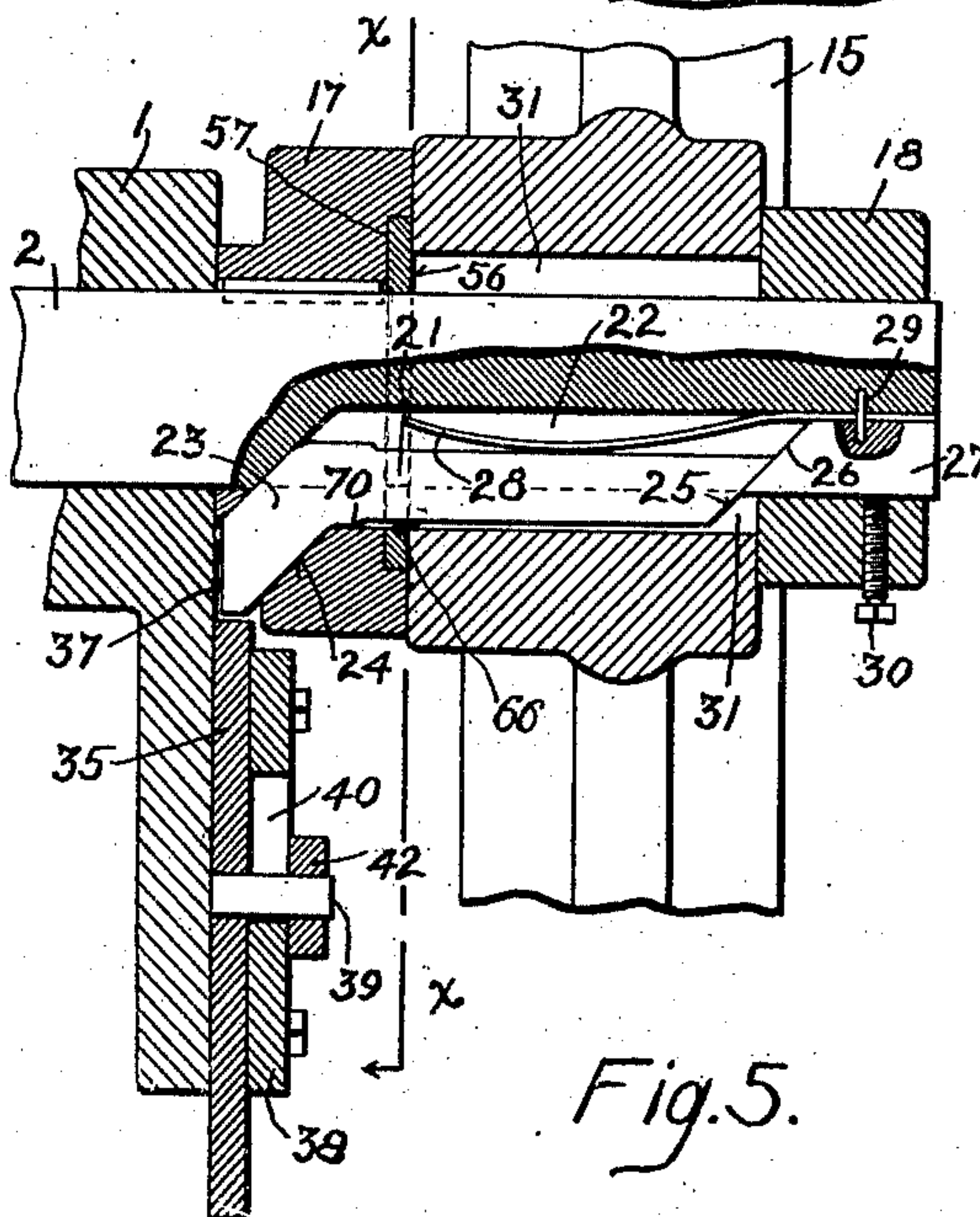
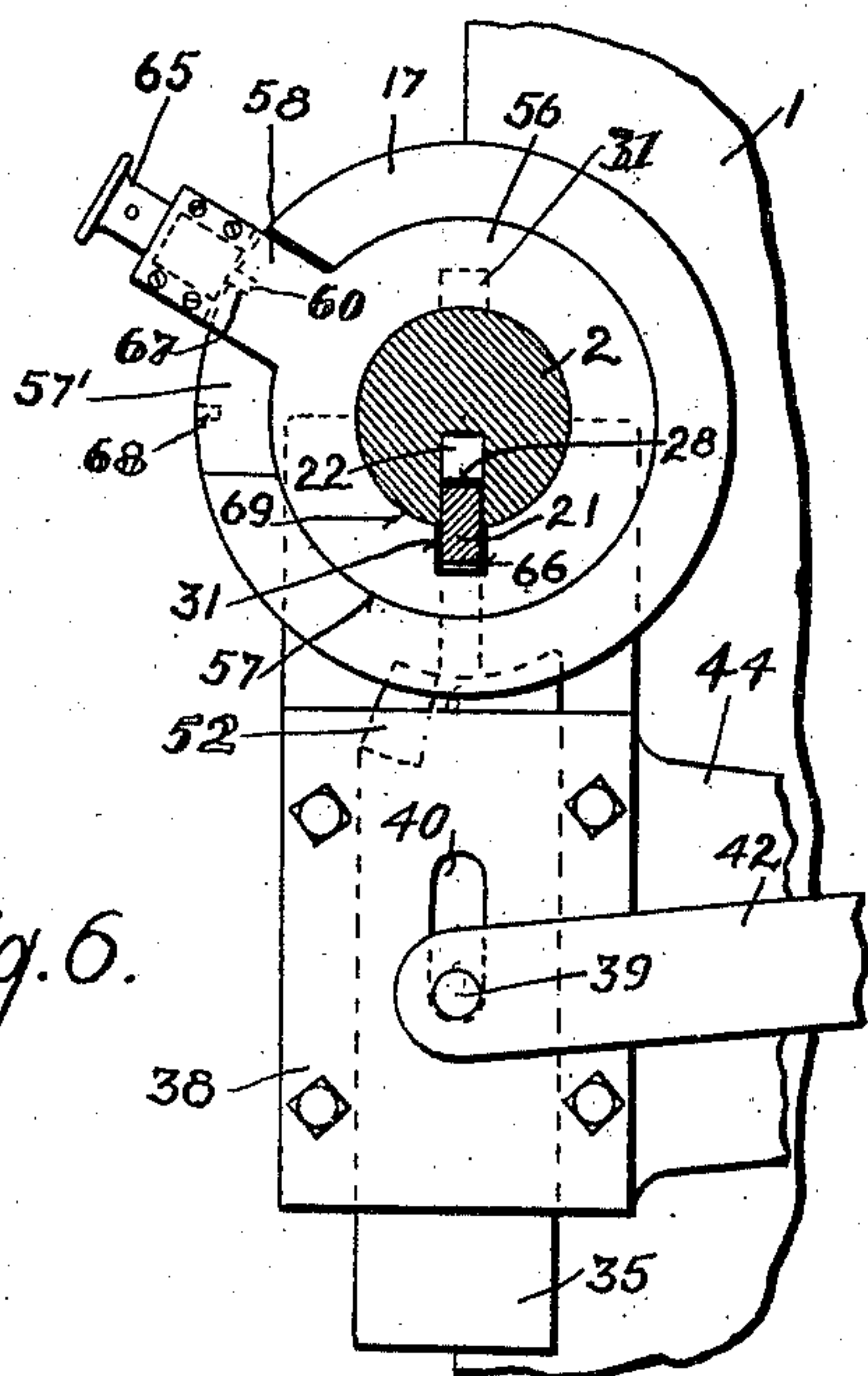


Fig. 5.

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UNITED STATES PATENT OFFICE.

CLARENCE N. FREY, OF CINCINNATI, OHIO, ASSIGNOR TO THE J. M. ROBINSON MANUFACTURING COMPANY, OF CINCINNATI, OHIO, A CORPORATION OF OHIO.

PRESS.

986,628.

Specification of Letters Patent.

Patented Mar. 14, 1911.

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To all whom it may concern:

Be it known that I, CLARENCE N. FREY, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Presses, of which the following is a specification.

My invention relates to presses of the character of those used in punching or bending sheet metal, and has for its object the providing of new and improved means whereby the power-actuating means of the reciprocating die-head may be rendered inactive for permitting the setting of the dies and for preventing accident when the machine is not in use but has the motive power still applied thereto.

The invention will be readily understood from the following description and claims, and from the drawings, in which latter:—

Figure 1 is a front elevation of my improved device. Fig. 2 is a side elevation of the same, partly broken away. Fig. 3 is an axial section, taken on the line $z-z$ of Fig. 2, showing the clutching mechanism between the fly-wheel and the crank-shaft, with the clutch in operative position. Fig. 4 is a cross-section of the same on the line $y-y$ of Fig. 3. Fig. 5 is an axial section similar to Fig. 3, showing the clutch in operative relation. Fig. 6 is a cross-section of the same on the line $x-x$ of Fig. 5. Fig. 7 is a front elevation of the clutch controlling mechanism; and, Fig. 8 is a horizontal section of the same on the line $w-w$ of Fig. 7.

1 represents a column in which a crank-shaft 2 is suitably journaled in bearings 3.

4 is a reciprocating die-head to which a reciprocating die 5 is suitably secured and which has reciprocation in a guide-way 6 of the column. This reciprocation is shown accomplished by means of an adjustable connecting-rod 7, connecting with a bearing-piece 8 journaled about the crank-pin 9 of the crank-shaft and articulated to the reciprocating die-head by a pin 10.

11 is a table for supporting the lower die 12, the table being adjustable on guideways 13 on the column by means of a screw-rod 14.

15 is a rotatable member, shown as a fly-wheel, about which the belt, indicated at 16, for operating the press is received. The rotatable member normally rotates loosely

about the crank-shaft and is held against endwise movement by collars 17 18 suitably secured to the crank-shaft.

21 is a key, the shank of which extends longitudinally of the crank-shaft and is received in a recess 22 in said crank-shaft. The key at one end has an angular extension 23 received in an angular recess 24 of the collar 17, the other end of the key having an angular face 25 engaging the angular face 26 of a block 27 secured in the recess 22.

28 is a spring received between the key and the crank-shaft for normally urging the key outwardly, the spring being positioned by a pin 29 received through apertures in the block, the spring and the shaft, the block and spring being clamped by means of a set-screw 30 in the collar 18. The spring normally urges the key outwardly toward the recess 31 in the bore of the rotating member 15 for causing the rotating member to carry the crank-shaft with it in its rotation. There are preferably two of the recesses 31 in the rotating member so that engagement between the rotating member and crank-shaft may be accomplished at two points in the circumference of the bore of the rotating member, the wall of said bore riding about said key while the key is maintained in the recess 22.

35 is a trip for the key. It is normally held in obstructing position for engaging the end face 37 of the key, the crank-shaft being normally in a position of rest, in which position the reciprocating die-head is in its uppermost position. The trip has reciprocation in a guide-piece 38. It is provided with a pin 39 received through a slot 40 in the guide-piece. A lever 42 is pivoted on a bolt 43 secured to a lug 44 of the guide-piece and articulated by means of links 45 46 with a treadle 47, a spring 48 causing return of said treadle and of said trip to normal position.

49 is a link articulated at 50 with the column and at 51 to the links 45 46 for controlling the path of movement of the latter links.

If it is desired to reciprocate the reciprocating die-head the treadle 47 is depressed for depressing the trip 35 for bringing the latter out of range of the key 21, whereupon the spring 28 will tend to force the key outwardly and as soon as one of the recesses 31

of the rotating member comes into registry with said key, the key will be forced into said recess for carrying the crank-shaft with the rotating member in the revolution 5 of the latter. When the foot is removed from the treadle the trip will spring back into obstructing position. The trip is provided with an inclined face 52 with which the end face 37 of the key engages for forcing the key out of engagement with the 10 rotating member and into the slot of the crank-shaft, whereupon the rotation of the crank-shaft ceases, a brake 53 of usual construction being provided for the crank-shaft 15 for causing the crank-shaft to stop as soon as the key is forced out of engagement with the rotating member.

In a machine of the character described, it is necessary when setting dies to bring the 20 reciprocating die-head into close relation with the table and to maintain the same in such close relation during the operation of setting the dies, so that the dies may be properly positioned in true relation to each 25 other. It has been the practice in machines of the character described, as heretofore constructed, when setting the dies, to remove the belt from the fly-wheel in order that the reciprocating die-head may be posi- 30 tioned by manual turning of the fly-wheel for permitting the reciprocating die to be brought into close relation to the die on the table. The operation was such that the inoperative position of the key was at the 35 point of farthest separation between the dies, the key being in connecting relation with both crank-shaft and rotating member during the balance of the movement of the reciprocating die-head.

In order to permit the die-head to be brought to any desired position of approach with relation to the table without disturbing the belt, I have provided means for locking the key in inoperative position in its 45 recess in the crank-shaft, so that the crank-shaft may be manually turned to any desired extent irrespective of the rotation of the rotating member. I have shown this locking member in the form of a ring 56 received in an annular recess 57 in the side 50 of the collar 17 and about the crank-shaft, the ring having a radial extension 58, extending through a radial slot 57' in collar 17, on which a lug 59 is located, a pin 60 being received in a bore 61 of said lug, there 55 being a spring 62 between an enlargement 63 on said pin and the outer wall 64 of said bore, a handle 65 being on the outer end of said pin for manipulating the same. The 60 ring has a recess 66 in the wall of its bore which may be brought into coincident position with the recess 22 in the crank-shaft and the angular recess 24 in the collar 17, when the pin 60 is received in a hole 67 of 65 the collar 17. When in such position, the

parts are in operative relation. If it is desired to render the key inoperative, the ring 56 is turned about its axis by removing the pin from the hole 67 and causing it to enter the hole 68 in the collar 17. This 70 will bring the inner wall 69 of the ring across the path of the key and act as a shoe for preventing the movement of the key out of its recess in the shaft, the key being provided with a radially extending shoulder 75 70 at the point of engagement of the shoe therewith, for maintaining the key well within the walls of its recess in the shaft for preventing accidental engagement between the rotating member and the key. When the 80 shoe is in obstructing position, the crank-shaft may be turned, irrespective of the turning of the rotating member, for bringing the die-head to any desired position lengthwise of its reciprocating path of 85 movement for any desired period of time for relatively adjusting the positions of the dies on the die-head and table. For accomplishing this turning of the shaft, I prefer to provide the same with a hand-wheel 90 71 by which the same may be manually turned. The handle 65 normally extends forwardly of the crank-shaft when the same is in normal position of rest, for placing the handle in convenient position for opera- 95 tion.

My improved construction has the further advantage that if the operator desires to leave his machine for a short time or at the end of a day's work, the key may be locked 100 in inoperative relation, so that the reciprocating parts will remain at rest in spite of manipulation of the treadle or other operating parts for initiating the reciprocation of the reciprocating die-head, and thereby preventing accident. 105

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

1. In a press of the character described, 110 the combination with the crank-shaft and rotating member having mating recesses, of a key, a trip normally maintaining said key within the recess in said crank-shaft, means for tripping said trip out of range 115 of said key for permitting said key to be received in the mating recesses in both said crank-shaft and rotating member for causing said crank-shaft and rotating member to rotate together in the ordinary operation 120 of said press, and supplemental safety means for locking said key within said recess in said crank-shaft and thereby preventing the tripping of said trip, substantially as described. 125

2. In a press of the character described, the combination with the crank-shaft and rotating member having mating recesses, of a key, a trip normally maintaining said key 130 within the recess in said crank-shaft, means

for tripping said trip out of range of said key for permitting said key to be received in the mating recesses in both said crank-shaft and rotating member for causing said crank-shaft and rotating member to rotate together in the ordinary operation of said press, a supplemental obstructing part for said key for rendering said key inoperative, said supplemental obstructing part having shiftable connection on said crank-shaft and arranged to turn therewith, and means for locking said obstructing part in obstructing position with relation to said key, substantially as described.

3. In a press of the character described, the combination with the crank-shaft and rotating member having mating recesses, of a spring-pressed key, a trip normally maintaining said key within the recess in said crank-shaft, means for tripping said trip out of range of said key for permitting said key to be received in the mating recesses in both said crank-shaft and rotating member for causing said crank-shaft and rotating member to rotate together in the ordinary operation of said press, a ring received about said shaft and said key, said ring having a recess therein, and means for positioning said ring on said shaft for causing the recess therein to coincide in position with or to be out of relation with said recess in said shaft and said key, and means for locking said ring in either of said positions, substantially as described.

4. In a press of the character described, the combination with the crank-shaft and rotating member having mating longitudinal recesses and a collar secured to said crank-shaft provided with an angular recess having connection with said longitudinal recess in said crank-shaft, of a spring-pressed key having a longitudinal shank, an angular portion and a radially extending shoulder between said shank and angular portion, said angular portion having movement in said angular recess, a trip normally maintaining said longitudinal shank of said key within the recess of said crank-shaft, means for tripping said trip out of range of said key for permitting said longitudinal shank of said key to be received in the mating longitudinal recesses in both said crank-shaft and rotating member for causing said crank-shaft and rotating member to rotate together in the ordinary operation of said press, said collar having an annular recess in its face adjacent to said rotating member, a ring received in said annular recess and arranged to contact said shoulder, said ring provided with a recess, and positioning means between said ring and collar for positioning said recess in said ring in line with said longitudinal recess in said crank-shaft or causing the inner wall of said ring to contact said shoulder for locking said

shank of said key within said longitudinal recess in said crank-shaft, substantially as described.

5. In a press of the character described, the combination with die-reciprocating parts embracing a pair of rotatable parts including a shaft and rotatable member having mating recesses, of a spring-pressed key, a trip normally maintaining said key within the recess in one of said rotatable parts, means for tripping said trip out of range of said key for permitting said key to be received in the mating recesses in both said rotatable parts for causing said shaft and rotatable member to rotate together in the ordinary operation of said press, a ring for said key received about said shaft, said ring having a recess therein, and means for positioning said ring on said shaft for causing the recess therein to coincide in position with or to be out of relation with said recess in which said key is normally maintained for rendering the operative effect of said trip active or inactive as desired.

6. In a press of the character described, the combination with die-reciprocating parts embracing a pair of rotatable parts including a shaft and a rotatable member having mating recesses, of a key, a trip normally maintaining said key within one of said mating recesses, means for tripping said trip for permitting said key to be received in said plurality of recesses, and means for locking said key in inoperative position, substantially for the purpose described.

7. In a press of the character described, the combination with die-reciprocating parts embracing a pair of rotatable parts including a shaft and a rotatable member having mating recesses, a key, a trip normally maintaining said key within one of said recesses, means for tripping said trip for permitting said key to be received in said plurality of recesses, and auxiliary safety means rendering operation of said trip upon said key inactive for maintaining said key within its said recess.

8. In a press of the character described, the combination with die-reciprocating parts embracing a pair of rotatable parts including a shaft and rotatable member having mating recesses, a key, a trip normally maintaining said key within one of said mating recesses, means for tripping said trip for permitting said key to be received in said plurality of recesses, and a shiftable part having a recess therein for the reception of said key, said shiftable part rotating with the part having said recess therein in which said key is normally received, and arranged for permitting shifting of said shiftable part into obstructing position of said key.

9. In a press of the character described, the combination with die-reciprocating parts embracing a pair of rotatable parts includ-

ing a shaft and rotatable member having mating recesses, a key, a trip normally maintaining said key within one of said mating recesses, means for tripping said trip for 5 permitting said key to be received in said plurality of recesses, and a shiftable part, said shiftable part rotating with the part having said recess therein in which said key is normally received, and arranged for per- 10 mitting shifting of said shiftable part into obstructing position of said key, said key having a shoulder thereon arranged to be engaged by said shiftable part when placed in obstructing position for maintaining said 15 key well within its normal recess.

10. In a press of the character described, the combination of two rotating parts embracing a crank-shaft and rotating member, said rotatable parts having mating longitu- 20 dinal recesses, a key, a trip normally maintaining said key within one of the said mating recesses, means for tripping said trip for permitting said key to be received in said plurality of recesses, a shiftable part 25 mounted on the rotatable part which has said key thereon, and means for placing and

locking said shiftable part in obstructing position for maintaining inoperative relation between said two rotatable parts.

11. In a press of the character described, 30 the combination of a reciprocating die-head, an opposing die-support, a shaft for reciprocating said die-head, a rotating member, said shaft and rotating member having mating recesses, a key, a trip normally main- 35 taining said key within one of said recesses, means for tripping said trip for permitting said key to be received in said plurality of recesses, an auxiliary safety means rendering the operative effect of said trip upon 40 said key inactive for maintaining said key within its said recess, and manual turning means operatively connected with said shaft for permitting manual reciprocation of said 45 reciprocating die-head.

In testimony whereof, I have signed my name hereto in the presence of two subscribing witnesses.

CLARENCE N. FREY.

Witnesses:

JOHN R. SCHINDEL,
LILLIAN BURNETT.