

No. 654,158.

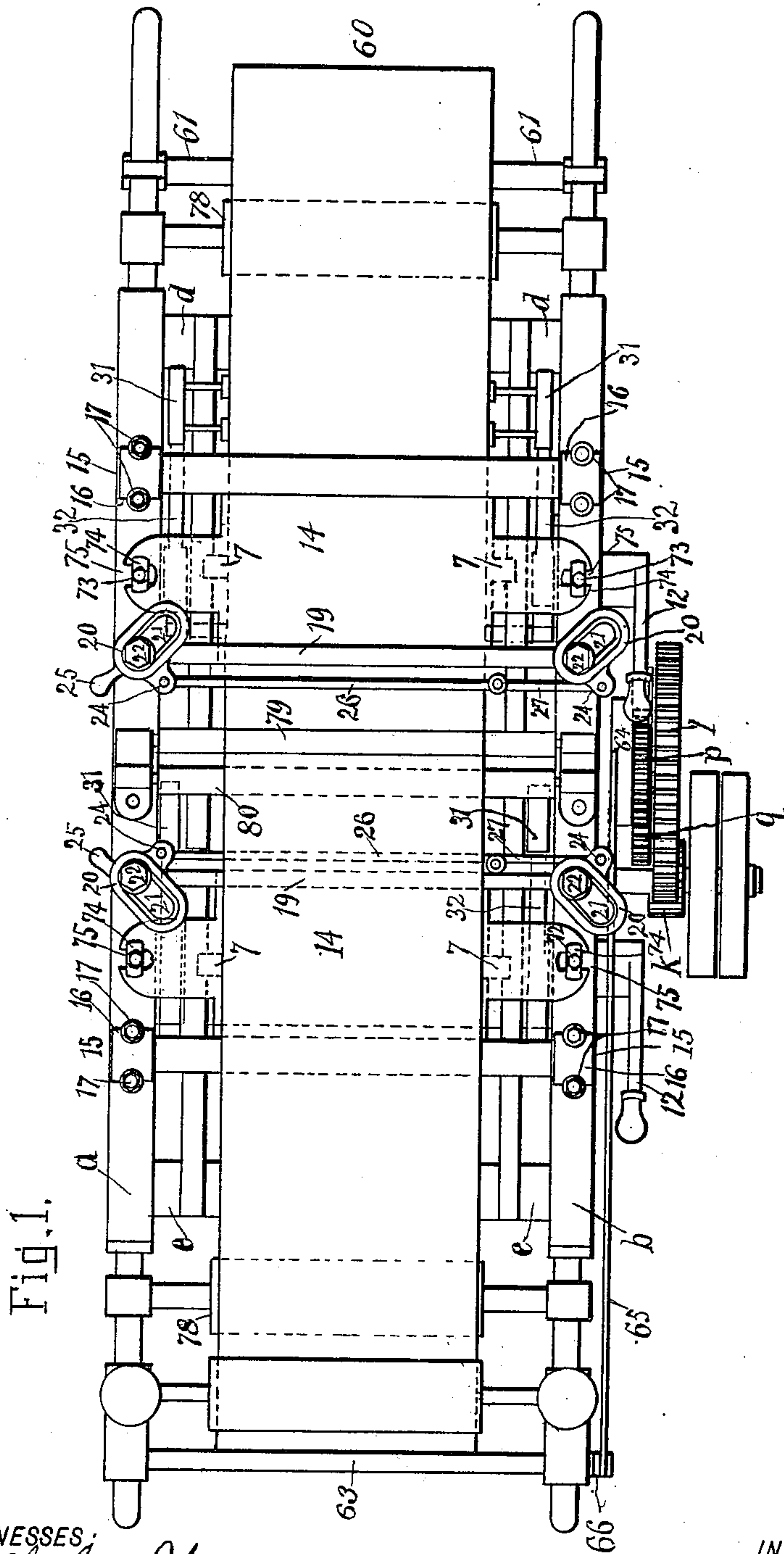
Patented July 24, 1900.

W. G. JOHNSTON.  
PRINTING PRESS.

(No Model.)

(Application filed Sept. 16, 1899.)

4 Sheets—Sheet 1.



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4 Sheets—Sheet 2.

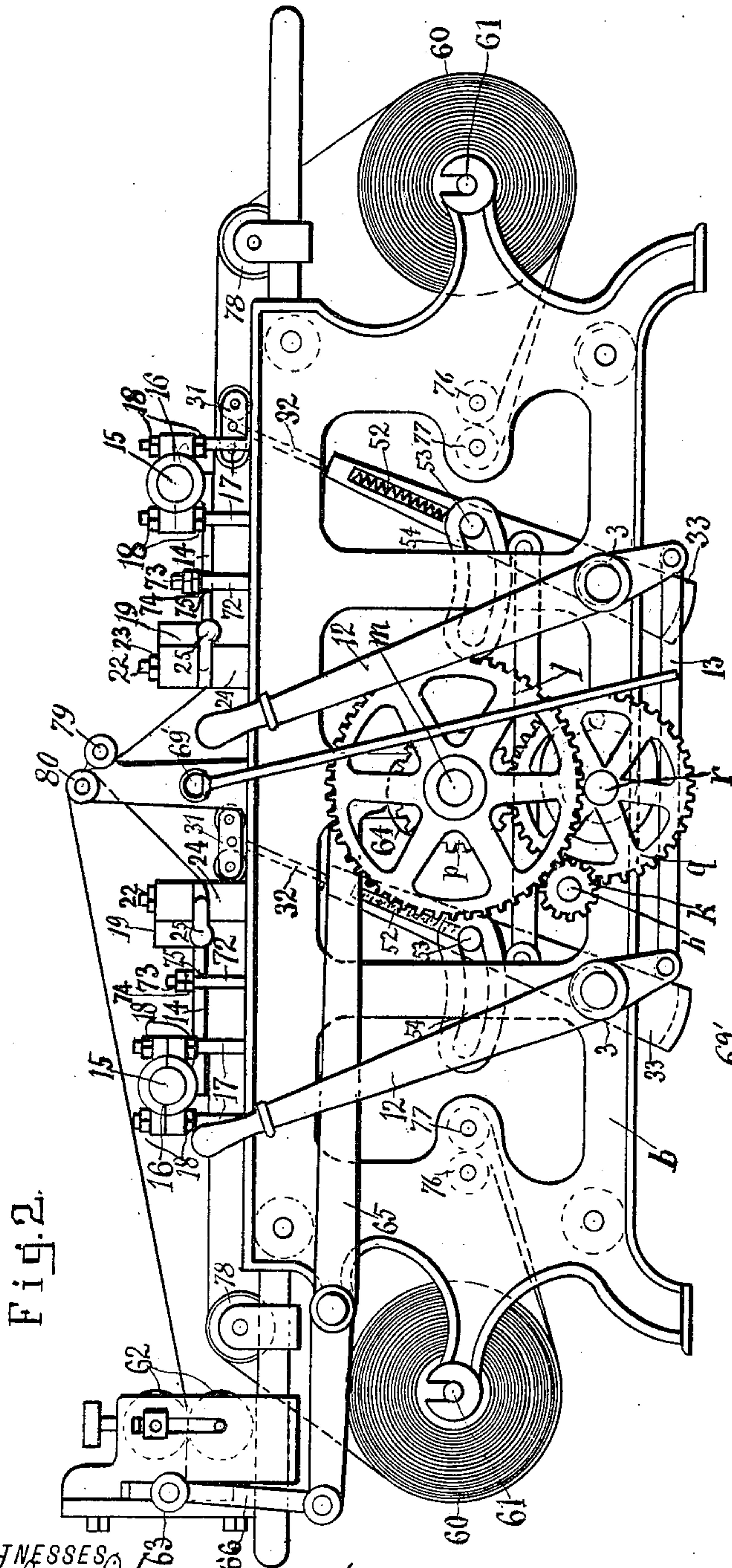


Fig. 2.

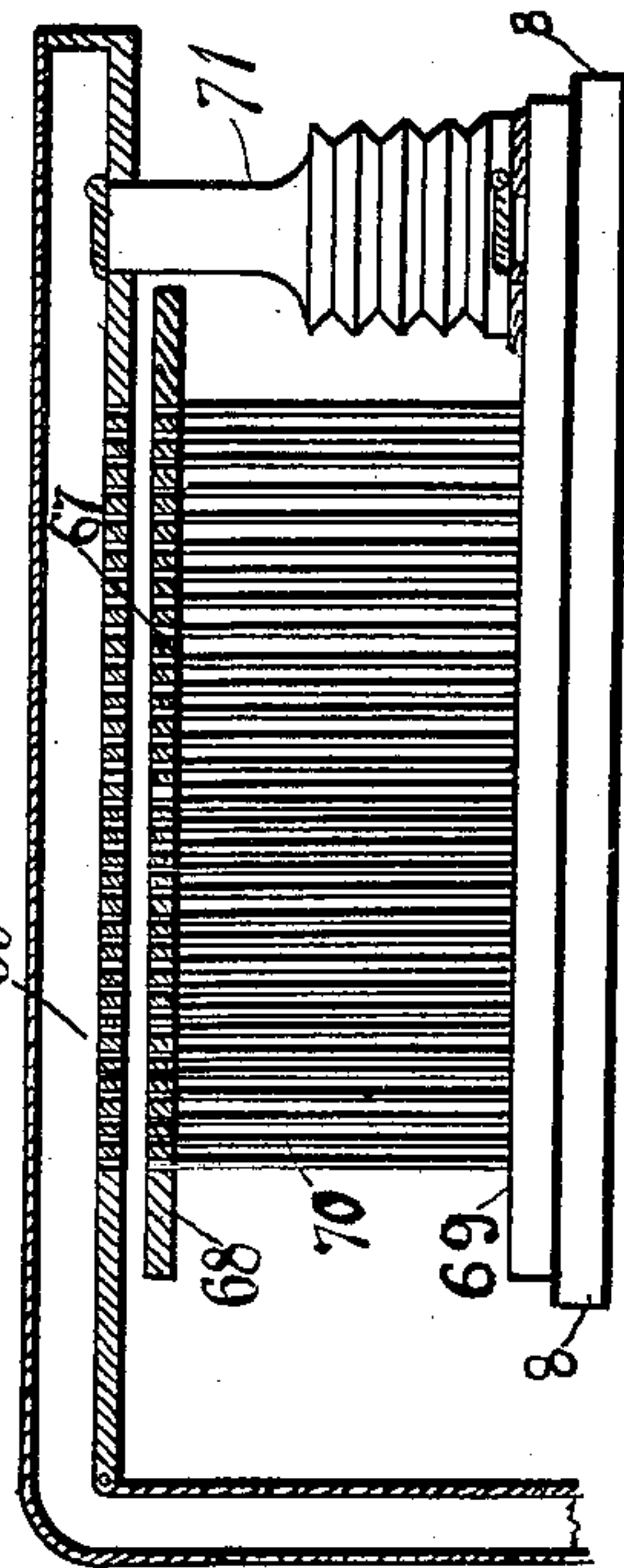


Fig. 10.

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**Patented July 24, 1900.**

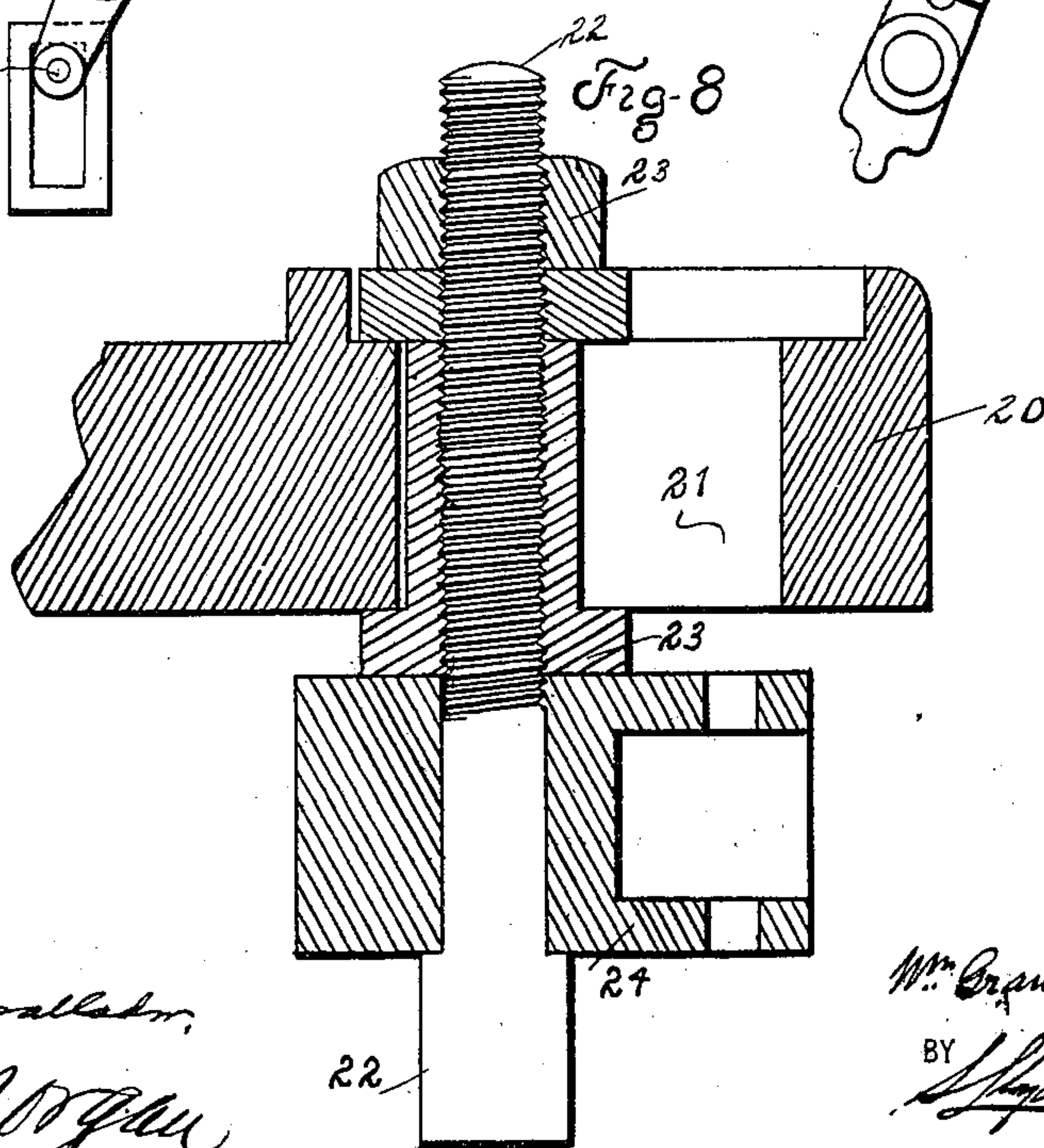
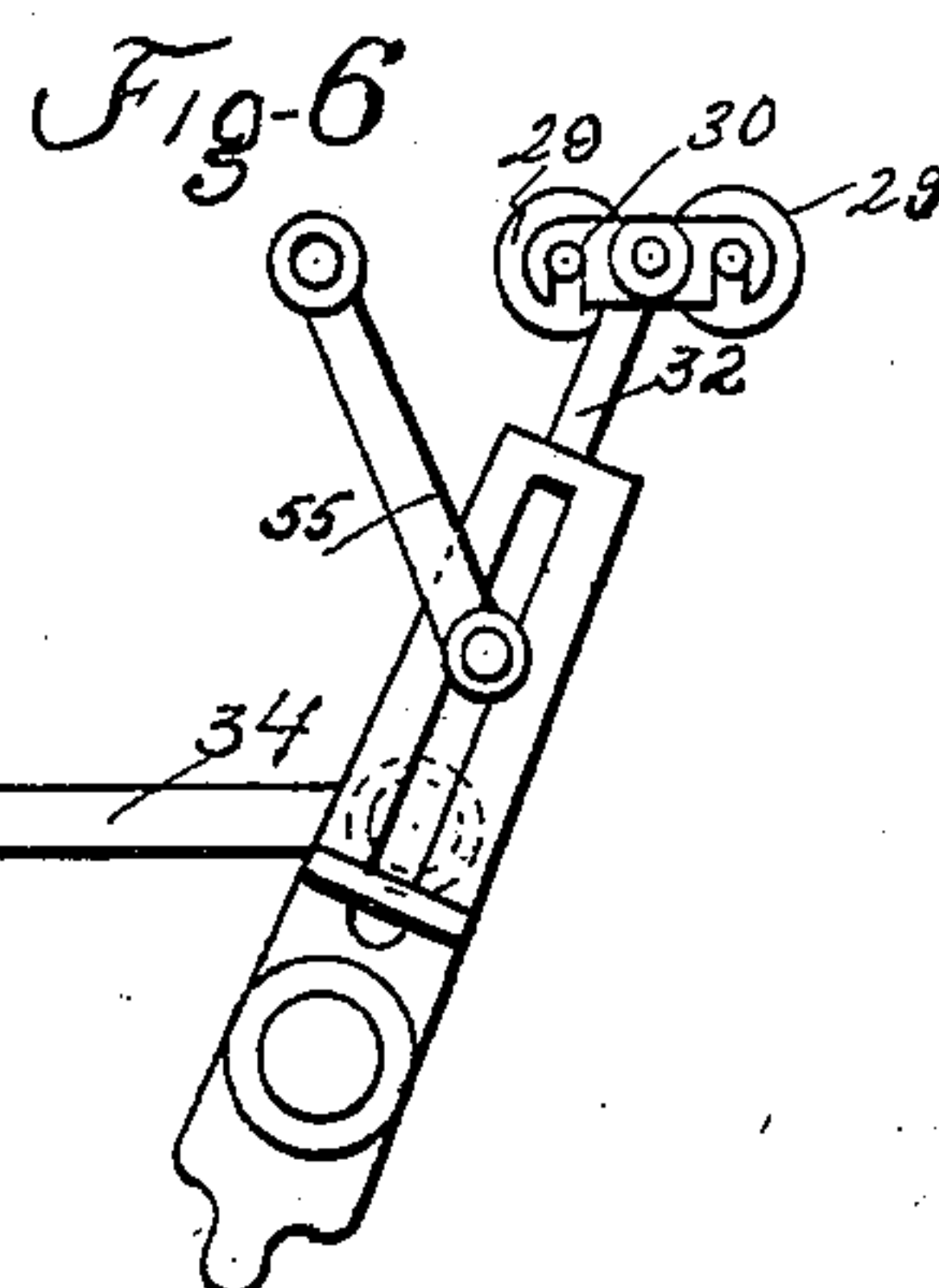
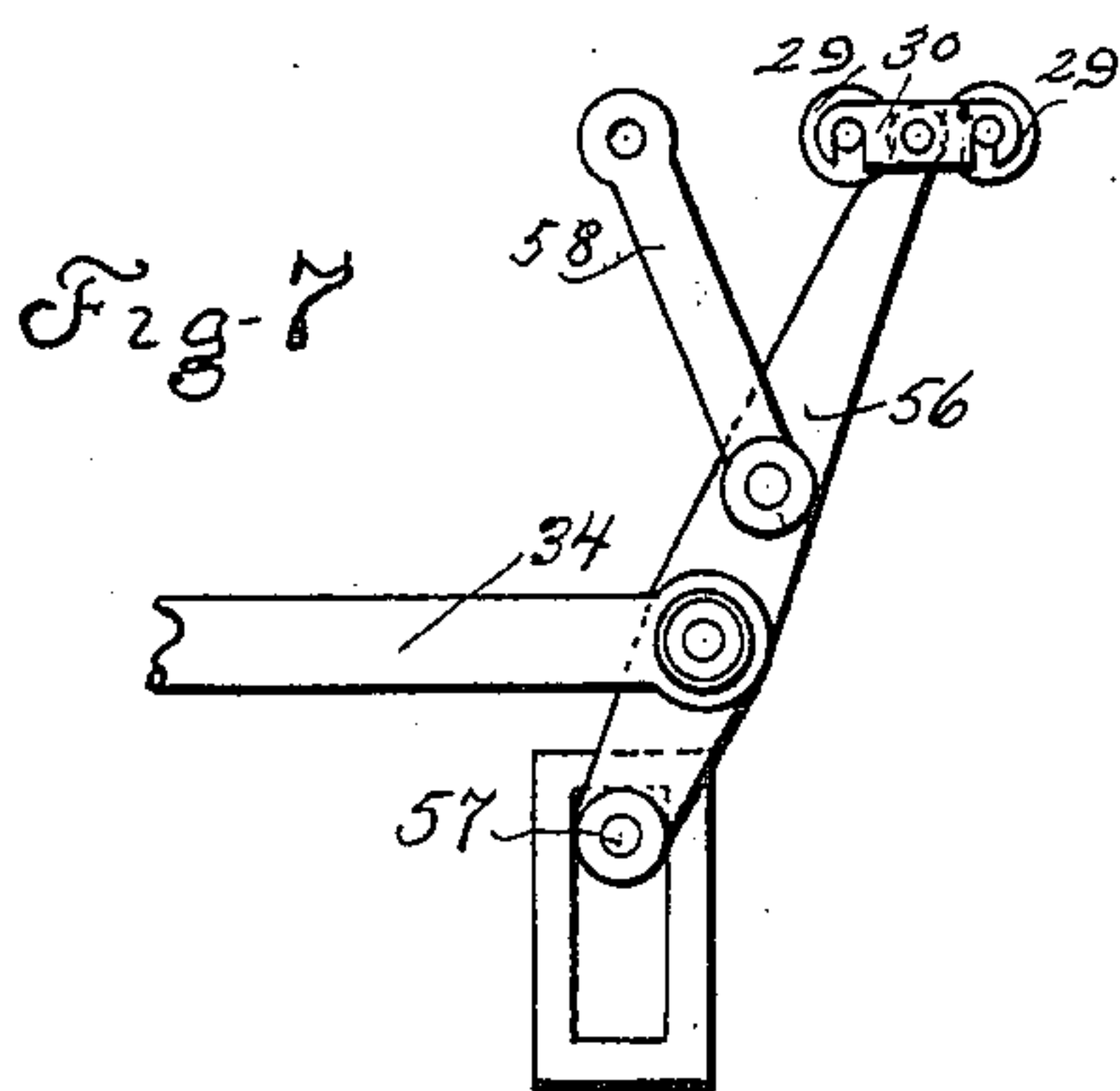
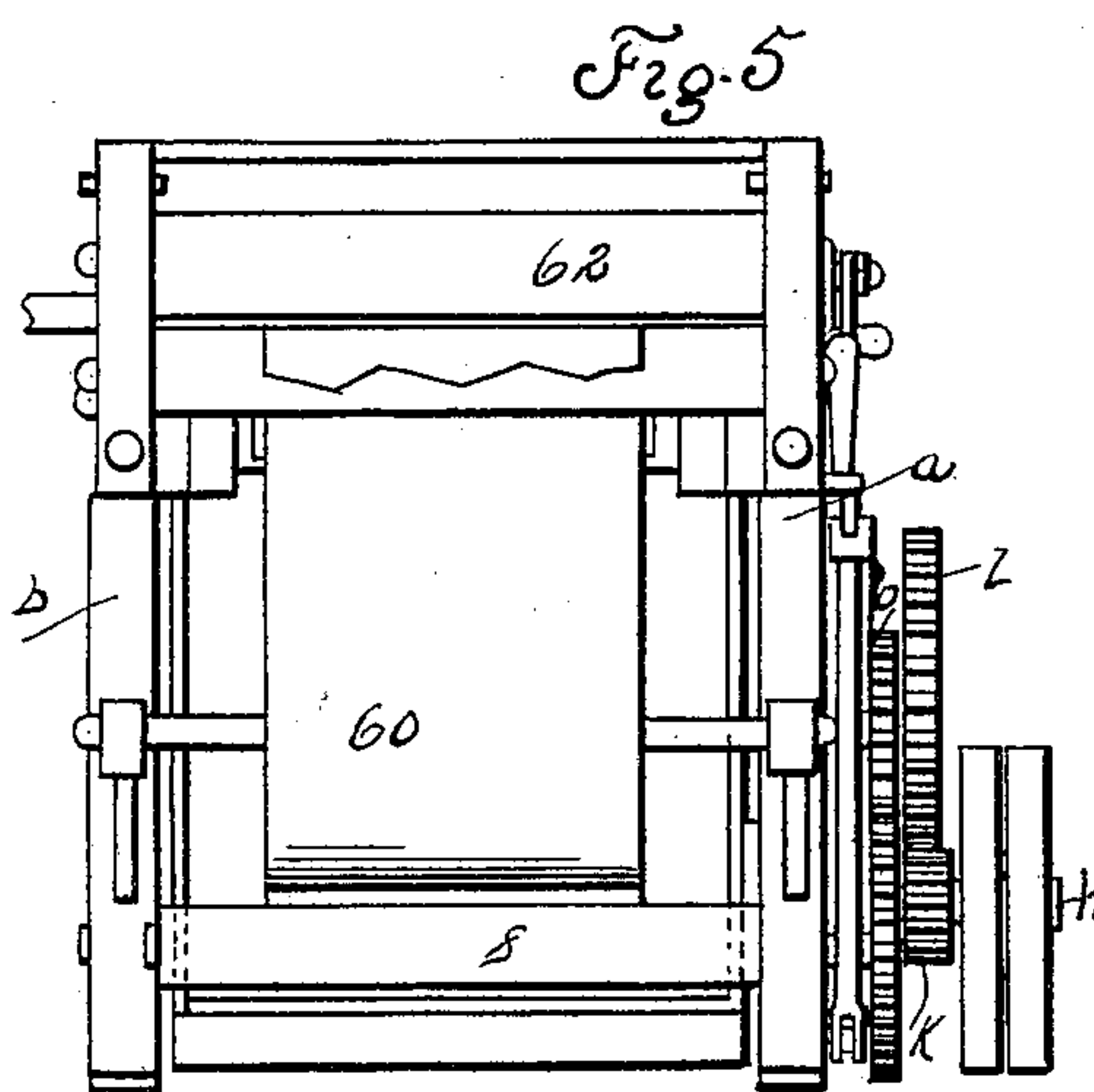
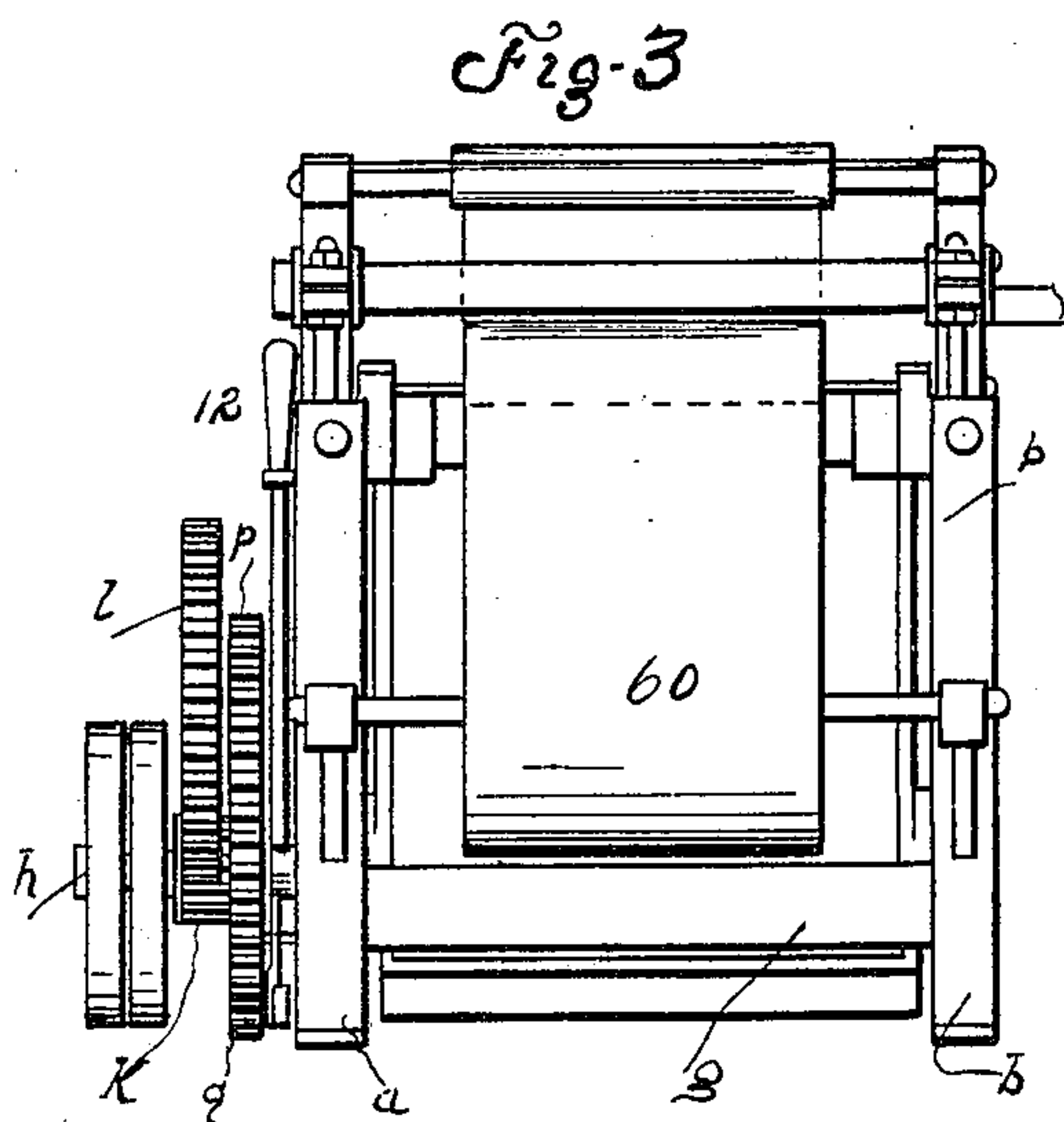
**W. G. JOHNSTON.**

**PRINTING PRESS.**

(Application filed Sept. 16, 1899.)

(No Model.)

**4 Sheets—Sheet 3.**



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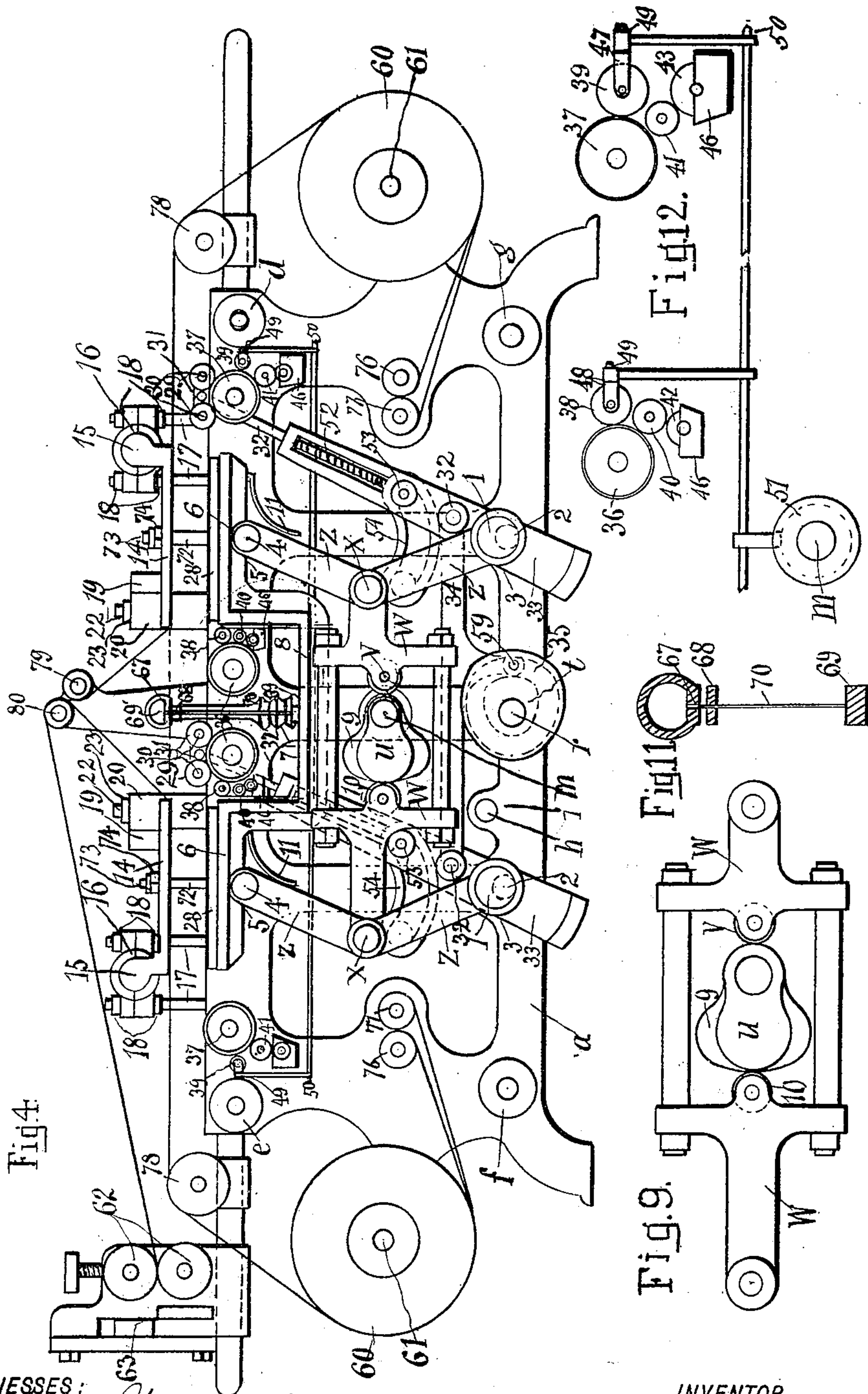
ATTORNEY.

W. G. JOHNSTON.  
PRINTING PRESS.

(Application filed Sept. 16, 1899.)

(No Model.)

4 Sheets—Sheet 4.



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# UNITED STATES PATENT OFFICE.

WILLIAM GRANT JOHNSTON, OF WOODBURY, NEW JERSEY, ASSIGNOR  
TO ROBERT SCHENCK CLYMER AND THE PRACTICAL MACHINE AND  
PRINTING COMPANY, OF SAME PLACE.

## PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 654,158, dated July 24, 1900.

Application filed September 16, 1899. Serial No. 730,788. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM GRANT JOHNSTON, a citizen of the United States, residing in the city of Woodbury, in the county of Gloucester and State of New Jersey, have invented a new and useful Improvement in Printing-Presses, of which the following is a specification.

The object of this invention is to improve the convenience of working and the perfection of product of the printing-press described and patented in United States Letters Patent No. 621,682 and dated March 21, 1899.

The nature of my improvement consists in a more efficient and convenient means of releasing and raising the platens to give access to the tympan and the printing-form, an improved construction of the ink-distributing apparatus, an improved arrangement of form-inking mechanism, an improved mechanism for producing and releasing the impression, and a device for making perforations in the printed web to register with the printing-forms.

The construction and operation of these improvements are hereinafter fully described, and shown in the accompanying drawings, in which—

Figure 1 shows a plan of a printing-press embodying this invention. Fig. 2 shows a front side elevation thereof. Fig. 3 shows a right end elevation thereof. Fig. 4 shows a section in the plane indicated by the dotted line *x x* in Fig. 1. Fig. 5 shows a left end elevation. Fig. 6 shows a modification of the mechanism for inking the form. Fig. 7 shows another modification of this part of the mechanism. Fig. 8 shows an enlarged vertical section of part of the mechanism for clamping and releasing the platens. Fig. 9 is an enlarged view of the cam and yoke for operating the impression-toggles. Figs. 10 and 11 are enlarged views of the perforating apparatus, and Fig. 12 is an enlarged partial view of the ink supplying and distributing apparatus.

Referring to the drawings, *a* and *b* represent the side frames of the press, connected and braced laterally by girths *d*, *e*, *f*, and *g*.

The press is driven by a rotary shaft *h*, sup-

ported in the bearings *i* and *j* in the frames *a* and *b* and carrying a pinion *k*, turning a spur-wheel *l* and a shaft *m* in bearings *n* and *o* in the frames *a* and *b*. On the shaft *m* there is fitted to turn with it a pinion *p*, turning in spur-wheel *q* and shaft *r* in bearings *s* and *t* in the frames *a* and *b* at one-half the velocity of the shaft *m* and pinion *p*, which shaft *r* operates the inking mechanism, as hereinafter described. On the shaft *m* is fitted a cam *u*, which turns with it and reciprocates a roller *v* and yoke *w* in horizontal direction. The ends of the yoke *w* are pivotally connected to the central pivots *x x* of the toggles *z z*. The pivots *x x* are reciprocated in curves with the yoke *w*, in one extreme of motion straightening the toggles *z z* into vertical position and in the other extreme flexing them into inclined position, thus raising and lowering their upper ends. The toggles *z z* are supported and turn at their lower ends upon shafts *1 1*, supported by eccentric journals *2 2* in bearings *3 3 3 3* in the frames *a* and *b*. The upper pivots *4* of the toggles *z z* are fitted in bearings *5 5* in the under side of the type-beds *6 6* and reciprocate them vertically between guides *7 7*, attached to the frames *a* and *b*.

The type-beds *6 6* are formed integrally with a connecting plate or bar *8* and preserve a horizontal position as they are raised and lowered by the operation of the toggles *z z*. The cam *u* operates on the yoke *w* and toggles *z z* to straighten them. A second cam *9* on the shaft *m* engages a roller *10*, secured to the yoke *w* and operates to flex them and lower the type-beds *6 6*. With slow-moving presses the cam *9* may be dispensed with by using springs *11 11* to press the toggles *z z* back from vertical position, so that gravitation may complete the returning or flexing motion; but in working at high speeds it requires the positive action of the cam *9* to insure the prompt descent of the type-beds *6 6*.

The shafts *1 1*, supporting the toggles *z z*, are provided with lever-handles *12 12*, connected pivotally with a link *13*, by which they move simultaneously, so that by turning on the journals *2 2 2 2* eccentric to the portions of the shaft supporting the toggles



$z z$  the toggles  $z z$  and the type-beds 6 6 can be raised and lowered at will of an attendant by pulling either of the lever-handles 12 12, thus providing the means for controlling the suspending and resuming of impressions without interrupting the other functions of the press.

Above each of the type-beds 6 6 is placed a platen 14 14. Upon an axis near to one edge of each there are formed journals 15 15, each fitted to turn in bearings 16, attached by bolts 17 17 to the frames  $a$  and  $b$ , provided with pairs of lock-nuts 18 18, by means of which the platens can be adjusted as to parallelism with the printing forms or types on the beds 6 6. In the platens 14 14 are slots 75, open at the sides of the platens, through which bolts 72, secured to the frames  $a$  and  $b$ , pass. On the bolts 72 are nuts 73, and below the nuts 73 are oblong washers 74, which when turned lengthwise of the slots 75 can pass through them, but when turned crosswise rest upon the platens 14 and hold them at that side against the upward stress in printing. Upon the opposite edges of the platens 14 14 are placed bars 19 19, retractably attached to the frames  $a$  and  $b$ . The bars 19 19 rest on the upper sides of the platens 14 14 and are provided with bosses 20 20 at the ends, having slots 21 21 therein diagonal to the length of the bars 19 19, but parallel with each other. Through each of these slots 21 21 is fitted a bolt 22, secured to the frames  $a$  and  $b$  and provided with nuts 23, by means of which the bars 19 19 can be adjusted in vertical direction at either end. Upon each bolt 22 is fitted a crank 24, provided with a lever-handle 25, by which it can be turned on the bolt 22. Links 26 and 27 connect the cranks 24 with the bar 19, so that when the handle 25 is turned in one direction the bar holds that edge of the platen, and when turned in the opposite direction the bar 19 is then clear of the platen, which can then be turned upon its journals 15 15 and the tympan adjusted and access be had to the printing-forms 28 or the type-beds 6 6.

The inking of the printing-forms 28 is effected by the rollers 29, having journals 30 in bearing-blocks 31. The bearing-blocks 31 are moved horizontally by levers 32, pivotally connected therewith and supported by rock-shafts 33 33, reciprocated by links 34, pivotally connected to the levers 32 32 and bearing a roller 59, engaged in and moved by a grooved cam 35 on the shaft  $r$ .

The rotation of the shaft  $r$  and cam 35 is, as hereinbefore stated, with one-half of the velocity of the shaft  $m$ , and the relative adjustment of the cam  $u$  on the shaft  $m$  and the adjustment and form of the cam 35 on the shaft  $r$  and engagement of the teeth of the pinion  $p$  and the spur-wheel  $q$ , connecting the shafts  $m$  and  $r$ , are such that the rollers 29 29 and the levers 32 32 are at the extremes of their motion at the time when the type-beds 6 6 are pressed upward by the toggles  $z z$ .

When in the extremes of their motion, the rollers 29 29 rest alternately on inking-cylinders 36 36, located centrally between the type-beds 6 6 and 37 37, located at the ends of the machine, and receive ink therefrom. Ink is supplied to and distributed upon the cylinders 36 36 and 37 37 by vibrating distributing-rollers 38 and 39 and ductor-rollers 40 and 41, alternately contacting therewith and with rollers 42 and 43 of inking-fountains 45 and 46. The vibrating distributing-rollers 38 and 39 are supported by their journals in frames 47 and 48, which are vibrated on pivots 49 and 50 by a cam 51 on the shaft  $m$ . The cam 51 is of such form and so adjusted relatively to the cam  $u$  on the shaft  $m$  and the cam 35 on the shaft  $r$  that the rollers 38 and 39 are only in contact with the cylinders 36 and 37, while the rollers 29 29 are not in contact therewith and are then distributing ink evenly on the cylinders 36 and 37 ready to be transferred to the rollers 29 29. By this construction of two ink-cylinders and double ink-distributing apparatus for each form a better perfecting of inking is attained with less risk of impairing the rollers by rapid working and heating during the fast running of the press.

In order to permit the bearing-blocks 31 to move in right line, the levers 32, pivotally connected therewith, are fitted to slide in the rock-shafts 33, connected therewith and pressed downwardly by springs 52, in addition to which rollers 53 are pivotally attached to the lower ends of the levers 32 and fitted to work in grooved curved guides 54, fixed to the frames  $a$  and  $b$ . The curves of the guides 54 are such that they produce a right-lined motion in the pivotal attachment of the bearing-blocks 31. This device effectually guards against the bouncing of the rollers 29 as they pass over the form and as they contact with the inking-cylinders 36 and 37. A modification of this mechanism for guiding the bearing-blocks 31 of the rollers 29 is shown in Fig. 6. In this construction links 55, pivotally attached at the upper ends of the frames  $a$  and  $b$  and at the lower ends to the levers 32, are substituted for the rollers 53 and guides 54 with a like effect. Another modification of this part of the mechanism is shown in Fig. 7. In this form the levers marked 56 are pivotally attached to the bearing-blocks 31 at the upper ends and at the lower ends to the guided pivots 57, susceptible of vertical reciprocating motion, and are guided by links 58, attached pivotally near to the center of the levers 56 and to the frames  $a$  and  $b$ . The levers 32 and 56 in these modified forms are reciprocated by the links 34 and cams 35.

The paper is supplied from rolls 60, supported on arbors 61, and passes around rollers 76 and 77, and thence over rollers 78 and under the platens 14 14, and thence over rollers 79 and 80 to the feeding-rollers 62, which draw it intermittently through the press and discharge the two webs of paper together through the cutter 63, operated by a cam 64



on the shaft *m* by a lever 65 and link 66, thus severing the printed webs into sheets. The friction of the webs of paper with the rolls 60, where they move in opposite direction after passing the rollers 76 and 77, serves to

5 produce a proper tension to deliver the paper smoothly to the platens 14 and prevent the free unwinding of the paper from the rolls 60. When it is desired to perforate the printed  
10 sheets, as in printing checks, check-books, sales-memorandum books, and like papers, a perforated die 67 is placed across the machine between the platens 14 and 14 and secured by the ends to the frames *a* and *b*. Below the die  
15 67 and parallel therewith is a stripper 68, secured to it, having perforations registering with those in the die 67 and stripper 68. The web of paper is passed in the direction of the dotted line between the platens 14 14, under  
20 the die 67, and above the stripper 68 instead of passing around the rollers 79 and 80, (and may have a second series of impressions printed upon it,) after passing the perforating-dies, to feed-rollers 62, it being understood that in  
25 this adjustment of the press the paper is supplied from only the roll at the end farthest from the feeding-rolls and cutter. Below the stripper 68 is placed a bar 69, bearing punches  
30 70, which reciprocate through the apertures in the stripper 68 and enter the perforations in the die 67, piercing holes through the web of paper and forcing the parts cut out through the die 67 into chamber 69, from which they are removed by an air-blast from a bellows 71  
35 to such position that they may not fall into the inking apparatus or on the forms. The bar 69, punches 70, and bellows 71 are attached to the bar 8 and are reciprocated therewith, as shown in Fig. 4.

40 The arrangement of paper-feeding mechanism in this press is substantially the same as that described and shown in the Letters Patent No. 621,682, hereinbefore referred to, and the modifications therein disclosed not being  
45 a part of the present invention for this reason are not more fully described than is requisite for an understanding of the novel features herein described as supplementing that invention.

50 It is obvious that the number of type-beds and platens and the mechanisms for operating the impressions and inking can be indefinitely increased, so that more than two webs of paper can be fed and triplicate or higher  
55 multiples of copies printed simultaneously as may be required without departing from the scope of the invention. These are useful for such services as the manufacture of checks and sales-slips requiring multiple memoranda  
60 and vouchers.

This improved press is specially valuable for the reason that the several printings can be made with greater celerity and at less cost and are necessarily in proper register with  
65 each other, and when used with interleaved transfer-papers will always exhibit in all the copies the proper relation of the written with

the printed matter with a degree of certainty and cheapness of production not heretofore obtained.

Having described my invention, what I claim is—

1. In a printing-press for simultaneously printing more than one sheet or web in definite relation with each other, a press-frame, a series of type-beds rigidly connected with each other, a series of platens superposed upon the frame over said type-beds, means of simultaneously reciprocating said beds toward the platens, and means for separately adjusting each platen in relation to the opposed type-bed, in combination with a pivotal attachment of one side of each platen to the press-frame and a cross-bar and cranks and connecting-links for releasing and engaging the opposite side of each platen from the frame, without change of the adjustment of the platen relatively to the opposed type-bed as and for the purpose set forth.

2. In a multiple bed-and-platen printing-press, two or more toggles and a reciprocating link attached to the central pivot of said toggles, a roller on said link and a cam to operate said roller and straighten said toggles, in combination with a second cam and a second roller attached to said link to flex said toggles substantially as set forth.

3. In a printing-press of the type described, the combination of a plurality of rigidly-connected type-beds, toggles connected therewith, and platens, arranged in line to print upon one or more webs simultaneously, inking-cylinders located intermediately and at the ends of said type-beds, and platens in combination with reciprocating levers, roller-bearings pivotally attached to said levers, and rollers arranged to alternately ink the printing-form and rest upon the inking-cylinders, and a guiding mechanism arranged to direct the pivots of said roller-bearings in right lines, as and for the purpose set forth.

4. In a printing-press of the type described, having a plurality of beds and platens arranged to print simultaneously, a perforating-die and a stripper, and punches therefor located between the platens and type-beds, and means of reciprocating the punches during the printing operation as set forth.

5. In a printing-press of the type described, a frame, bolts attached to said frame, and platens having open-ended slots therein, embracing said bolts, and nuts upon said bolts arranged to adjust and hold said platens, in combination with oblong washers on said bolts, adapted to turn in one position to hold said platens down against the force of impression, and in the other to pass through said slots, without changing the adjustment of said nuts, substantially as set forth.

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Witnesses:

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