

No. 750,907.

PATENTED FEB. 2, 1904.

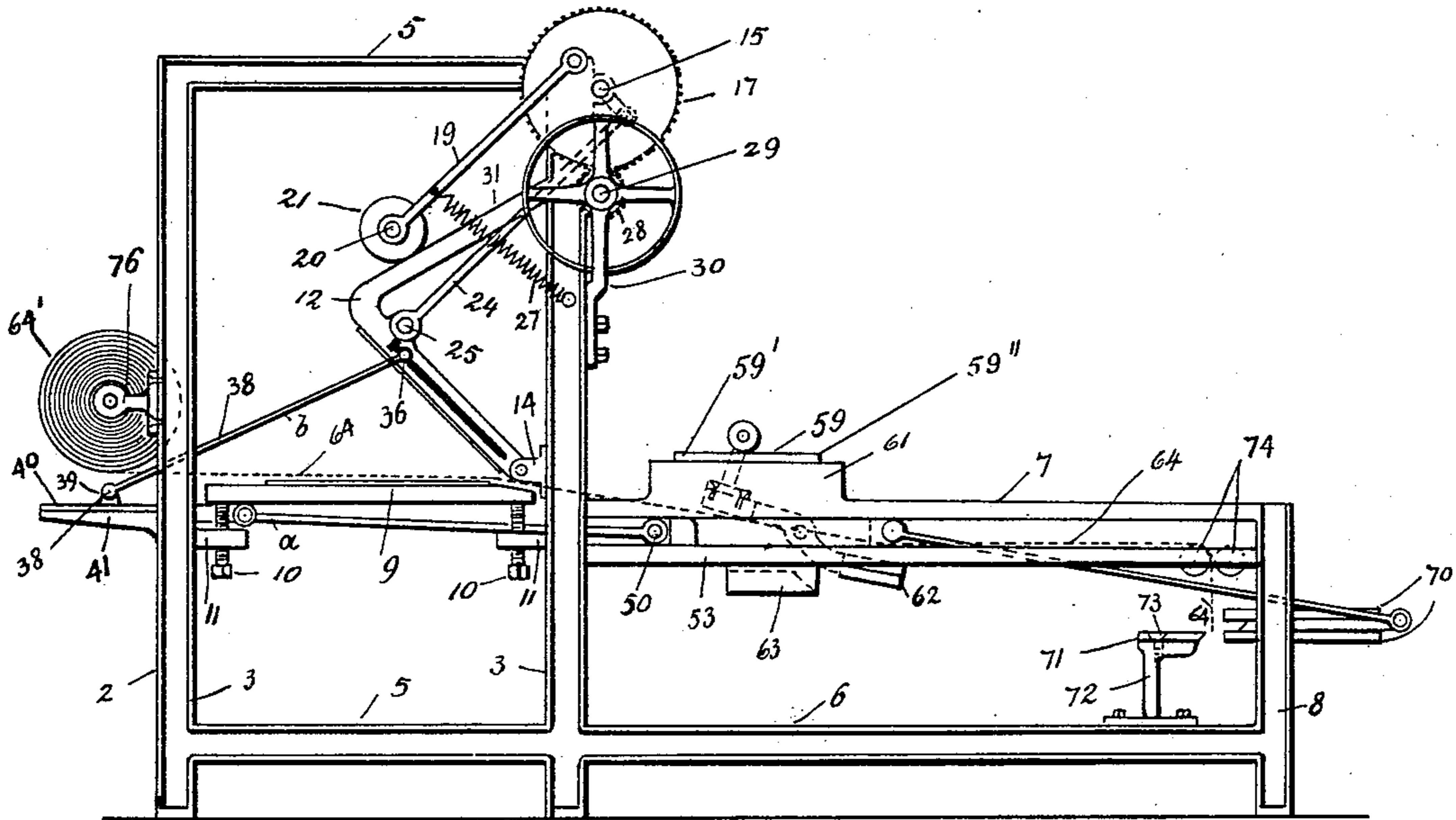
R. STERN.  
PRINTING PRESS.

APPLICATION FILED JUNE 10, 1903.

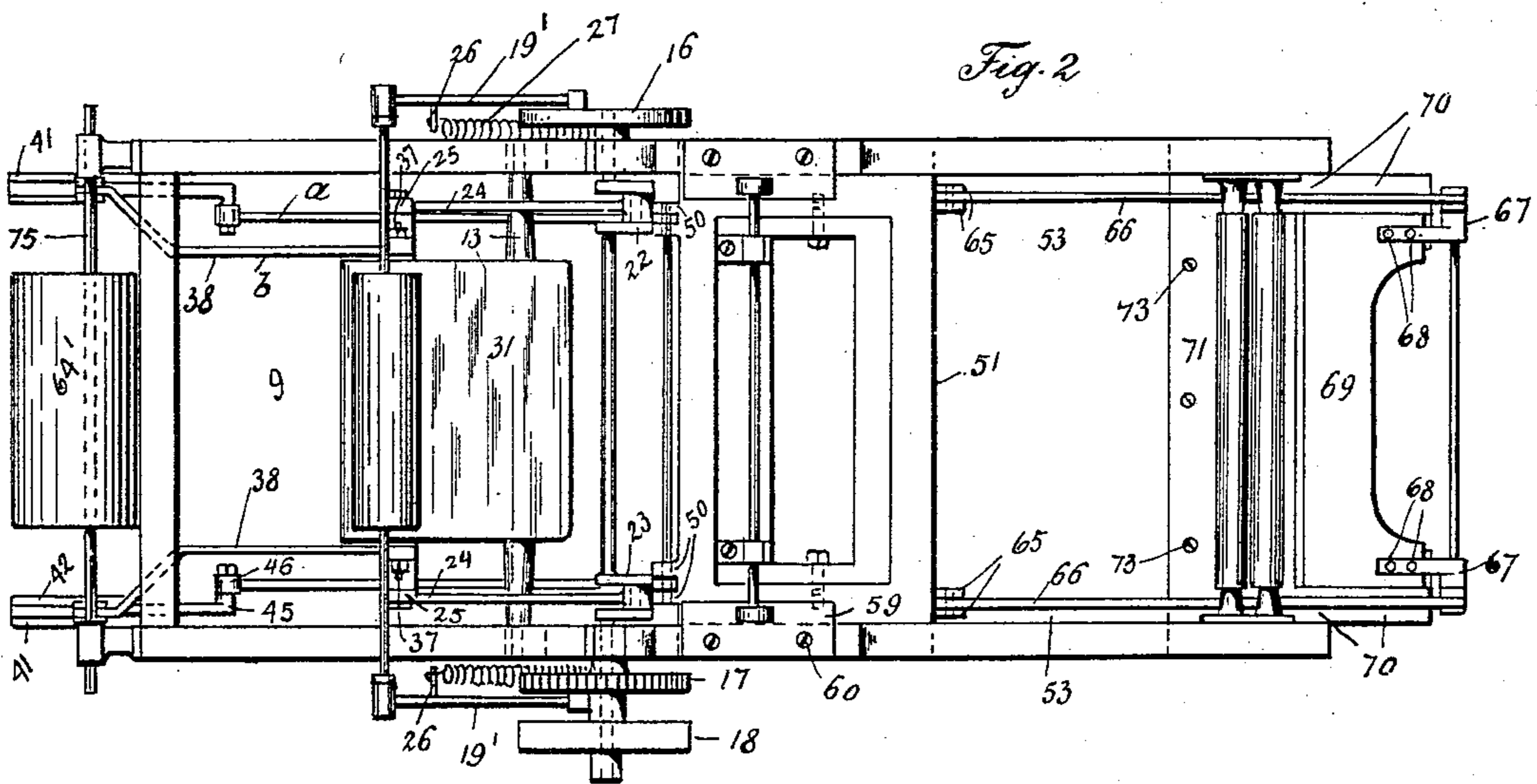
NO MODEL.

3 SHEETS—SHEET 1.

*Fig. 1*



*Fig. 2*



WITNESSES  
*Wm. M. Kingaley*  
*Frank Britch*

INVENTOR  
*Rebel Stern*  
BY *Robt. Klotz*  
ATTORNEY

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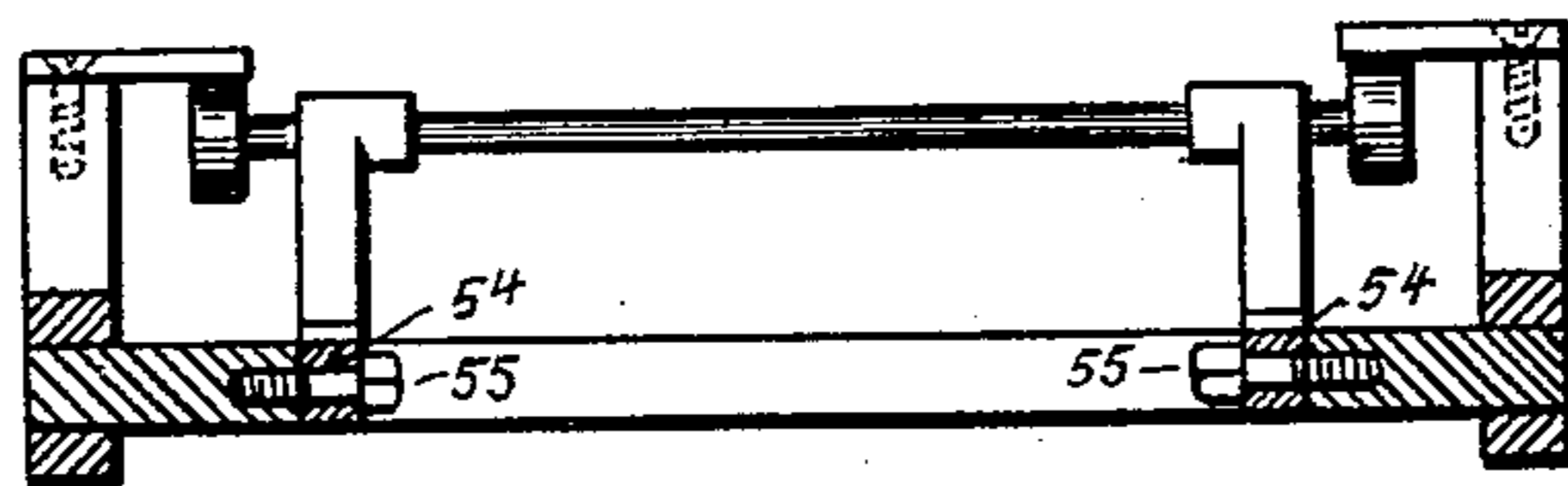
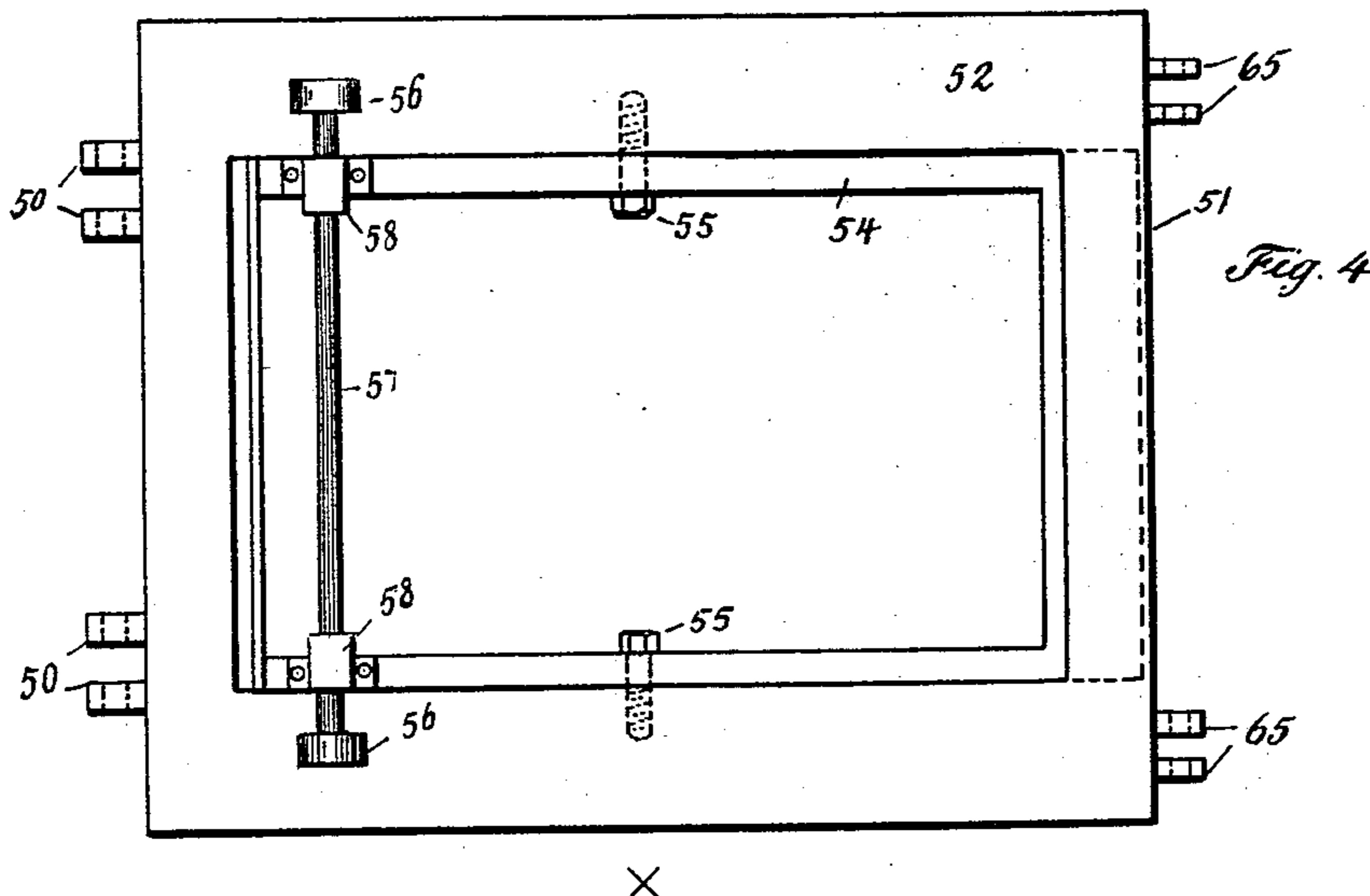
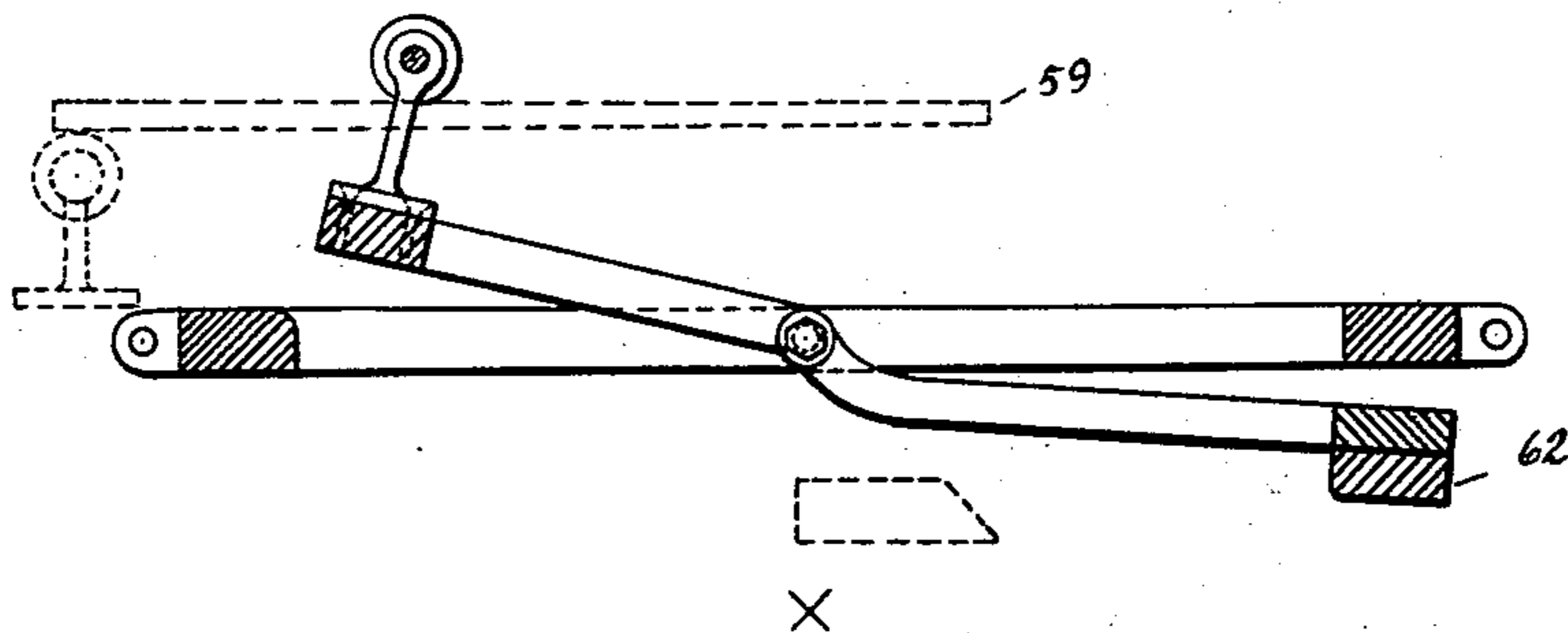
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NO MODEL.

3 SHEETS—SHEET 2.

*Fig. 3*



WITNESSES

*Wm. M. Kingsley*  
*Frank Britch*

INVENTOR

*Rebel Stern*

BY

*Robt. Klotz*

ATTORNEY

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NO MODEL.

3 SHEETS—SHEET 3.

Fig. 6

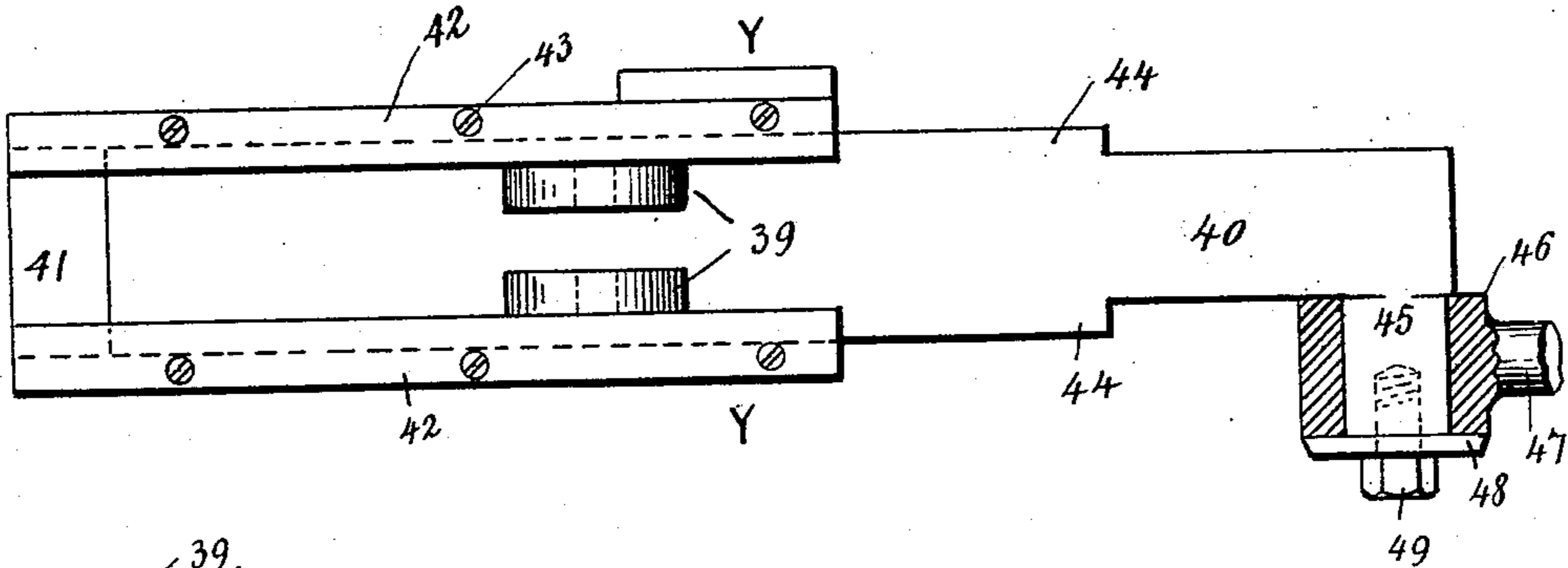


Fig. 7

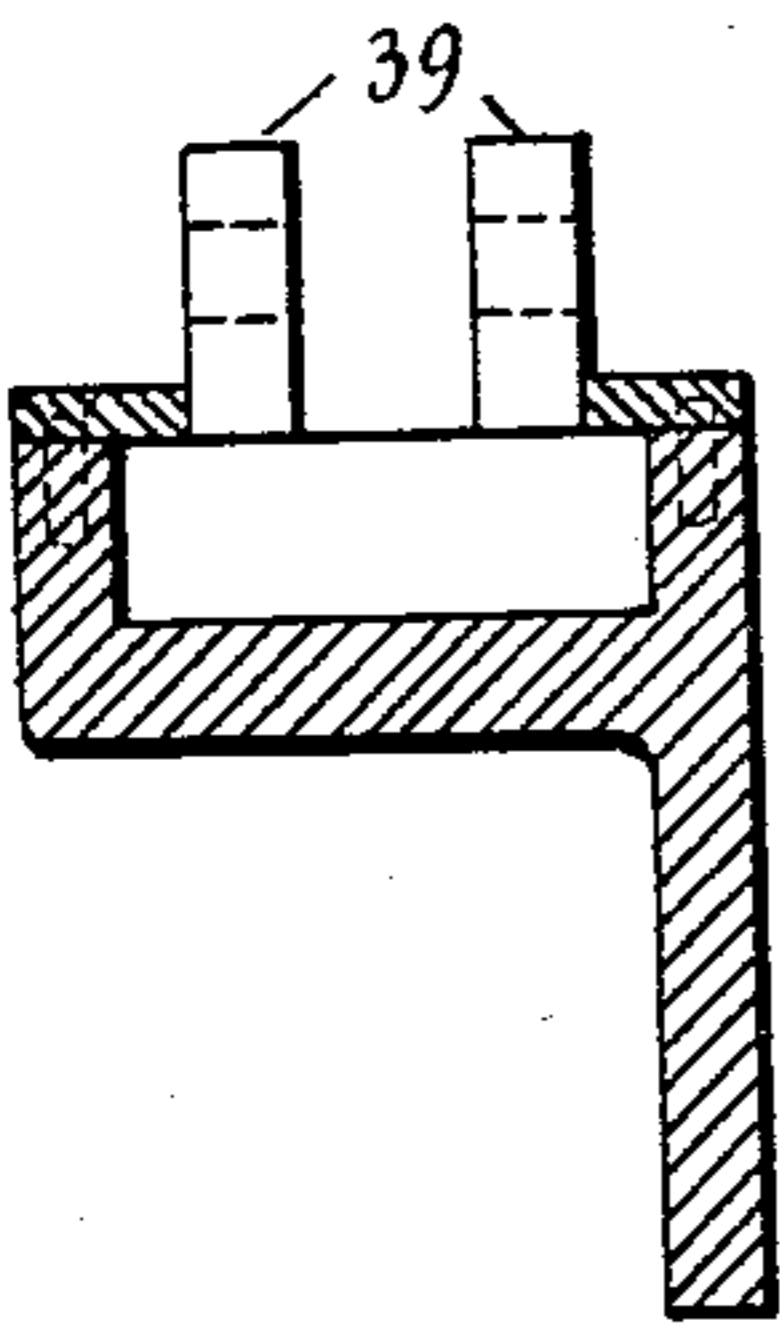
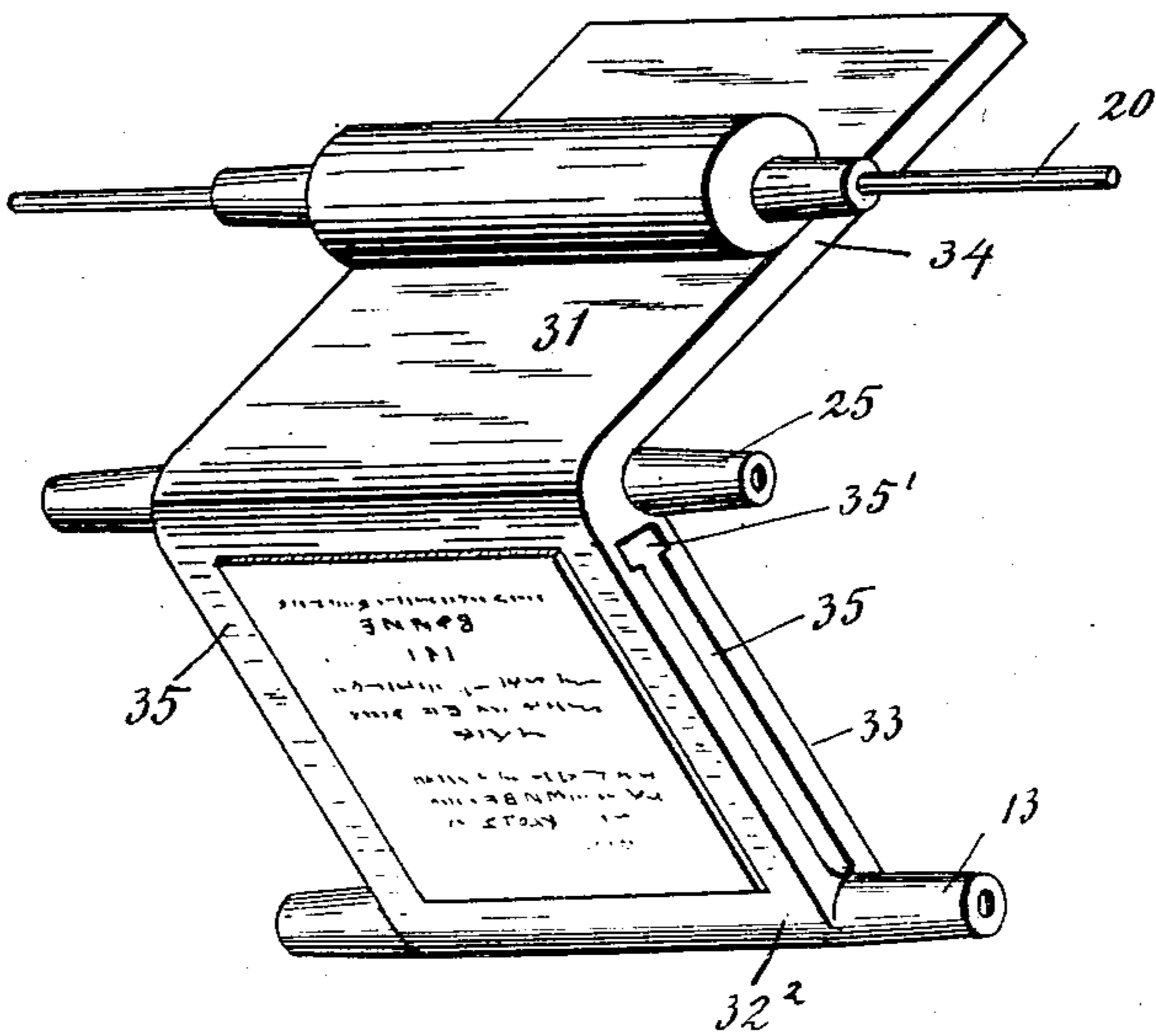


Fig. 8



WITNESSES  
*Wm. M. Kingsley*  
*Frank Britch*

INVENTOR  
*Rufel Stern*  
By *Robt. Klotz*  
ATTORNEY

## UNITED STATES PATENT OFFICE.

REFEL STERN, OF CHICAGO, ILLINOIS.

## PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 750,907, dated February 2, 1904.

Application filed June 10, 1903. Serial No. 160,869. (No model.)

*To all whom it may concern:*

Be it known that I, REFEL STERN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have  
 5 invented certain new and useful Improvements in Printing-Presses, of which the following is a specification.

This invention relates to printing-presses, and has particular reference to the platen type  
 10 thereof employed for miscellaneous printing.

The objects of the invention are, generally speaking, to provide a machine for printing cards, newspapers, circulars, posters, notices, and the like continuously upon a paper strip  
 15 and severing the individual impressions; to make the several operations automatic and doing away with press-feeding by hand and its attendant dangers of bodily injury; to provide a combination of machine elements that  
 20 are simple as opposed to intricate parts, which may be easily understood and operated by anyone and which shall not easily get out of order; to expose the work in plain view while in transit that any errors or inaccuracies may  
 25 be promptly noted, and to make the different parts of the machine readily accessible.

The invention consists generally in the combination, with a stationary bed, of a reciprocating type-form having an inking-surface  
 30 and a type or impression surface, an inking-roller, and means actuating said platen and roller whereby their united movements will cause said roller to pass over the surfaces of said type-form.

35 The invention further consists in a novel impression-plate having an inking-face and a type-face forming a continuous surface with its several faces arranged in different planes.

40 The invention further consists in the combination, with a rotating shaft, of a type-carrying and type-inking form and roller rocked, oscillated, or reciprocated by pitmen and means upon said shaft for actuating said pitmen.

45 The invention further consists in a form-actuated feeding mechanism and a paper-cutting mechanism actuated by the latter.

The invention further consists in novel means for varying the length of the intermit-

tent movements of the paper-feeding mechanism. 50

The invention further consists in a novel paper-gripping mechanism for moving the paper forward or advancing it from a roll of paper after each type impression. 55

The invention further consists in a paper-feeding and a paper-cutting mechanism arranged in substantially a direct line and positively actuated by pivoted connecting-rods; and the invention further consists in the novel  
 60 details of construction and combinations of parts hereinafter described in detail, illustrated in the drawings, and pointed out in the claims.

Referring to the accompanying drawings, forming a part of this specification, Figure 1  
 65 is a side elevation of a printing-press embodying my invention. Fig. 2 is a top plan view thereof. Fig. 3 is an enlarged side view, partly in section, of the paper-gripping mechanism. Fig. 4 is a plan view thereof. Fig. 5  
 70 is a sectional view taken substantially on the line *xx* of Fig. 4. Fig. 6 is an enlarged plan view, partly in section, of the driving-slide actuated by the form or type-carrier. Fig. 7 is a sectional view taken on the line *yy* of  
 75 Fig. 6; and Fig. 8 is an enlarged perspective view of the form or type-carrying and inking plate, together with the inking-roller.

In the drawings, 2 represents the frame of the machine, consisting of four uprights 3, 80 cross-pieces 5, the horizontal extension-rails 6 and 7, and their connecting cross-pieces 8.

9 represents the bed-plate, supported at each of its corners on screws 10, held in threaded apertures in the brackets 11, secured to or  
 85 forming a part of the uprights 3. By means of these supporting-screws the bed-plate may be properly adjusted with relation to the rocking or reciprocating inking and type-carrying plate 12. The latter is pivoted upon bearings  
 90 13, held in brackets 14, secured to two of the uprights 3. At the upper ends of the latter are suitable bearings for the shaft 15, to one of which is keyed a knuckle wheel or disk 16. The opposite end of said shaft carries a gear  
 95 17, having a knuckle similar to that on disk 16. Pivoted to the knuckles of said disk and gear are pitmen 19 and 19', which in turn are

pivoted to the journals 20 of the inking-roller 21. Between the uprights 3 the shaft 15 is bent into the form of two cranks 22 and 23, to each of which is pivoted a pitman 24. Each of the latter is also pivoted to the platen and inking-plate 12 at 25 25. A pin 26 upon each of the pitmen 19 19' carries one end of a spiral spring 27, secured at its other end to a suitable pin in the upright 3. The shaft 15 is rotated by a pinion 28 meshing with the gear 17. Said gear is keyed to a short shaft 29, having bearings in a bracket 30, bolted, as shown, to one of the uprights 3. The form 12 has an inking-surface 31 and a type-surface or impression-face 32 and is bent into the form of an angle-plate comprising a type-wing 33 and an inking-table 34. The portion 33 has an undercut groove 35 in each of its side edges adapted to slidably hold the head of a bolt 36 for each of said grooves. An enlarged or widened portion 35' at the upper end of said grooves is provided for the insertion and removal of the head of the bolt. The outer or threaded ends of these bolts, one of which (labeled 36) is shown in Fig. 1, are provided with short sleeves (not shown) of larger diameter than the widths of the apertures or grooves 35. The nuts 37 on the bolts 36 are tightened against the ends of said sleeves, clamping the latter against the edges of the grooves 35. Pivoted upon said sleeves are connecting-rods 38, pivoted to and between bearing-lugs 39 upon the slide 40, having slide-bearings in the brackets 41, bolted or otherwise secured to two of the uprights 3. Said slide-bearings comprise the upper surfaces of the brackets 41 and plates 42, held by screws 43, which are threaded into suitable apertures in said brackets. The inner edges of these plates are rabbeted, as shown by dotted lines in Fig. 6, for the bearing edges 44 of the slide 40. On the outer end of the slide 40 is a knuckle or pivot 45 for the pivoted end 46 of the connecting-rod 47, held upon said knuckle by means of a retaining-washer 48 and a screw 49, threaded into the end of the knuckle 45. As shown in Fig. 2, a slide 40, and associated parts above described, is provided for each side of the frame 2. The other ends of rods 47 are pivoted to the two pairs of lugs 50 upon one end of the gripper 51. The latter consists of a frame 52, supported at its opposite edges for a sliding movement between the upper extension-rails 7 of the frame and the tracks or slideways 53.

As clearly shown in Figs. 3 and 4, the gripper-frame 52 carries another frame 54, pivoted upon screws 55 within the frame 52. The two frames coact as a pair of tongs which grip the paper at each forward movement and release it on the return stroke. The mechanism for opening and closing the jaws of the gripper consists of a pair of trolley-wheels 56, mounted on the ends of the shaft 57, supported in bearings 58, bolted to the

inner or angularly-movable frame 54. The wheels 56 are caused to travel over and under the tracks 59, consisting of metal plates secured by means of screws 60 to blocks 61, which may be either integral with the top extension-rails 7 or separate blocks secured thereto in any suitable manner. The angularly-movable frame 54 is provided at one end with a weight 62, which tends to tilt up the trolley end of the frame and to cause the trolleys to mount the tracks 59. To tilt the frame 54 in the opposite direction or close the jaws, I have provided inclined blocks 63, secured to the under side of the tracks 53 and projecting under the sides of the frame 54. These blocks 63 are arranged in the path of the weight 62, so that the latter will be lifted thereupon at the moment the trolleys 56 are at the end 59' of the tracks 59 and tilt down the trolleys below said tracks. This operates to close the jaws formed by the two frames 52 and 54 upon the strip of paper therebetween, and on the return stroke the trolleys will travel against the under side of the tracks 59, carrying the strip of paper along until the trolleys reach the end 59'', when the weight 62 will tilt them up to again travel over the upper surfaces of the tracks 59 and simultaneously release the strip of paper represented by the dotted lines labeled 64 and full line 64'. The length of the reciprocal stroke of the gripper 51 on the tracks 53 is adjustable by means of the bolts 36, adjustable in the slots 35 of the platen. By moving them downward toward the pivotal end of the platen the ends of the rods 38, pivoted on the platen, will describe a shorter arc, and vice versa. Changing the length of stroke in this manner also necessitates changing the lengths of the track-plates 59 correspondingly, which, as previously described, are removably held upon the blocks 61 by means of screws 60. Other means than screws may of course be provided for holding these plates or tracks—such as, for instance, pockets in the sides of the blocks constructed to firmly hold the edges of the plates. These tracks may also be in the form of angle-brackets comprising both blocks 61 and tracks 59, mounted removably upon the top rails 7 in any suitable manner. The end of the gripper 51 which is opposite to the lugs 50 is also provided with a similar pair of pivot-lugs 65 near each corner of said end. A pair of rods 66 are each pivoted at one end to these lugs and have their other ends pivoted upon pivot-brackets 67, secured by screws 68 to a cutter 69, slidably held between a pair of bearing-plates 70, secured at each side of the frame to the upright cross-pieces 8, one of which is shown in Fig. 1. This cutter 69 being connected to the gripper 51 by means of the rods 66 reciprocates with said gripper. A second stationary cutter 71, coöperating with the cutter 69, is secured to a bracket 72 by means of screws 73, and the end of the paper 64 is fed between said cutters

between guide-rollers 74. Sufficient space is left between these rollers to permit the end of the paper to pass freely between them. It is obvious that these rollers may also be placed in close contact and serve as feed-rollers and one of said rollers provided with a pinion operated by a rack-bar pivoted or secured to the paper-feed mechanism, said pinion being loosely mounted on the shaft of the roller and provided with a pawl and ratchet, whereby the rollers would be rotated only on the forward stroke of the paper-feed mechanism or during the movement of the latter toward the cutter 69. 64' represents the paper-supply in the form of an ordinary roll of paper mounted on a shaft 75, journaled in bearing-brackets 76, secured by any suitable means to the two outer uprights 3.

The operation of my invention is as follows:  
 20 The pulley 18 is connected by means of a suitable belt with a suitable source of power. When said pulley is rotated, the gear 17 will be rotated through the pinion 28, and therewith the shaft 15, which will revolve the cranks 22 and 23 and the knuckle wheel or disk 16 and knuckle-gear 17. As shown in Fig. 1, the throw or crank movement of the knuckles to which rods 19 and 19' are pivoted is in the opposite direction to that of the cranks 22 and 23, reciprocating rods 24, and as the form 12 moves away from the bed 9 the inking-roller 21 will be moved toward the bed over the inking table or surface 31 and the type-face 32, the springs 27 keeping the inking-roller against the latter face as it passes over the angle formed by the two faces presented to it by the surface 31 and type-face 32. As the form moves or oscillates back toward the bed 9 the roller 21 is carried back upon the inking-surface 31, the combined movements of roller and form in opposite direction giving the roller with reference to the surfaces 31 and 32 a movement corresponding to the combined reciprocal strokes of the cranks 22 and 23 and the knuckles on disk 16 and gear 17 as to the length thereof.

Referring now to the paper-feed and paper-cutting mechanism actuated by the platen, starting from the position of the form shown in Fig. 1, as the platen moves downward, or toward the bed 9, the rods 38 will move the slide 40 outwardly away from the bed, and said slide will carry with it the gripper 51. At the moment the form is parallel with the bed or makes its type-impression upon the paper 64 upon said bed the trolleys upon the gripper will have reached the end 59' of the tracks 59 and drop down below said tracks through the action of the inclines 63 cooperating with the weight 62, previously described. Simultaneously therewith the cutter 69 will have been moved forward against the cutter 71 and cut off the end of the paper therebetween. On its upward or return movement away from the bed 9 the form will pull the

slide 40 toward the bed, which in turn will push the gripper 51, between which the paper is now held, in the direction of the cutters, and the latter being separated the end of the paper fed forward will be permitted to drop down between the cutters. Having completed its upward reciprocal movement, the form will have forced the trolleys to the end 69' of the tracks 59, when the paper will be released by the trolleys tipping to the upper surface of said tracks and opening the jaws formed by the two frames 52 and 54, and so on.

While I have illustrated the bed and paper-feed mechanism as occupying a horizontal position, it is obvious that same may be placed vertically by simply changing the direction of motion of the cutters at right angles to the plane of the paper, in which event the guide-rollers 74 may be dispensed with. In the latter arrangement the springs 27 might also be dispensed with and the force of gravity alone depended upon to hold the inking-roller against the inking and type surfaces of the form. The mechanism for moving the paper forward step by step may also be modified in numerous ways—as, for instance, a pair of feed-rollers at each edge of the strip of paper actuated by the slide 40 to rotate only in one direction, as previously referred to in connection with the rollers 74, and in numerous other ways—and while for the purpose of clearly illustrating my invention I have shown a comparatively large frame the parts may be arranged much more compactly.

As numerous modifications may be made in the details of structure embodying my invention by one skilled in the art, I do not confine my invention to the specific construction herein shown and described.

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

1. In a printing-machine, the combination with a frame of a platen adjustably fixed upon said frame, a combination type-form and inking-table consisting of a single member, hinged to move angularly with relation to said platen, means upon a single shaft for inking and rocking said form, means for feeding a web of paper step by step automatically between said form and platen, and a cutter actuated by said type-form and inking-table for cutting off the paper between each impression.

2. In a printing-machine, the combination with a frame of a stationary platen adjustably fixed upon said frame, a reciprocating paper-feed mechanism arranged to reciprocate in a plane parallel with the plane of said bed, reciprocating cutters also parallel with said bed, a combination type-form and inking-table hinged to said bed and having its type-surface movable angularly with relation thereto, a thrust-rod connection between said type-form and said paper-feed mechanism and reciprocating cutters, a driving-shaft and cranks on

said shaft arranged to throw in opposite directions, an inking-roller operatively connected with one of said cranks and said type-form being operatively connected with the other of said cranks.

3. In a printing-machine, the combination, of a stationary bed, a combination type-form and inking-table hinged to move angularly with relation to said bed, an inking-roller mounted to roll upon said type-form and inking-table, a rotatable shaft, a crank connection between the latter and said roller for reciprocating and rotating the roller upon the type-form and inking-table, means upon the type-form and said shaft for oscillating the type-form and inking-table against said roller, means for keeping said type-form and inking-table and roller constantly in contact with each other, a jointed slide having an angularly-movable paper-gripping mechanism thereon, means operatively connecting said type-form and inking-table and slide for changing the oscillating movement of the former into a reciprocating movement in the latter, and means for actuating said gripping mechanism.

4. In a printing-machine, the combination, of a stationary bed, an angularly-movable combination type-form and inking-table, having a surface for inking the roller and a type or impression surface substantially at right angles to each other, an inking-roller mounted to roll upon said type-form and inking-table, a rotatable shaft, a crank-and-thrust-rod connection between the latter and said roller for reciprocating the roller over said type-form, means upon the type-form and said shaft for

oscillating the type-form oppositely to said roller, a jointed slide movable parallel with said bed, a gripping-frame upon said slide, connecting-rods pivoted to said type-form and slide for actuating the latter by the former, a paper-cutter, and means for actuating the latter by said slide.

5. In a printing-machine, the combination, of a stationary bed, an angularly-movable type-form and inking-table formed into two wings occupying intersecting planes, one of said wings providing a roller-inking table and the other constituting a type or impression plate, an inking-roller movable over said table and plate, a pair of connecting-rods pivoted to said roller, a rotatable shaft, a pair of cranks on said shaft to which said rods are also pivoted, a pair of substantially similar rods pivoted to said type-form and inking-table and to a pair of cranks also on said shaft, arranged to throw oppositely to said first-mentioned cranks, a reciprocating slide arranged substantially parallel to said bed, a paper-gripping mechanism on said slide, a pair of rods pivoted to said slide and type-form and inking-table, and a paper-cutter arranged to move parallel to said bed and slide and connected with the latter to move therewith.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

REFEL STERN.

Witnesses:

ROBT. KEOTZ,  
D. A. ADE.