

No. 721,236.

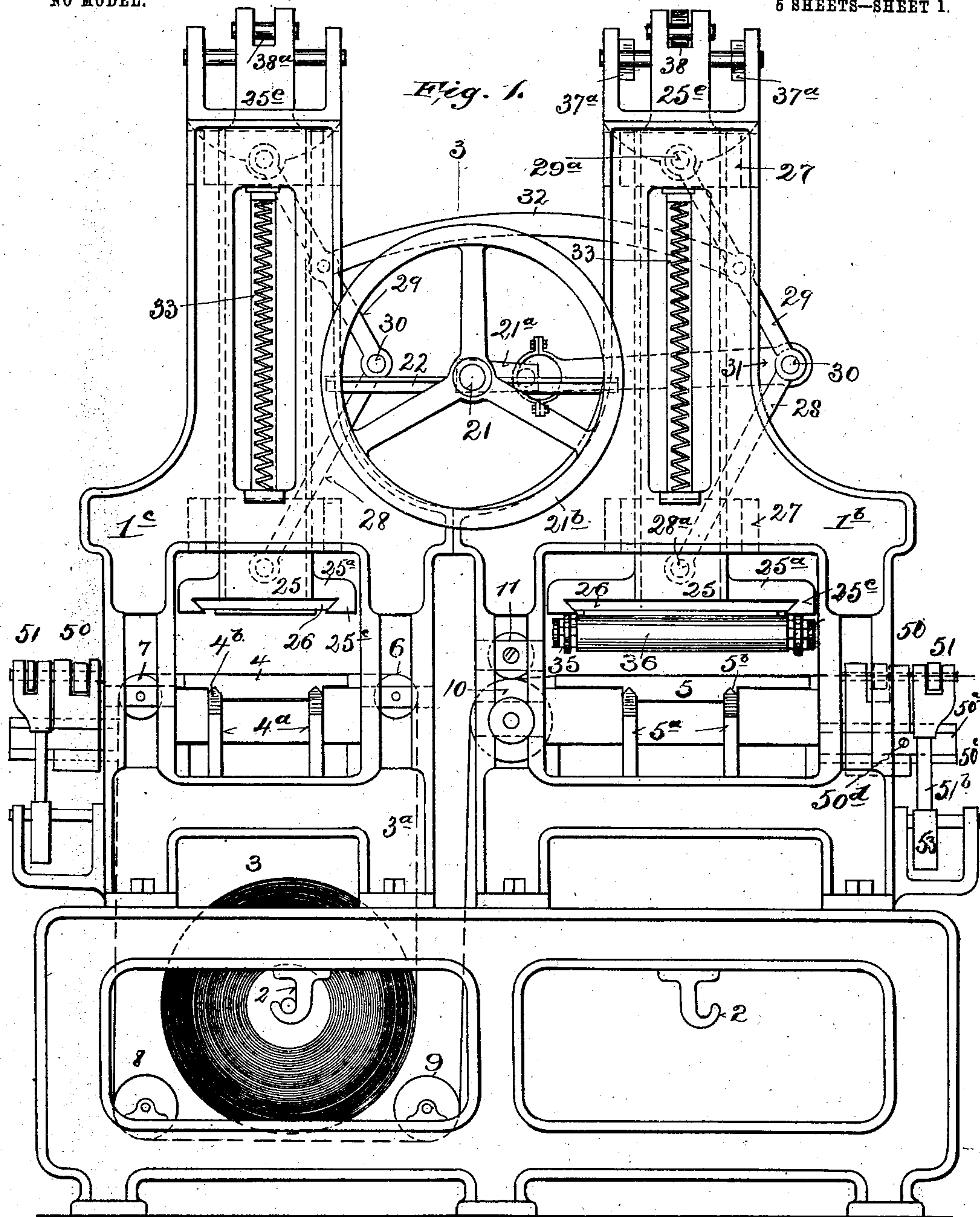
PATENTED FEB. 24, 1903.

J. H. REINHARDT.
PRINTING MACHINE.

APPLICATION FILED JUNE 22, 1901.

NO MODEL.

5 SHEETS—SHEET 1.



WITNESSES:
M. Manning
C. Herbrandt

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5 SHEETS—SHEET 2.

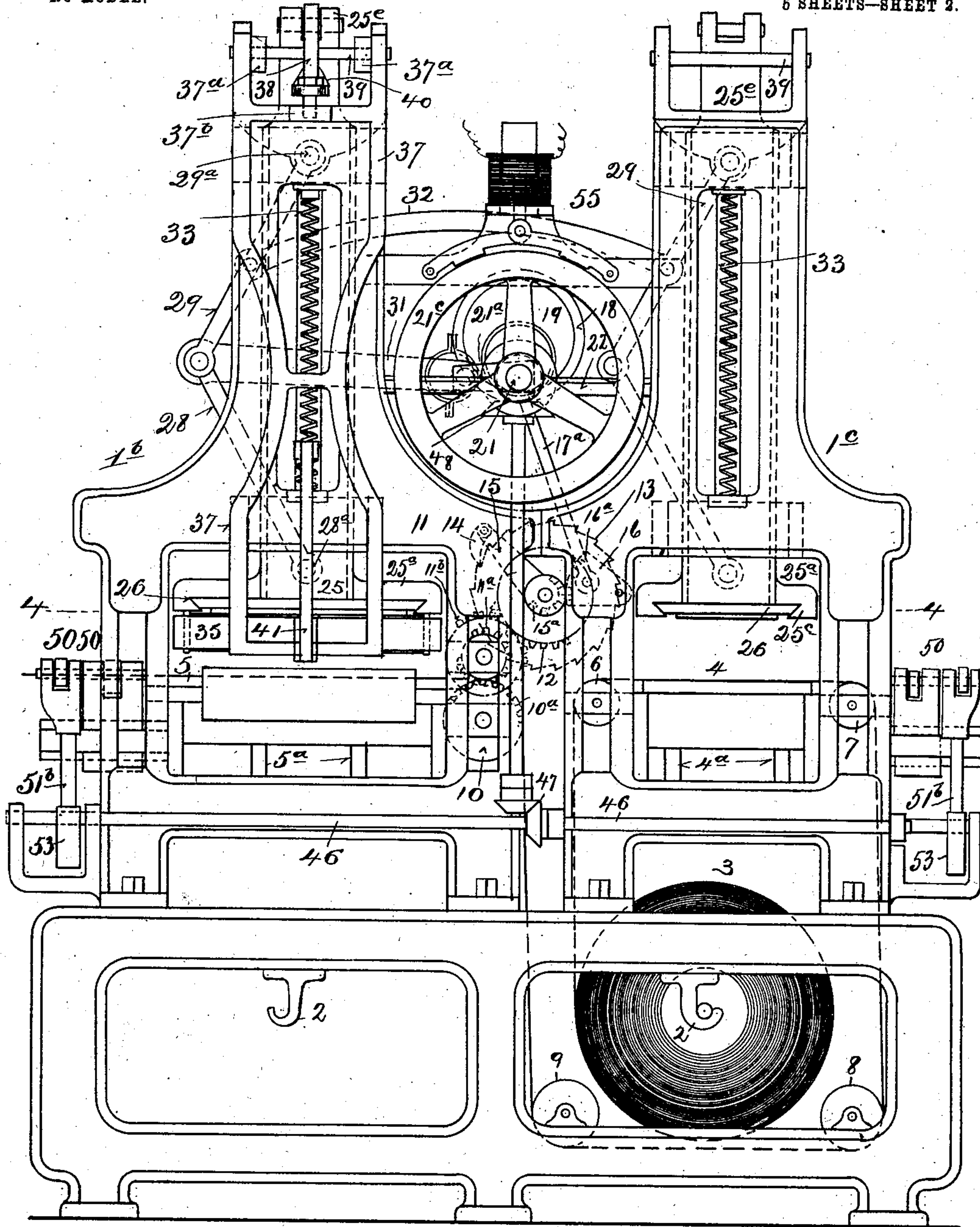


Fig. 2.

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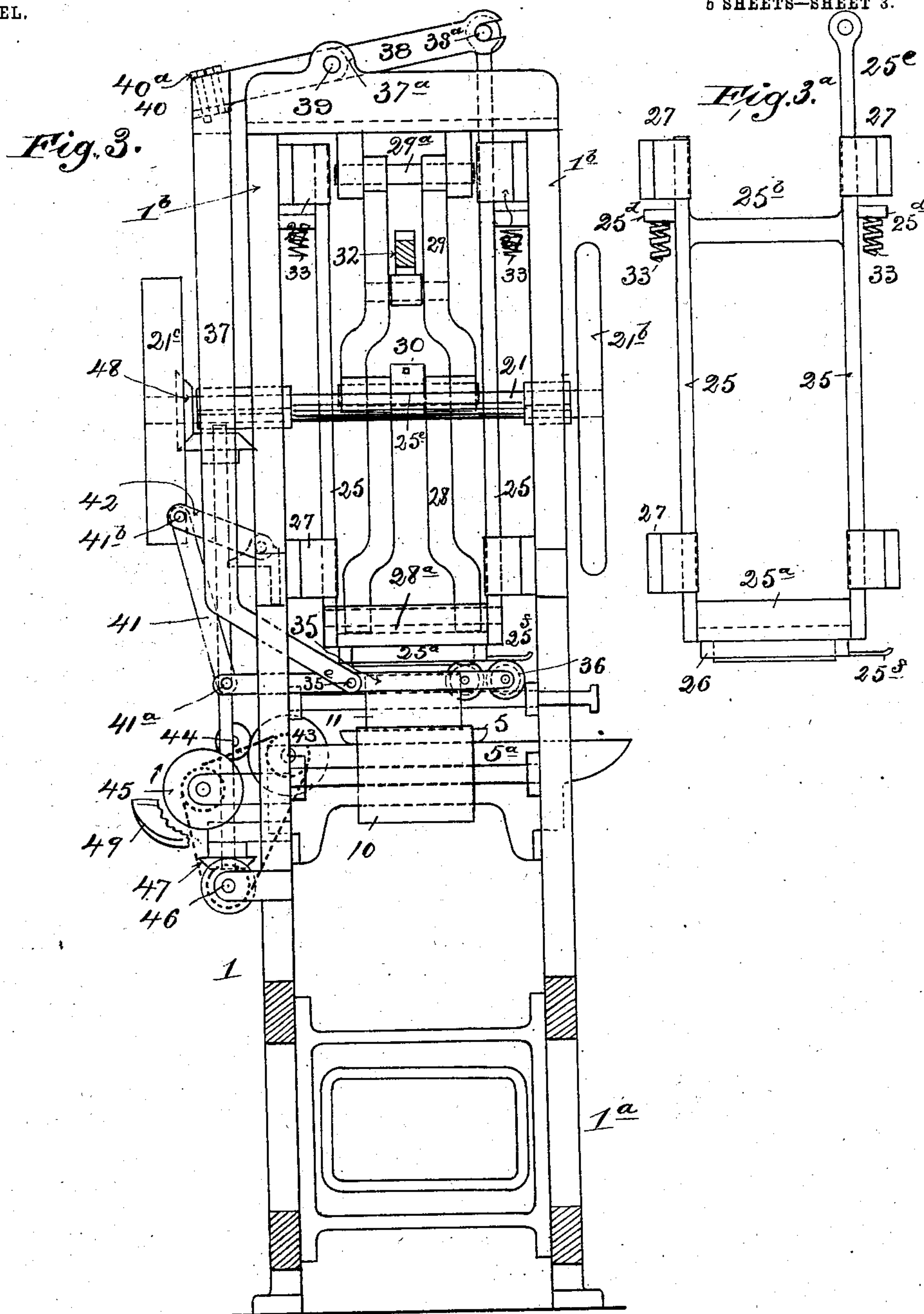
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5 SHEETS—SHEET 3.



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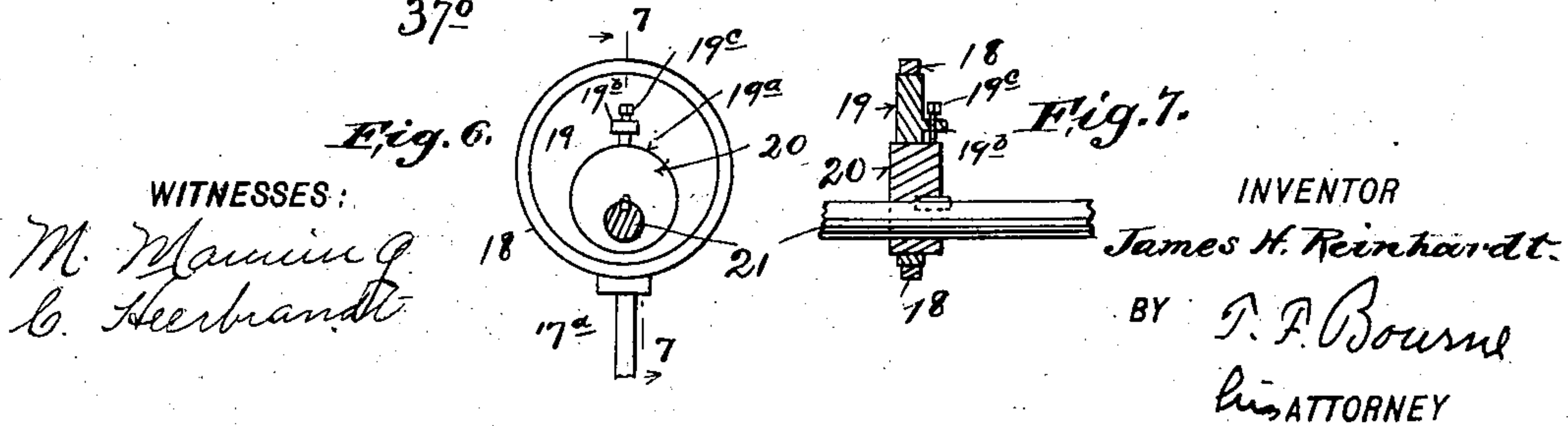
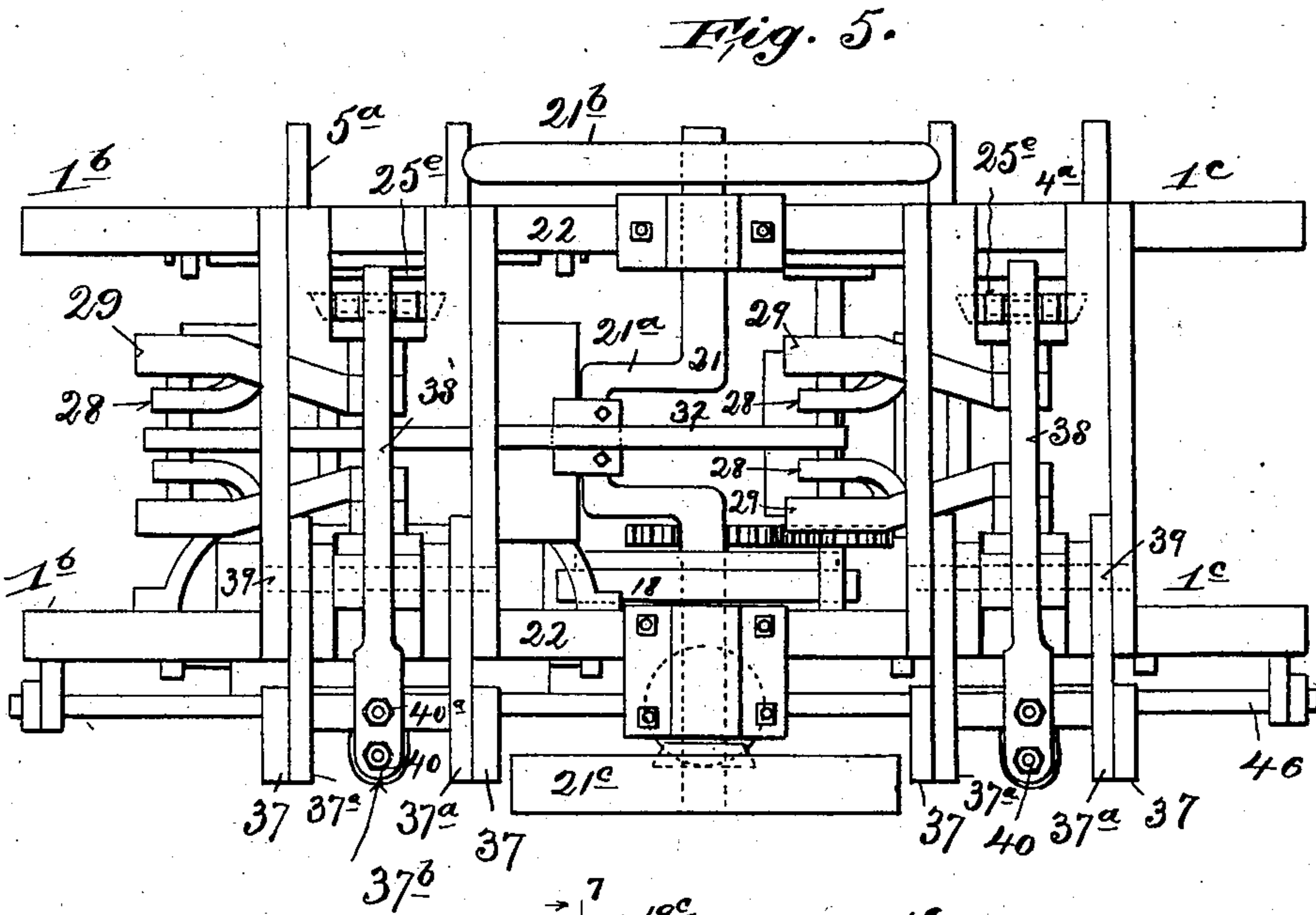
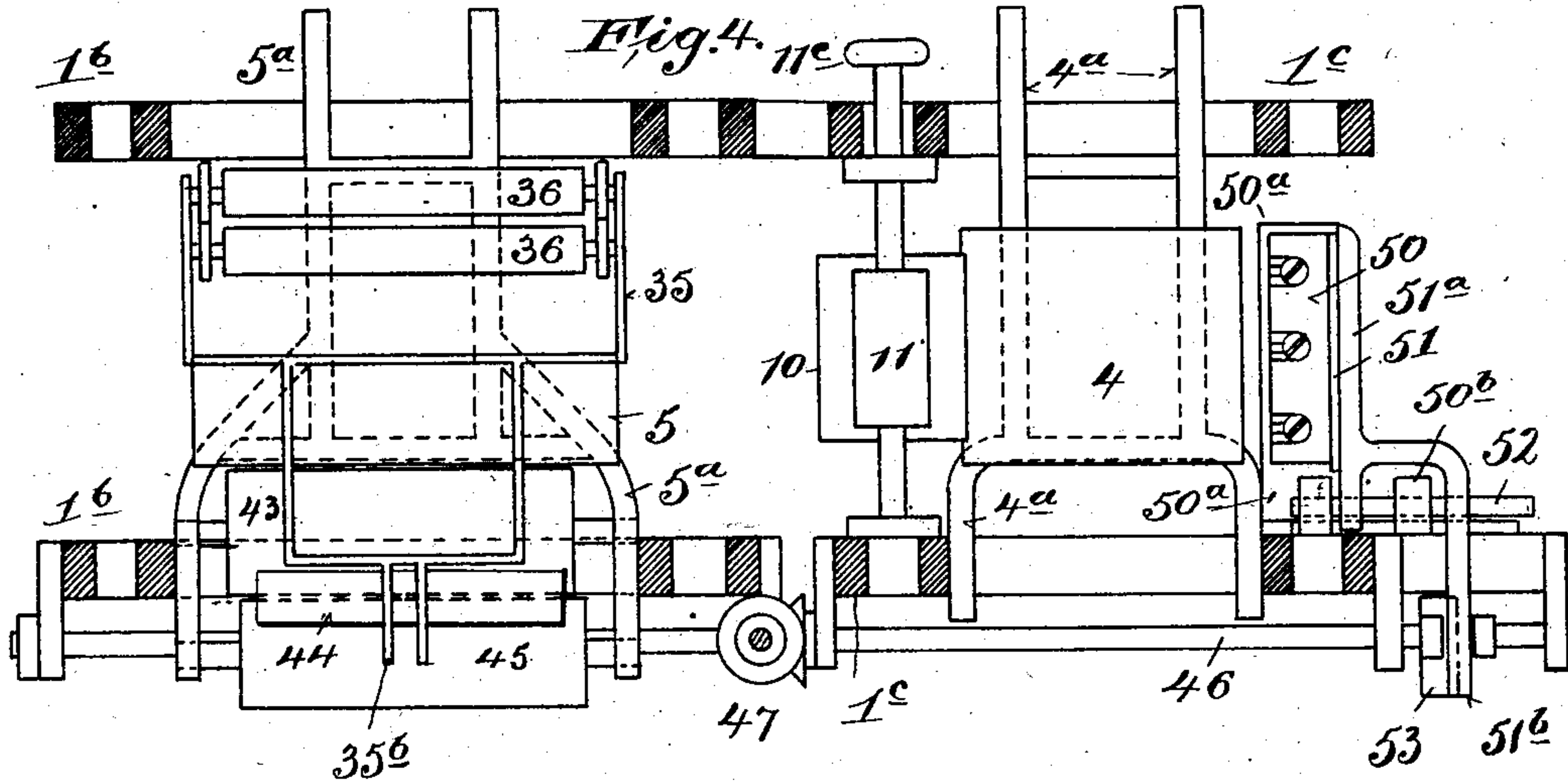
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5 SHEETS—SHEET 4.



No. 721,236.

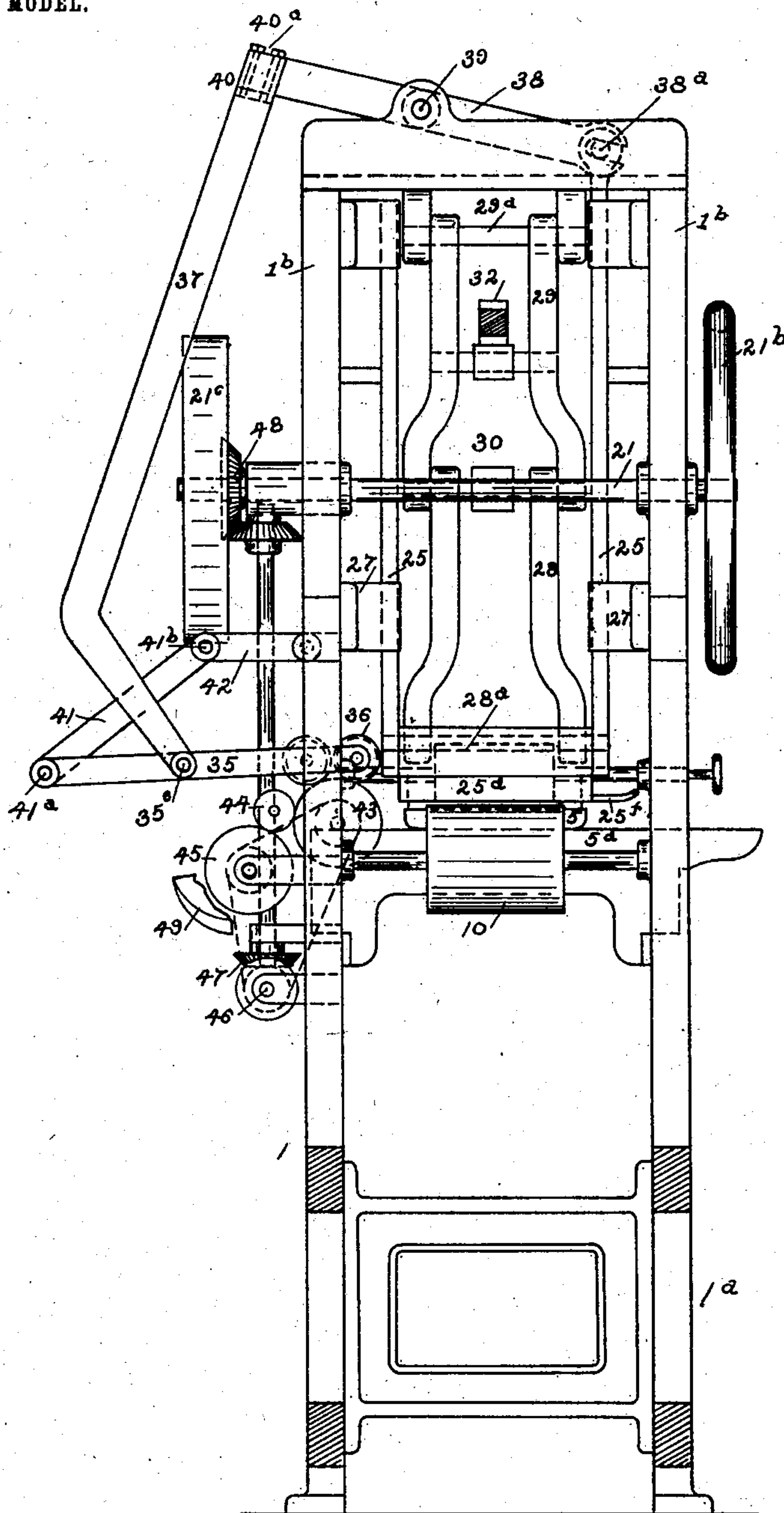
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APPLICATION FILED JUNE 22, 1901.

NO MODEL.

5 SHEETS—SHEET 6.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JAMES H. REINHARDT, OF EAST ORANGE, NEW JERSEY.

PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 721,236, dated February 24, 1903.

Application filed June 22, 1901. Serial No. 65,657. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. REINHARDT, a citizen of the United States, and a resident of East Orange, Essex county, State of New Jersey, have invented certain new and useful Improvements in Printing-Machines, of which the following is a specification.

The object of my invention is to provide a printing machine or press capable of printing with rapidity upon one or both sides of paper supplied from a roll; and to this end the invention consists in the novel details of improvement that will be more fully hereinafter set forth and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming part hereof, wherein—

Figure 1 is a front elevation of a machine embodying my invention, one set of the inking devices being removed for the sake of clearness of illustration. Fig. 2 is a similar view looking at the back of the machine. Fig. 3 is a vertical section on the plane of the line 3 3 in Fig. 1 looking from the left. Fig. 3^a is a detail view of the type-carrier. Fig. 4 is a horizontal section substantially on the plane of the line 4 4 in Fig. 2, parts below being omitted for the sake of clearness. Fig. 5 is a plan view, parts being removed. Fig. 6 is a detail view of the eccentrics used to feed the paper from the roll. Fig. 7 is a cross-section thereof; and Fig. 8 is a view similar to Fig. 3, showing the inking-rollers and their operating parts in a different position.

Similar numerals of reference indicate corresponding parts in the several views.

In the drawings the numeral 1 indicates generally the main frame of the machine, which may be of suitable construction and which is shown provided with a base portion 1^a and with uprights 1^b 1^c, shown, respectively, arranged in pairs, providing a space between them for the operating parts, the uprights also having lateral openings. The frame 1 is provided with suitable hangers or bearings 2 to support the journals of a paper-roll 3, there being provision for two of such rolls to be supported, as indicated in Figs. 1 and 2. Above the paper-roll are platens 4 5, over which the strip of paper from the roll is adapted to travel to there receive the impressions from the type. Suitable guides or rollers are provided to properly conduct the paper from the roll over

one of the platens or over both simultaneously. To enable the paper to be drawn over both platens, so as to print on opposite sides of the paper as it passes through the machine, I have shown rollers 6 7 on opposite sides of platen 4 and rollers 8 9 beneath the same and also beneath the paper-roll 3 and on opposite sides of the latter and a roll 10 adjacent to the platen 5, at the inner side thereof, whereby the strip of paper 3^a from the roll 3 can be carried from one edge thereof first over the roller 6, then across platen 4, over roller 7, and under rollers 8 and 9, and likewise under the paper-roll 3, thence up over roll 10, and across the platen 5. It will be observed that in its passage the strip 3^a will first have one side presented upwardly over platen 4, and its opposite side will be presented upwardly over platen 5, and thus as the strip 3^a travels through the machine both sides will be presented in printing position to receive impressions, as hereinafter explained. The roller 10 with a companion roller 11 may serve as the feeding-rollers to draw the paper strip from the roll 3 and feed it through the machine. The feeding-rollers will be operated to feed the desired amount of paper at each impression of the type by suitable means, and the means I have shown for the purpose comprises devices that permit ready adjustment for the purpose of feeding the paper strip 3^a more or less at each impression of the type, as more clearly shown in Figs. 2, 6, and 7. For this purpose the rollers 10 and 11 are geared together by suitable pinions or gears 10^a 11^a, and to the roller 11 is also connected a gear 11^b, which meshes with a gear 12, connected with a ratchet-wheel 13, supported in suitable bearings on the main frame, 14 being a pawl carried by an arm 15, loosely hung concentric with the ratchet 13, as on the shaft of said ratchet, and operated by a rocking arm 16, suitably journaled on the main frame, the arms 15 and 16 being preferably geared together to give the arm 15 an increased motion over that of the arm 16. For this latter purpose the arm 16 is shown provided with spur-teeth 16^a, that mesh with spur-teeth 15^a, connected with arm 15. The arm 16 is oscillated or rocked by means of an eccentric or cam on the main shaft of the machine, arranged as follows: A rod 17, pivotally

connected with the arm 16, is connected with a strap 18, that surrounds an eccentric disk 19, that is provided with an eccentrically-disposed opening 19^a, in which an eccentric 20 is located and adapted to be adjusted circularly, and the eccentric 20 is secured on the main shaft 21. The latter is journaled in suitable bearings in the main frame, being shown supported on bars 22, extending between the corresponding pairs of uprights 1^b 1^c. The eccentrics 19 and 20 are to be locked together for operative or rotative purposes, which may be done by suitable means, and for this purpose in Figs. 6 and 7 I have shown the eccentric 19 as provided with an extension 19^b, receiving a set-screw 19^c, adapted to bear upon the extending surface of eccentric 20. In operation the eccentrics 19 and 20 act as one in conjunction with strap 18 to oscillate the arm 16; but to regulate the throw of arm 16 the eccentrics 19 and 20 can be adjusted in a circular direction relatively to each other, as by loosening the screw 19^c and rotating the eccentric 19 around the eccentric 20 the desired amount and then locking them together again.

From the foregoing it will be understood that as shaft 21 makes a completed rotation the arm 15 through the devices described above will be rocked back and forth, and thereby the feed-rollers 10 11 will be operated to feed the paper the desired amount for each impression, it also being understood that an impression is made, as hereinafter explained, for each complete rotation of shaft 21. By the means described the extent of feed of the paper strip 3^a for each impression can be regulated by the adjustment of the eccentrics 19 and 20 relatively to each other. The shaft 21 may have a hand-wheel 21^b and a fly-wheel 21^c, and the roller 11 may have a hand-wheel 11^c to assist in adjusting the paper over the platens. Means for cutting the paper strip into suitable lengths after it is printed, as hereinafter explained, are employed.

The platens 4 5 are preferably made removable, so as to be slid in and out when desired, and they are shown respectively supported upon suitable guides 4^a 5^a, shown in the form of skeleton frames, supported in the uprights 1^c 1^b, respectively, the forward edges of which guides preferably extend beyond the uprights in line with the lateral front openings to form convenient ledges for the platens to rest upon in the forward adjustment. The platens 4 5 are shown supported upon their guides 4^a 5^a by dovetail slideways 4^b 5^b, respectively.

As I have shown two platens, there are also provided two type-carriers adapted to coact therewith, respectively, and as both type-carriers are substantially alike the description of one will suffice for both. The type-carriers comprise opposite bars 25, connected together at 25^a 25^b, the parts 25^a at the lower ends of the bars 25 comprising the holding and supporting means for the type-chase 26,

which may be secured thereto in any suitable manner. I have shown the supports 25 as provided with dovetail or undercut depending arms 25^c, adapted to receive the correspondingly-shaped sides of the chase 26. The bars 25 are guided to reciprocate vertically in the space between the respective uprights 1^b 1^c, and these uprights are provided with guides 27 for the bars 25. The type holders or carriers 25 25^a are located, respectively, above the platens 4 5, so as to impress the type upon the paper strip 3^a, passing thereover. For reciprocating the type-carriers I have provided toggle-levers 28 29, pivotally connected together at 30, the lever 28 at its lower end being pivotally connected with the type-carrier, as at 28^a, and the lever 29 being pivotally connected at its upper end by a support with the main frame, as at 29^a. One pair of toggle-levers is pivotally connected by a link 31 with the crank 21^a of the main shaft 21, and the arrangement of the parts is such that for each complete rotation of shaft 21 the type-carrier will be moved downwardly to cause an impression to be made and upwardly to the highest position, or, in other words, when the crank 21 makes one half-rotation from the position shown in Fig. 1 the toggle-levers will be drawn in or straightened, and thereby the type-carrier will be moved down to the printing position, and when said crank makes the next half-rotation back to the position shown the toggle-levers will be moved outwardly, as indicated, thereby raising the type-carrier to the highest position.

32 is a rod between and pivotally connecting the two pairs of toggle-levers, whereby both type carriers and chases will be reciprocated simultaneously and to the same extent by the operation of the single crank 21^a. Thus two impressions can be made simultaneously and on opposite sides of the paper strip 3^a as it lies in reverse positions over the two platens 4 5. To assist in elevating the type-carriers, springs 33 may be interposed between the main frame and suitable portions 25^d of the type-carrier or its bars 25, as indicated in Figs. 1, 2, and 3^a.

The means I have shown for inking the type permit the inking-rollers to engage the type during its reciprocating motions, while at the same time traveling across the type and paper. Only one set of the inking devices are shown, except a portion thereof in Fig. 5, for the sake of clearness of illustration, and it will be understood that a similar set is provided for each type-carrier, and a description of one set will be sufficient for both. The inking devices shown are arranged as follows:

35 is a suitable frame carrying inking-rollers 36, adapted to travel under and engage the type carried by the chase 26, and said frame is pivotally connected to a lever or arm 37, which passes upwardly at the back of the machine and is connected with a rocking arm 38, pivotally supported, as on a shaft 39, at

the top of the machine. The parts 37 and 38 are rigidly connected together, so as to rock as one, and adjustment is provided between said parts for regulating the position of the rollers 36 relatively to the type-chase, and for this purpose I have shown the arm 37 as provided with extensions 37^a, hung on the shaft 39, and the parts 37 and 38 are connected by two screws 40 40^a, the screw 40 meshing in threads in a portion 37^b of the arm 37, and the screw 40^a bears upon a portion of the arm 37, whereby the angle at which the parts 37 38 extend relatively to each other can be adjusted and said parts can be locked in such position. The arm 38 is to be rocked coincidentally with the reciprocation of the corresponding type-carrier 25, and for this purpose the type-carrier is shown provided with an extension 25^c, pivotally connected with the arm 38, as by a pivot 38^a.

From the foregoing it will be understood that as the type-carrier descends the arm 37 will be rocked in an outward direction, so as to draw the rollers 36 backwardly under the type, and as the type rises the arm 37 will return to push the rollers 36 forwardly under the type. The type-carrier 25 is shown provided with an extension 25^f, against which the forward roller 36 may bear to maintain the rollers in the proper position. The inking-rollers 36 are to be brought into contact with distributing-rollers when drawn back during the descent of the type, and to accomplish this and also to keep the rollers in contact with the type during the reciprocations of the latter the frame 35 is pivotally connected by a link 41 with the main frame, as by an extension 42, carried thereby. The frame 35 in Fig. 4 is shown provided with a forked extension 35^b, to which the link 41 is pivoted, the pivot 41^a thereby swinging on an arc described around the pivotal point 41^b. From this it will be understood that as the frame 35 is drawn back during the descent of the type-carrier the link 41 will cause the rollers 36 to remain in contact with the type, (the rollers descending with the type while being drawn back,) owing to the pivotal connection of the frame 35 at 35^e between the rollers 36 and the pivot 41^a, and after the rollers have been drawn back beyond the type they will be depressed into contact with a distributing-roller 43. Ink may be applied to the distributing-roller 43 by any suitable means. I have shown a roller 44 bearing against roller 43 and against a roller 45, the rollers 43 and 45 being suitably journaled in the main frame and driven by means of a sprocket and chain passing over a sprocket on a shaft 46, that is suitably journaled in the main frame, the shaft 46 being rotated by gearing 47 and 48 from the main shaft 21. (See Figs. 2, 3, and 8.) 49 is a suitable ink-receptacle for roller 45.

At one or both ends of the machine cutters may be provided for cutting the printed paper strip in suitable lengths as fed from the machine, according to the impressions made

thereon. The arrangement I have shown comprises a stationary knife 50, suitably secured to a frame 50^a, attached to the main frame, and a movable knife 51, coacting therewith and having a supporting-arm 51^a, hung upon a rod or shaft 52, carried by the frame 50^a, as by lugs 50^b, the extension 51^b of arm 51^a being adapted to be operated at the proper time by a cam 53 on shaft 46. The knives and the cam are preferably adjustable laterally, and for this purpose the frame 50^a is adjustably held on the main frame, as by a dovetail joint 50^c, and held rigidly by a screw or the like 50^a. In Fig. 4 the knives at the left are omitted, and in Fig. 5 both knives are omitted for the sake of clearness. The main shaft 21 may be provided with a suitable brake to quickly stop the shaft. In Fig. 2 I have indicated an electric brake 55, which is omitted from other figures, as it forms no part of my present invention.

The operation of the machine may be described as follows: If it is desired to print both sides of the paper as the strip 3^a is drawn through the machine, said strip is arranged, as shown in Fig. 1, so as to pass over both platens and present opposite side upwardly, as before explained, and the type-chases are placed in position. The shaft 21, which may be driven by any suitable motor, belt, or the like, is rotated, and the toggle-levers depress the type-carriers, and as they descend the parts 37 and 38 are rocked, drawing the inking-rollers 36 under the type, and while the type is making impressions upon the paper the inking-rollers are being supplied with ink from the rollers 43, and during the descent of the type-carriers the arm 15 is drawn back by the eccentric in a new position for feeding the paper. As the type-carriers rise the eccentric causes the arm 15 to feed the paper over the platens the proper amount, the parts 37 38 push the inking-rollers 36 under the type, and the appropriate knives cut the paper transversely in the proper length.

The machine can be operated very rapidly, and as the paper is cut off and delivered it will be properly printed on both sides. If it is desired to print the paper on but one side, the strip 3^a can be carried across either platen. If the paper is to be printed only upon platen 5, the strip 3^a can be carried from the roller 3 first under the roll 9 and thence between rolls 10 and 11 in the direction shown in Fig. 1; but if the paper is to be printed only upon platen 4 then the strip will be carried, as before, under roller 9 and then between the rollers 10 and 11 from the side opposite that shown in Fig. 1, and thence over the platen 4 and will be cut by the knife adjacent to said platen. If only one of the type-carriers is to be operated at one time, the link 32 can be disconnected from one or both of the toggle-levers.

It will be understood that in accordance with the construction above described the inking-rollers are moved across the type in

a direction substantially transverse to the direction or line of travel of the paper strip over the platens, and there is no danger of the rollers coming in contact with the paper, and the paper can be conveniently fed during the reciprocations of said rollers.

I do not limit my invention to the details of construction shown and described, as they may be varied without departing from the spirit thereof.

Having now described my invention, what I claim is—

1. A printing-machine comprising a frame, a pair of platens facing in the same direction, means for supporting a paper-roll, means for guiding the strip of paper from the roll first over one platen and thence over the other platen so that opposite sides of the paper will be exposed over the platen, and feeding devices located between the platens for feeding the strip, said feeding devices being adjacent to the last platen over which the paper strip passes, substantially as described.

2. A printing-machine comprising a frame, a pair of platens, means for supporting a paper-roll, guides for the paper strip adjacent to the platens and above the roll, and guides for the strip below the means for supporting the roll to guide the strip from the roll first over one platen, then below the roll, and then over the other platen in reverse positions over the two platens, substantially as described.

3. A printing-machine comprising a frame, a pair of platens, means for supporting a paper-roll, a pair of guides at opposite sides of one platen, a pair of guides below the upper guides and below the means for supporting the paper-roll, and a pair of feeding-rolls adjacent to the other platen for guiding the paper strip in reverse positions over said platens, substantially as described.

4. A printing-machine comprising a frame, a pair of platens, guides for a paper strip, means for supporting a paper-roll within the space bounded by the paper strip as it passes from its roll along said guides, and feeding devices located between the platens for feeding the strip, said feeding devices being adjacent to the last platen over which the paper strip passes, substantially as described.

5. A printing-machine comprising a frame, a pair of platens, means for supporting a paper-roll, means for guiding the strip of paper from the roll first over one platen and thence over the other platen so that opposite sides of the paper will be exposed over the platens, means for cutting the paper strip into lengths as it passes from the platen, and feeding devices located between the platens for feeding the strip, said feeding devices being adjacent to the last platen over which the paper strip passes, substantially as described.

6. A printing-machine comprising a frame, a pair of platens, means for supporting a paper-roll, means for guiding the strip of paper from the roll first over one platen and thence over the other platen so that opposite sides

of the paper will be exposed over the platens, means for feeding the paper strip step by step over the platens, and feeding devices located between the platens for feeding the strip, said feeding devices being adjacent to the last platen over which the paper strip passes, substantially as described.

7. In a printing-machine, the combination of a frame, a pair of platens, means for supporting a paper-roll, means for guiding the strip from said roll over both platens, means located between the platens and adjacent to the last platen over which the strip passes, for feeding the strip step by step, cutters located outside of one platen, and means for intermittently operating said cutters, substantially as described.

8. In a printing-machine, the combination of a frame, a pair of platens, means for supporting a paper-roll, means for guiding the strip from said roll over both platens, means located between the platens and adjacent to the last platen over which the strip passes, for feeding the strip step by step, cutters located outside of one platen, a cam, and means for supporting and operating said cam, substantially as described.

9. A printing-machine comprising a frame, a platen, a pair of feeding-rollers, an operating-shaft therefor, devices connected with the feeding-roller for intermittently rotating the roller, an eccentric connected with said shaft, an eccentric surrounding said eccentric, means for permitting adjustment of said eccentrics relatively to each other and for locking them in the adjusted position, and means for connecting the eccentrics with said devices for operating said roller, substantially as described.

10. A printing-machine comprising a frame, a platen, a pair of feeding-rolls, a ratchet-wheel, gearing for operating the feeding-rolls by said wheel, a rocking arm having a pawl to actuate said wheel, an oscillating arm geared to the first-mentioned arm, a shaft, an eccentric carried thereby, means for connecting the same with the second-mentioned arm, and means for regulating the throw of said eccentric, substantially as described.

11. A printing-machine comprising a frame, a platen, a pair of feeding-rolls, a wheel, gearing for operating the feeding-rolls by said wheel, a rocking arm having means to actuate said wheel, an oscillating arm geared to the first-mentioned arm, a shaft, an eccentric connected with said shaft, an eccentric surrounding said eccentric, means for adjusting said eccentrics relatively to each other and for locking them in the adjusted position, and means for connecting the eccentrics with the second-mentioned arm, substantially as and for the purposes set forth.

12. A printing-machine comprising a frame, a pair of platens, a pair of reciprocative type-carriers, toggle-levers to operate each carrier, a shaft, connections between said levers and the shaft for reciprocating the type-car-

riers simultaneously, and means for feeding a strip over both platens during the time both carriers are removed from their platens, substantially as described.

5 13. A printing-machine comprising a frame, a pair of platens, a pair of reciprocative type-carriers, toggle-levers to operate each carrier, a crank-shaft, a link connecting the crank with the levers of one type-carrier, a link connecting the levers of the two type-carriers for reciprocating said carriers simultaneously, and means for feeding a strip over both platens during the time both carriers are removed from their platens, substantially as described.

14. A printing-machine comprising a frame, a platen, a type-carrier, means for reciprocating the same, an inking-roller, a rocking arm pivotally supported by the main frame and supporting said roller, means connected with the type-carrier and arm for rocking said arm, and an oscillatory link pivotally connecting the roller with said frame for maintaining the roller in contact with the type during the reciprocations of the type-carrier, substantially as described.

15. A printing-machine comprising a main frame, a type-carrier, means for reciprocating the same, an inking-roller, a frame therefor, a rocking arm pivotally supported by the main frame and pivotally connected with said roller-frame, means connected with the type-carrier and arm for rocking said arm during the reciprocations of the type-carrier,

a link pivotally connecting the frame of the roller with said main frame, and an ink-distributing roller to be engaged by the ink-roller, substantially as and for the purposes described.

16. A printing-machine comprising a frame, a type-carrier, means for reciprocating the same, an inking-roller, a frame therefor, an arm pivotally connected with said frame, an arm 38, means connecting the type-carrier with said arm for rocking the same, means for adjustably connecting the first-mentioned arm with the arm 38, and means for maintaining the inking-roller in contact with the type during the reciprocations of the type-carrier, substantially as described.

17. A printing-machine comprising a main frame, a type-carrier, means for reciprocating the same, an inking-roller, a frame therefor, an arm pivotally connected with said frame, said arm having an extension journaled on a shaft 39, connections between the type-carrier and said arm to rock the latter, an arm 38 also journaled on said shaft, means for adjustably connecting the first-mentioned arm with the arm 38, a link pivotally connecting the inking-roller with the main frame, and a distributing-roller adapted to be engaged by the inking-roller, substantially as described.

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Witnesses:

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