

No. 616,028.

Patented Dec. 13, 1898.

J. P. STEVENS.
PLATE PRINTING MACHINE.

(Application filed Mar. 30, 1898.)

(No Model.)

6 Sheets—Sheet 1.

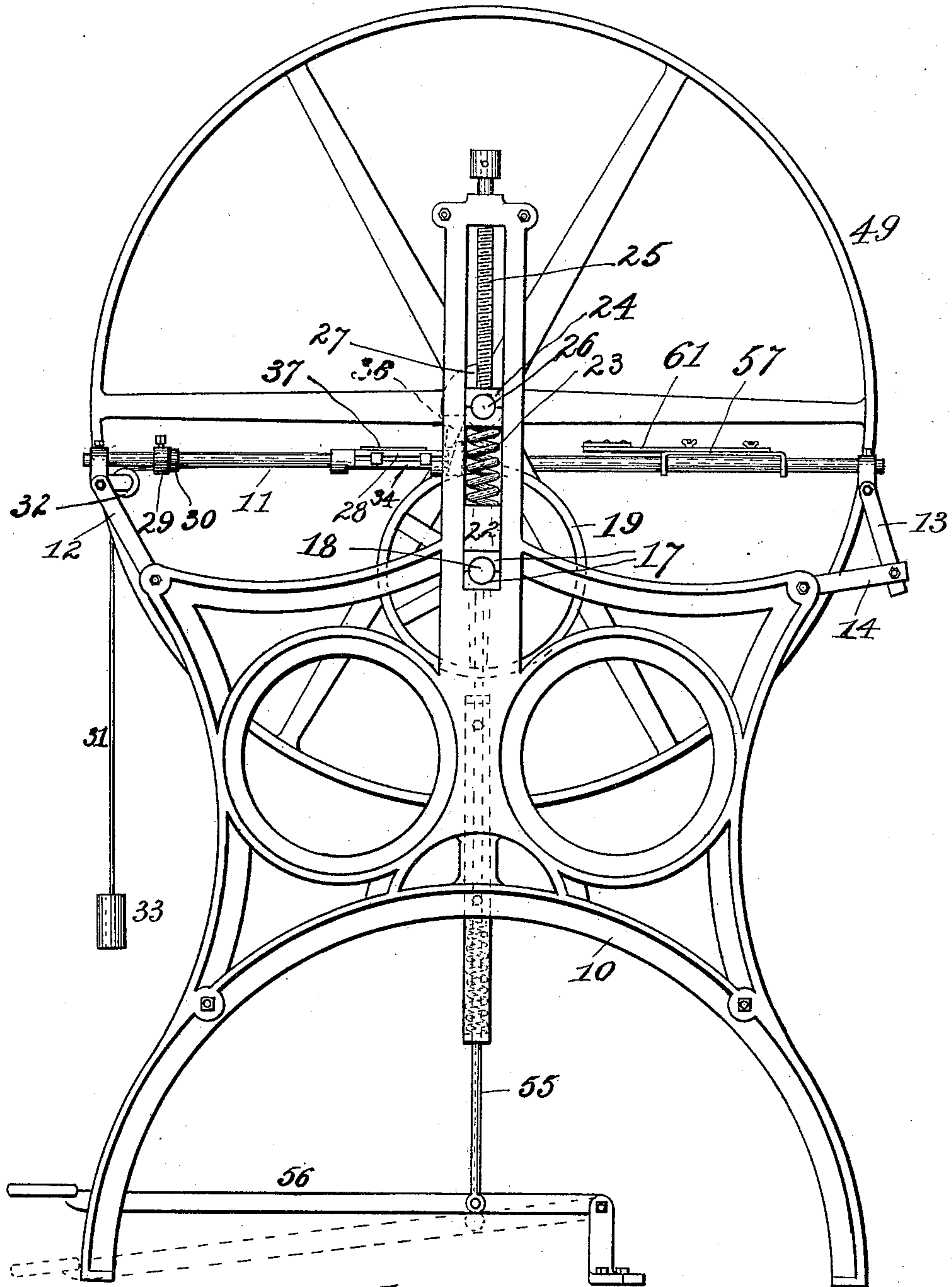


Fig. 1.

WITNESSES

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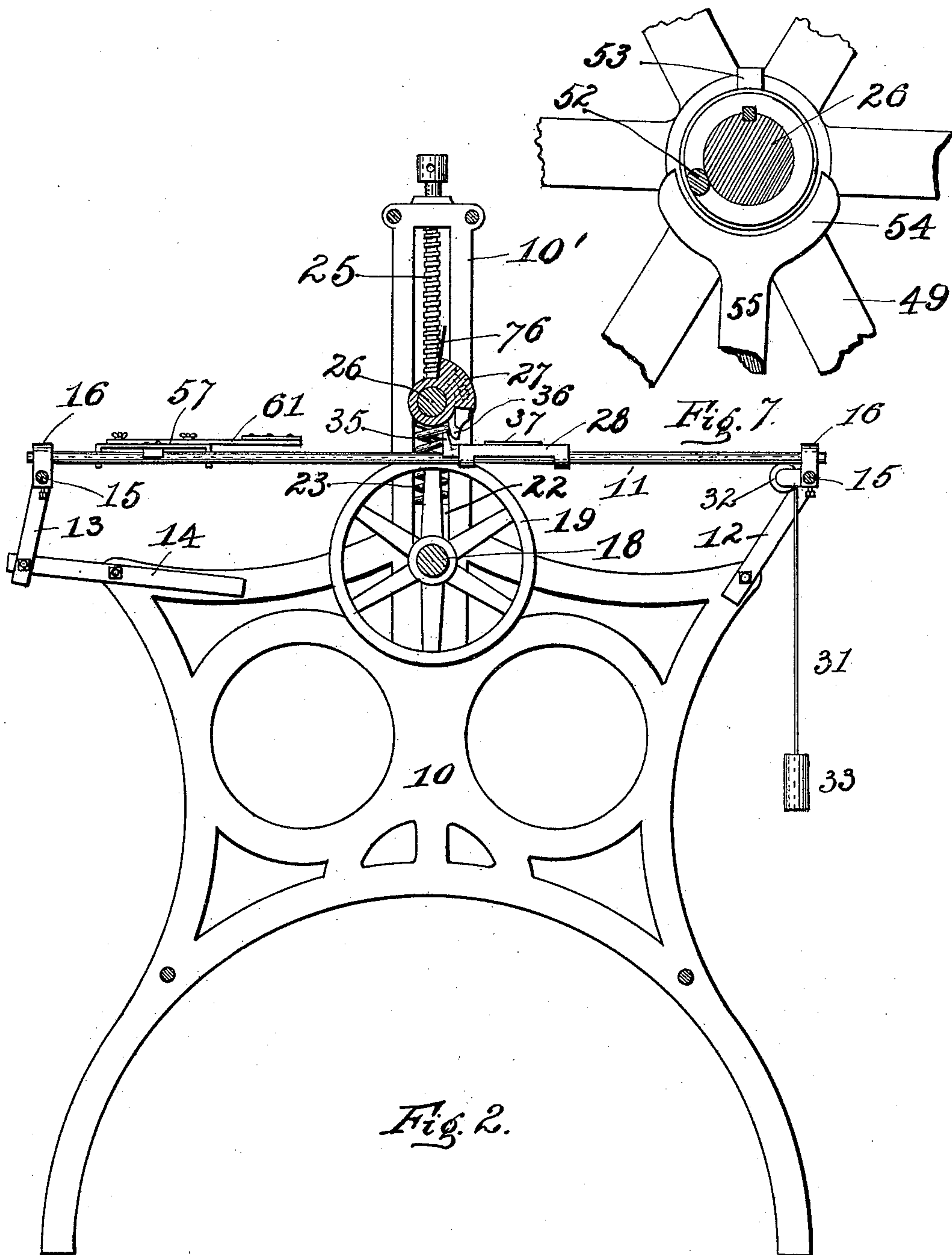
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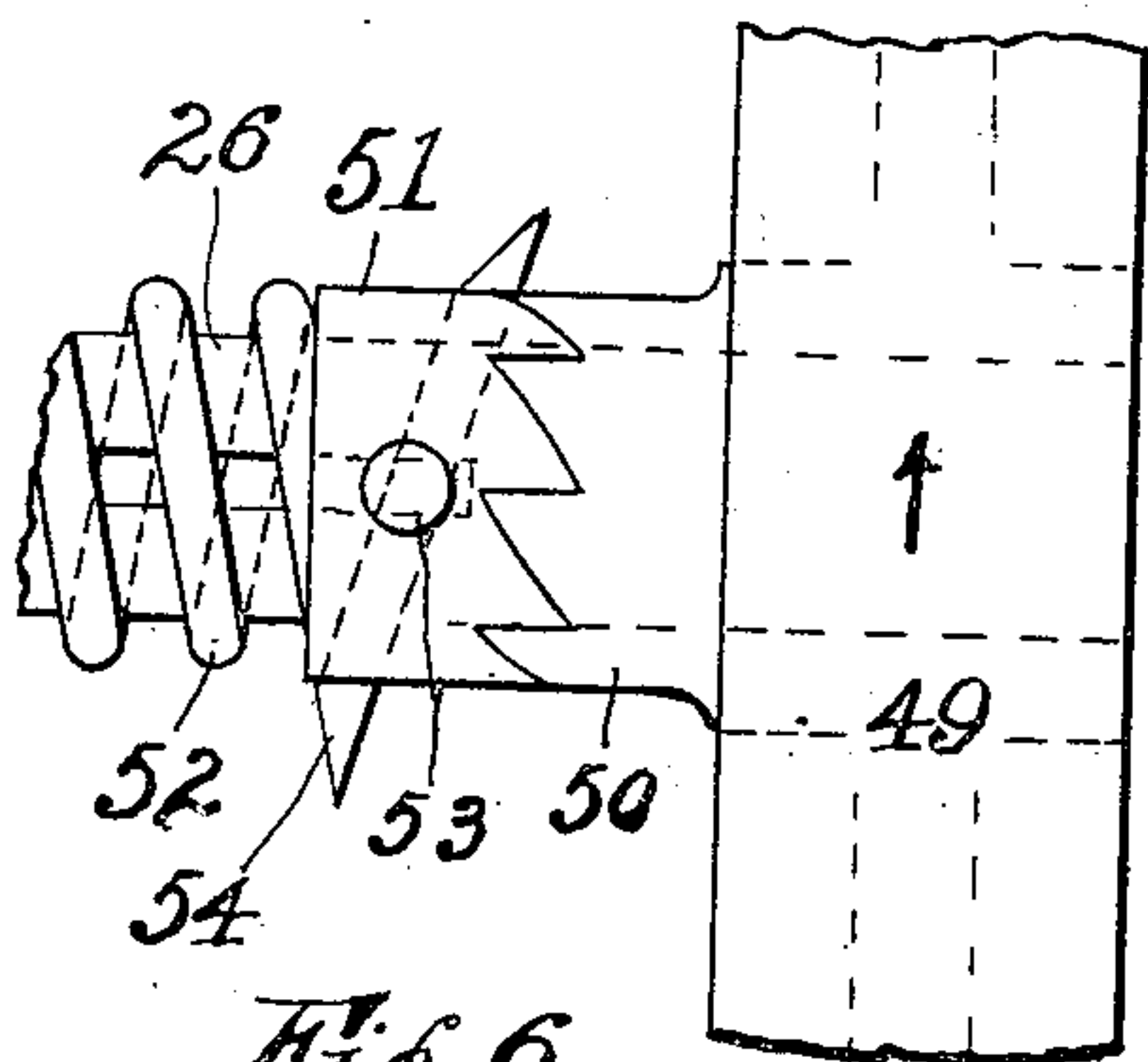


Fig. 6.

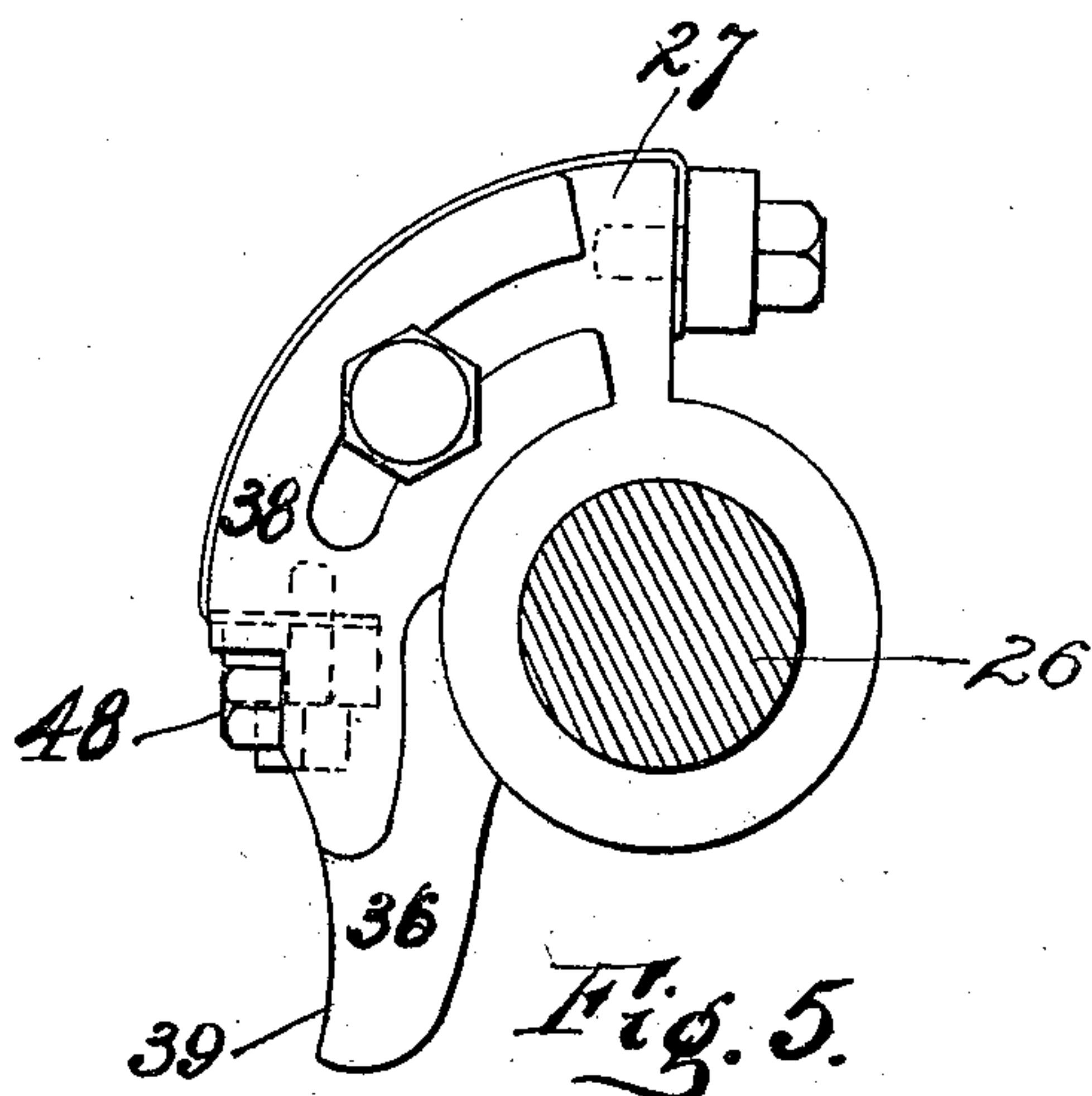


Fig. 5.

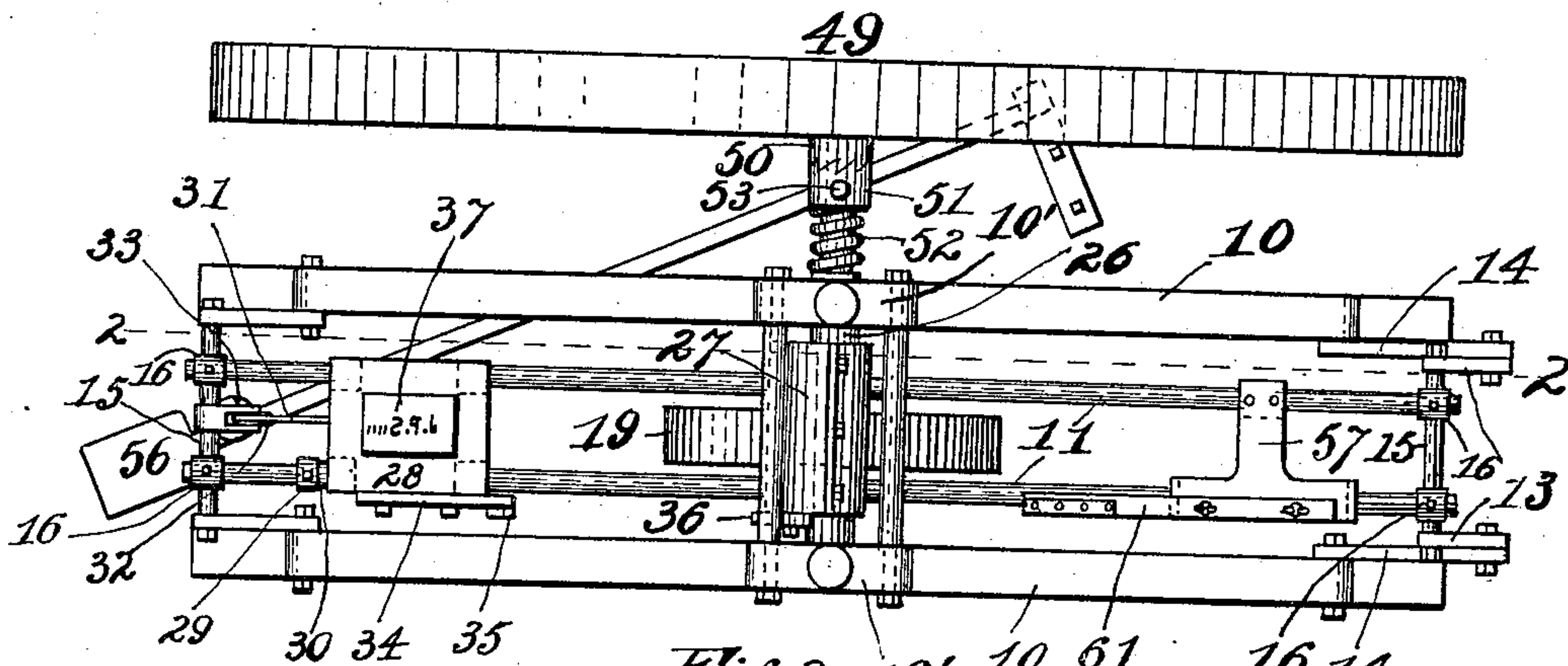


Fig. 3.

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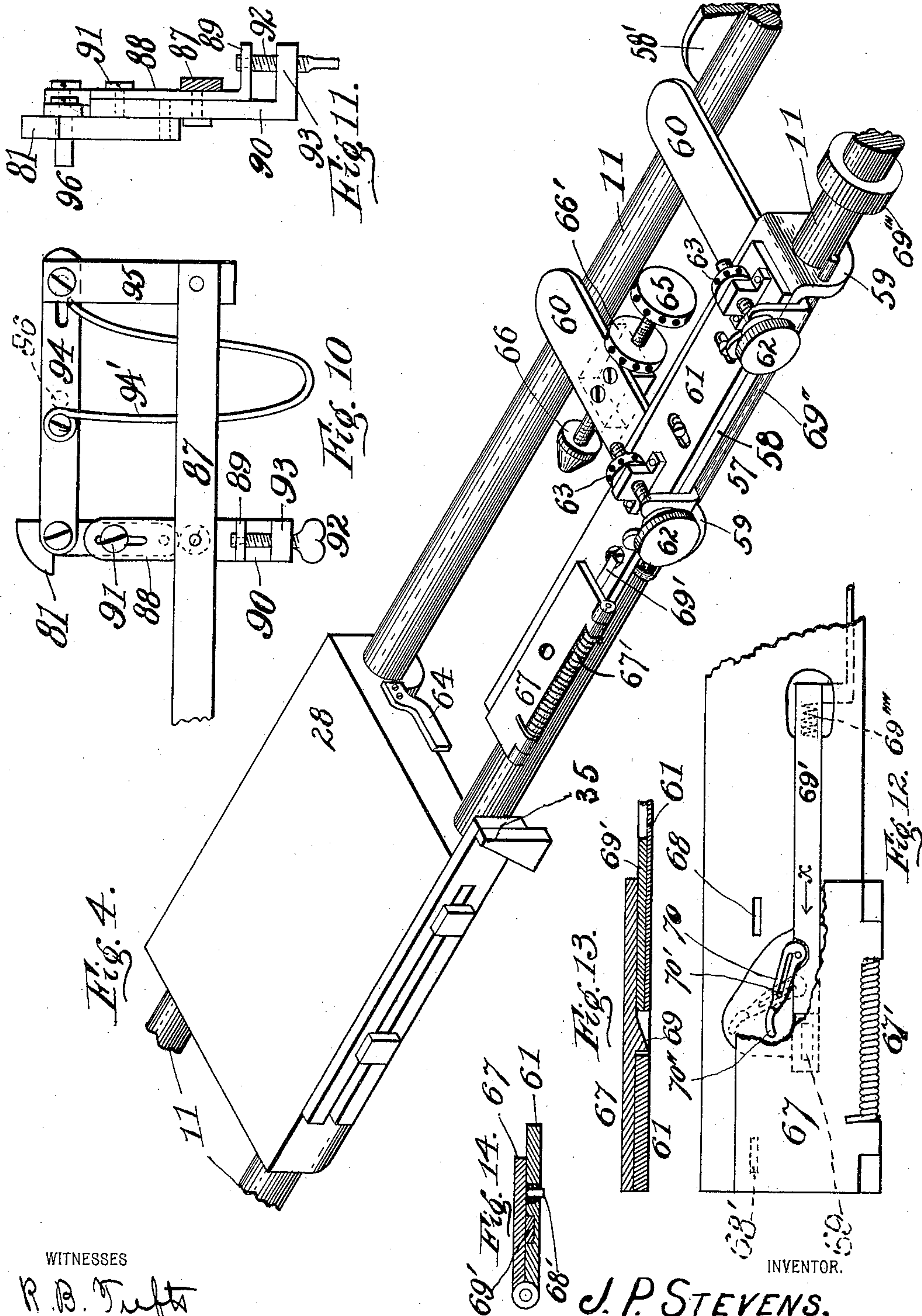
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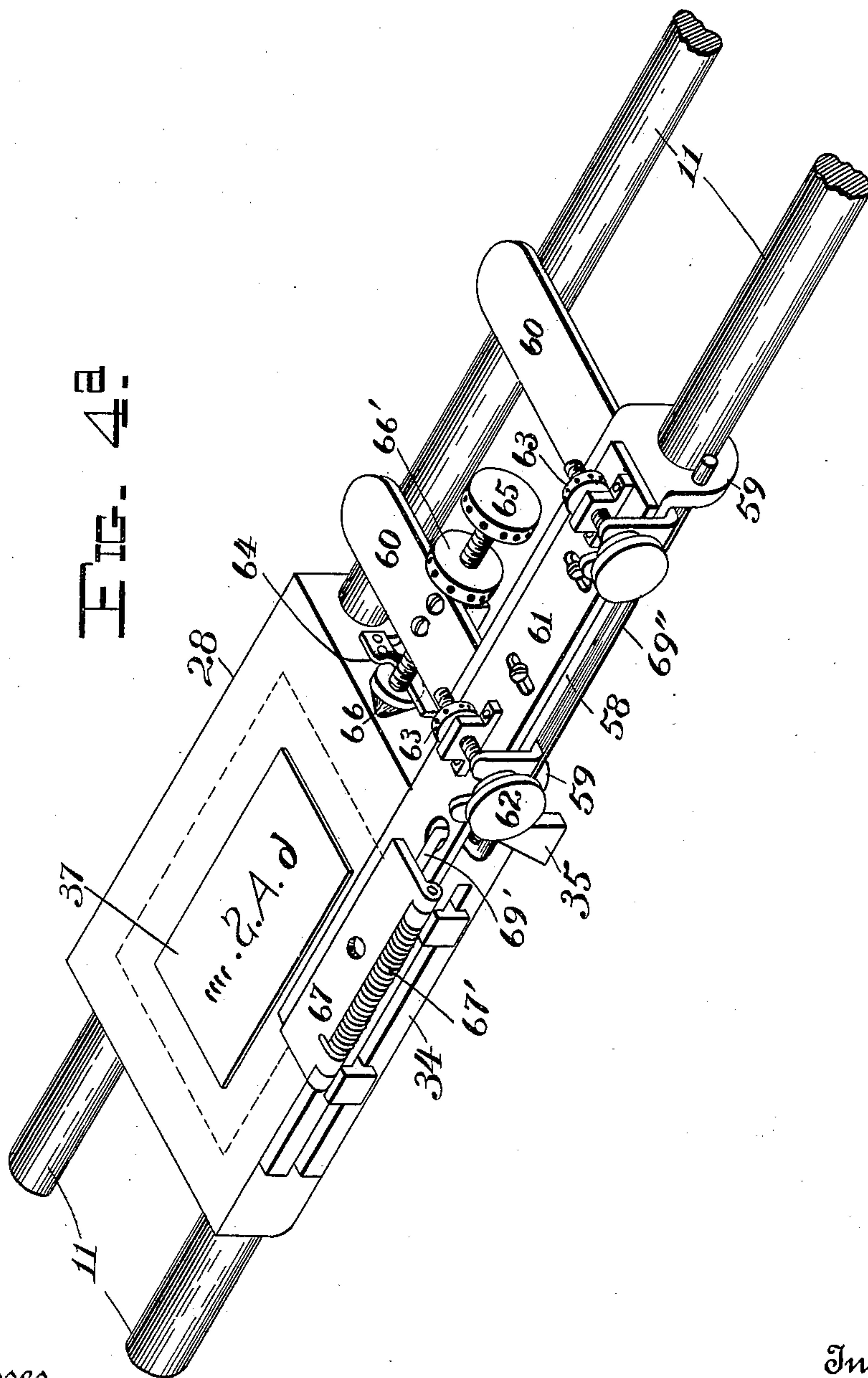
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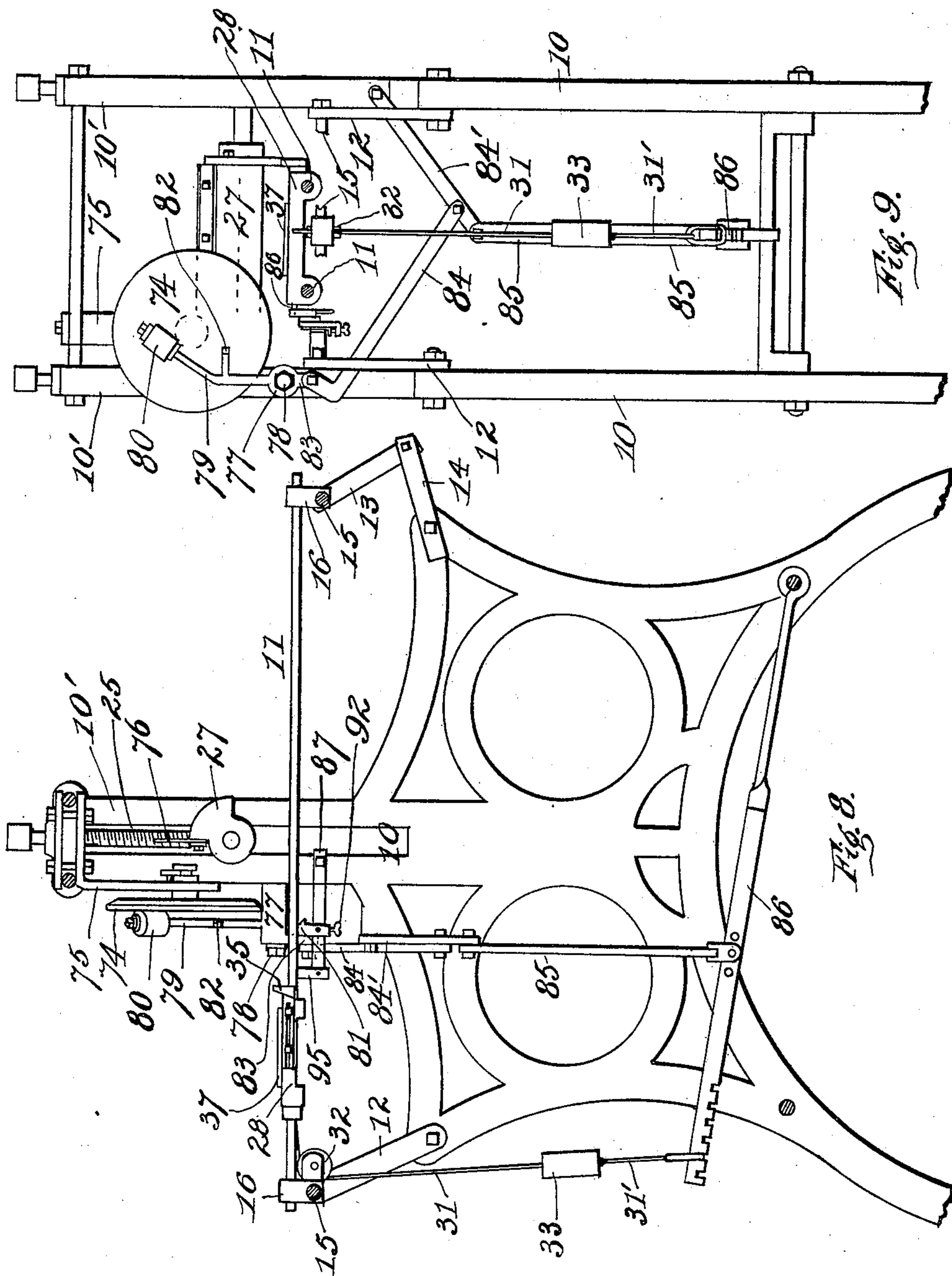
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6 Sheets—Sheet 6.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOSIAH PERCY STEVENS, OF ATLANTA, GEORGIA.

PLATE-PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 616,028, dated December 13, 1898.

Application filed March 30, 1898. Serial No. 675,818. (No model.)

To all whom it may concern:

Be it known that I, JOSIAH PERCY STEVENS, a citizen of the United States of America, and a resident of Atlanta, in the county of Fulton and State of Georgia, have made a certain new and useful Improvement in Plate-Printing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings; and to figures of reference marked thereon, which form part of this specification.

This invention relates to presses or machines for printing from intaglio-plates upon cards usually, but adaptable to use on any thickness of paper, the object of the invention being to provide a device of this class in which the cards or blanks may be fed accurately and more rapidly from the back side of the machine, and whereby an improved impression is obtained and a satisfactory application of power from a line-shaft is obtained.

The invention consists of the device hereinafter fully specified and claimed.

In the accompanying drawings, Figure 1 is a side elevation of the device, the position for the inker or pressman proper being at the left of said figure and for the feeder at the right thereof. Fig. 2 is a longitudinal vertical section of the device, showing, however, one of the end pieces of the frame removed—that is, being a section on line 2-2, Fig. 3. Fig. 3 is a plan of the device. Fig. 4 is a detail in isometric perspective of the guide-bars, the die-carriage, and the card-carriage, showing the adjustable card-holder on the latter. Fig. 4^a is a similar view showing the parts in position for printing with the die in place and the paper shown in dotted lines. Fig. 5 is an end elevation of the segmental platen, showing the adjustable cam for causing the card-carriage to move into engagement with the periphery of said segmental platen. Fig. 6 is a fragmentary detail of the fly-wheel, the clutch, and the disengaging-cam. Fig. 7 is an end view from the left of Fig. 6. Fig. 8 is a side view of the self-inking attachment, a portion of the frame being in section. Fig. 9 is a front view thereof. Fig. 10 is a side elevation, and Fig. 11 is an end view, of the detent and re-

lease mechanism. Fig. 12 is a fragmentary detail in plan of the card-clamp on the card-carriage. Fig. 13 is a longitudinal vertical section thereof. Fig. 14 is a vertical cross-section.

In the figures like reference characters are uniformly employed in the designation of corresponding elements of construction in all the views.

10 are side pieces of the frame, which may obviously be of any form desired and necessary to sustain the working parts of the device.

11 are guide-rods, which should be sufficiently flexible to allow the carriage, when under pressure, to rest upon the abutment 19, yet strong enough to obviate any danger of their taking short bends, becoming permanently distorted by use, or otherwise becoming incapable of performing duty which devolves upon them, as will be hereinafter set forth. These guide-rods are made vertically adjustable by means of swinging arms 12 and 13, to the upper ends of which they are secured by means of bars 15, extending therebetween, and shackles 16, mounted so as to be movable laterally along said bars 15. These swinging arms 12 and 13 are secured to the frame, the latter adjustably to the frame 10 by means of intermediate arms 14, and the former being preferably secured directly to the frame 10, so as to partially revolve upon the bolts securing them to the frame, as shown in Figs. 1 and 2. It is obvious that these guide-rods 11 may be adjustably supported on the frame in many ways, and hence I do not confine myself to the particular construction herein shown.

Extending vertically of the parts 10 of the frame are slots, and in the lower end of these slots, in journal-bearing boxes 17, is a shaft 18, on which is semirotatably mounted the rotating abutment 19, the periphery thereof lying in about the plane of the guide-rod 11 and being adjustable vertically by means of shims under the lower bearing-boxes 17.

Intermediate blocks 22 may or may not be employed, as desired, in the slots; but in the construction shown these are used for convenience, and a spring 23, lying in each slot, extends upwardly from said block to the lower one of the bearing-boxes 24, a screw 25 acting

to limit the upward movement of said boxes in each slot. 26 is a shaft rotatably mounted in the said bearing-boxes 24, carrying thereon the segmental platen 27, (best shown in Figs. 2, 3, and 5,) which is the ordinary device used in machines of this class as an impression-platen. It is obvious that this platen may be adjusted to and from the guide-rods 11 and the peripheral surface of the rotating abutment 19, or being located positively against upward movement by its abutment with the screws 25 through the medium of the shaft and its bearing-boxes. This adjustment is necessary to accommodate engraved plates of different thicknesses and to get the proper "impression."

28 is the die or plate carriage and slides upon the guide-rods 11, its motion backwardly being limited by a collar 29 and an interposed spring or washer 30 of elastic material. A cord or chain 31, attached to this carriage, but one end passing through a sheave 32 and bearing a weight 33 on its end, serves to bring said carriage to its normal position or its position whereon it is inked and wiped by hand or by suitable inking or wiping mechanism, as shall be found most desirable. On one side of this carriage 28 is an adjustable strap 34, having an upwardly-projecting lip 35, which comes into contact with the cam 36, secured adjustably to the correlative end of the segmental platen 27. This strap 34 and the cam 36 should be so adjusted that the carriage will be carried forward promptly to the point of engagement of the plate 37 with the periphery of the segmental platen 27 and then disrupt the engagement between the parts 35 and 36 and allow the carriage to move forward with its lower side resting upon the periphery of the rotatable abutment 19 and the upper side of the plate with the part interposed and lying thereon in forcible contact with the platen 27. To this end the bar 34 is slotted, so as to move longitudinally upon the plate-carriage 28, and the cam 36 is provided with a segmental slot, as shown in Fig. 5. As also shown in Fig. 5 and for sake of good mechanical construction, the cam 36 is made in two pieces—that is, a body 38 of a strong metal and a point 39 of metal capable of receiving a high temper, such as would insure good wearing qualities. A cap-screw 48 serves to join these two parts.

On the shaft 26 is a combined fly and band wheel 49, running loosely on the shaft and carrying one element 50 of the clutch, 51 being the other element and being splined to the said shaft 26, a spring 52 serving to keep the two clutch elements in engagement.

53 is a lug projecting from the side of the clutch element 51, and 54, Figs. 6 and 7, is a segmental cam partially encircling the said clutch element 51 and lying at an angle to the plane of rotation thereon and of revolution of the lug 53. This inclined segmental cam is secured to a rod 55, which is mounted slidably in suitable guides on one of the side

pieces 10 of the frame and is spring-pressed upwardly, a treadle 56 serving to depress the same. Now it is obvious that when this segment 54 is depressed the lug 53 will be free of engagement therewith and the clutch element 51 will be forced into engagement with the element 50 by the spring 52, and the said clutch element 51 will hence rotate with the wheel 49 and rotate the shaft 26, thus revolving the platen 27. It will also be seen that if during this rotation of the clutch element 51 the segment 54 shall be elevated the lug 53 will engage with this inclined side and disengage the two clutch elements.

57 is a card-carriage which consists of a slide 58, having on its two opposite extremities guides 59, adapted to engage in any desired manner one of the guide-rods 11 and having arms 60 thereon, adapted to rest upon or otherwise engage the other rod, and thus preserving the equilibrium of the frame 58, one of which arms 60 is adapted to pass upon and along an elevation 58' and so tilt the card-carriage 57 as to disrupt its engagement with the plate-carriage, as will be presently described. Lying along the upper side of the carriage 57 is a bar 61, which is secured to said carriage so as to be movable laterally thereon, being adjusted by means of thumb-screws 62, provided with suitable jam-nuts 63, as shown. The end of this bar 61 is capable of carrying a card on its end, so as to register it with the die 37. On the carriage 28 is a finger 64, and carried on the carriage 57 is a screw 65, having a head 66, adapted to pass over the edge of said finger 64 and engage same by a downward movement. This screw 65 is adjustable longitudinally, and a jam-nut 66' is provided thereon to hold same in any set position. This device causes the engagement of the two carriages 28 and 57, whereby the card is caused to remain stationary over the plate 37 beyond any danger of displacement during the time the carriage 28 is approaching the point where the impression takes place. To the upper side of the free end of the bar 61 is hinged the plate 67, a spring 67' of suitable form being provided for closing the said hinge element downwardly onto the upper side of the said bar, whereby a card may be clamped between them. In the said bar 61 are small openings 68, into which pins 68', carried on the element 67, may pass, said pins forming stops to locate the card in the clamp so formed. It is now necessary to provide means for opening the said clamp and for ejecting the card. This consists in the construction shown of a cam 69 on the under side of the said element 67 and a plunger 69' longitudinally movable in a groove in the bar 61 and caused to move by means of a rod 69'', connected thereto and passing through suitable guides in the carriage 57, projecting from the back side thereof into position to strike the abutment 69''', a spring 69'''' (shown in broken lines in Fig. 12) acting to hold the said bar 69' in its nor-

mal position. The card is thrown out by means of a latch 70, pivotally secured to the plunger 67 and being slotted and engaging a pin 70', whereby as the plunger moves forwardly in the direction of the arrow α , Fig. 12, the free end of the latch will be thrown outwardly to strike the edge of the card and eject it, as shown by broken lines in Fig. 12. The bar 61 and the member 67 are recessed for the latch 70, and it is preferable that this latch lie below the surface of the bar 61, with a lug projecting upwardly above said surface, and contacting with the edge of the card as the said latch moves forwardly. As the carriage is drawn back by the feeder after an impression the end of the rod 69'' contacts with the abutment 69''' and moves the plunger 69' in the direction of the arrow α , Fig. 12, lifting the member 67 and throwing the latch forward, whereby the card is unclamped and ejected. The feeder then simply introduces a card between the member 67 and bar 61, and pushing the carriage away from the abutment 69''' the spring 69'''' will cause a reverse movement of the plunger 69', causing the latch 70 to be quickly withdrawn by means of the pins 70' and the member 67 to close upon the card, whereupon the carriage 57 may be moved forwardly, or toward the carriage 28, and the two correlative hooks, consisting of the finger 64 and the head 56, come into engagement, when the card will be firmly held in registry with the plate 37. Of course it will be obvious that the lateral adjustment of the bar 61 and the longitudinal adjustment of the screw 65 cooperate to permit any adjustment of the card relatively to the engraved line of the plate 37, so as to cause proper registry.

In Figs. 9, 10, and 11 is shown the inking device, which I will now proceed to describe.

74 is a circular platen rotatably mounted upon an arm 75, secured in some suitable place on the frame and being caused to rotate by means of a wiper-arm 76, secured to the segmental platen 27. Secured to the hub 77, which is rotatably mounted on a stud 78, is an arm 79, carrying the ink-roller 80 on its free end and by its vibration rolling said arm across the face of the said rotatable platen 74 and bringing it into position to be contacted with by the plate 37 as the carriage 28 passes under it, being locked in its downward position by the hooked latch 81 (best shown in Fig. 10) and engaging with the hooked end of the arm 82, secured to the arm 79. Projecting downwardly from the hub 77 is a short arm 83, to which is secured one end of a toggle-lever composed of members 84 84'. These toggles are operated by means of a pitman 85, connected thereto at its upper end and at its lower end connected to the lever 86, pivoted on the frame and operated by a cord or chain 31', leading from the weight 33, which weight, as above stated, operates, through the cord 31, to return the plate-carriage 28 to its normal position. Obviously the movements of

these toggles will cause a vibration of the arm 79, with the result hereinbefore specified. As soon as the carriage 28 has passed under the roller 80, with the plate 37 thereon in contact with said roller and the said plate thereby inked, the engagement between the hooked end of the arm 82 and the latch 81 should be disrupted. This I accomplish by the following construction:

87 is an arm which is secured to the frame, as best shown in Fig. 8, and 88 is an arm pivoted thereon, having a foot 89 on its lower end and being slotted in its upper end. 90 is a slide secured to the said part 88 by means of a screw 91, passing through the slot into the upper end of said plate, and the adjusting-screw 92, passing through the feet 89 and 93, the detent 81 being secured to the upper end of this slide 90. It will thus be seen that the detent 81 is pivotally secured to the said arm and adjustable vertically, the vertical adjustment being desired in order that the hooked end of the arm 82 may be made to take onto this detent, so as to accommodate rollers differing in their diameters.

94 is a pitman which is pivotally secured to the upper end of the detent-pawl 81, and being horizontally placed alongside the desired one of the bars 11 its other end is supported and guided by a slotted engagement with the upright 95, which is secured to the distal extremity of the arm 87. 95 is a spring acting to press the pawl 81 forwardly. 96 is a pin which is set in the side of the said pitman 94, projecting into such a position relative to the guide 11 as to be struck by the carriage 28 on its return to its normal position. The point of engagement of the lower end of the cord 31' with the lever 86 is made adjustable to insure the same movement of the inking-roller regardless of the exact length of movement of the carriage 28. The die may be wiped by hand in the usual manner.

The operation of this device is as follows: The plate 37, having been suitably attached to the upper side of the carriage 28, is inked, wiped, and set forth and prepared by the pressman, and the card is inserted by its edge under the lip 67 of the bar 61 of the near carriage 57 by the helper, who stands at the back of the machine or on the opposite side thereof from the pressman, by means of which there is no cross interference between them, both having sufficient room to do their work. The operation as referred to having been accomplished, the feeder moves the carriage 57 along the guide-rods 11 until the head 66 contacts with the forward end of the carriage 28, when the pressman may correct the adjustment of the bar 61 to provide the proper card and plate registry, start the press by means of the treadle 56, throwing in the clutch, (the operation of which has been sufficiently described,) and then presses the carriages 28 and 57 forwardly until the cam 36 engages the lug 35 and draws the plate and superincumbent card under the segmental platen 27,

with the lower side of the carriage 28 in forcible contact with the rotating abutment 19, and so effects the transfer of ink from the intaglio portions of the plate 37 to the lower side of card. The revolution of the segmental platen 27 being continued propels the carriage 28, which in turn pushes the carriage 57 toward the feeder, who, as soon as the card is released from being clamped between the plate and the platen 27, grasps the carriage 57 and draws it toward her, removing the card and laying it upon the drying-tray or on the pile of printed cards and inserting another card in the clamp. The operation of this clamp and the connected parts has already been described. As soon as the face of the segmental platen 27 passes out of engagement with the carriage 28 and the said carriage 28 is thereby released the weight 33 will, through the cord or chain 31, return the said carriage 28 to its normal position, when the operation is repeated.

The various adjustments of the device have been fully explained and the description of the parts themselves, and a further explanation thereof is deemed unnecessary.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a plate-printing machine, depressible guides, a carriage sliding thereon and adapted to receive and hold the plate, an impression-platen rotatably mounted above said guides and a rotating abutment below said guides directly under said platen to withstand the force of the impression, for the purpose specified.

2. In a plate-printing machine, flexible guides, a plate-carriage sliding thereon, means for applying pressure on the said plate-carriage, a card-carriage also mounted to slide on the said guides, and provided with means for holding a card over the said plate-carriage, and an abutment below the said flexible guides to withstand the force of the impression, substantially as described.

3. In a plate-printing machine, flexible guides, a plate-carriage sliding thereon, means for applying pressure on the said plate-carriage, a card-carriage also mounted to slide on the said guides and provided with means for holding a card over the said plate-carriage, means for locking the card-carriage to the plate-carriage, and an abutment below the said flexible guides to withstand the force of the impression, substantially as described.

4. In a plate-printing machine, guides, a plate-carriage sliding thereon, means for applying pressure on the face of said plate-carriage, and a card-carriage provided with means for holding a card over said plate-carriage consisting of an arm projecting from same toward said plate-carriage and a plate thereon adapted to engage a card and slidably mounted on said guides for the purpose specified.

5. In a plate-printing machine, guides, a

plate-carriage mounted slidably thereon, means for compressing said carriage in transit, and a card-carriage mounted slidably on said guide, an arm adjustably secured to the said card-carriage, and projecting toward said plate-carriage and means for securing a card to the free end of said arm, for the purpose specified.

6. In a plate-printing machine, guides, a plate-carriage mounted slidably thereon, means for compressing said carriage in transit and a card-carriage mounted slidably on said guides, an arm adjustably secured to the said card-carriage, and projecting toward said plate-carriage and means for securing a card to the free end of said arm comprising a clamp carried on the end of said arm and means for opening and closing said clamp respectively on the approach and departure of the card-carriage from its normal position, for the purpose specified.

7. In a plate-printing machine, guides, a plate-carriage mounted slidably thereon, means for compressing said carriage in transit, and a card-carriage mounted slidably on said guide, an arm adjustably secured to the said card-carriage, and projecting toward said plate-carriage and means for securing a card to the free end of said arm comprising a clamp carried on the end of said arm and means for opening and closing said clamp respectively on the approach and departure of the card-carriage from its normal position, consisting of a slide in operative relation to one of said clamp elements, a spring acting to move said slide to its normal position, a rod moving in bearings on and with said card-carriage, and an abutment for the end of the said rod lying in the line of movement of said carriage, for the purpose specified.

8. In a plate-printing machine, guides, a plate-carriage mounted slidably thereon, means for compressing said carriage in transit, and a card-carriage mounted slidably on said guides, and an arm adjustably secured to the said card-carriage, and projecting toward said plate-carriage and means for securing a card to the free end of said arm consisting of a plate hinged to the said arm at its free end and normally spring-closed, an inclined-faced lug on the lower side of said plate, a plunger seated so as to be reciprocable on said arm so situated that the inclined face of said lug lies in and crosses its path and means for moving said plunger into and out of contact and across said inclined face respectively on the approach and departure of said card-carriage to and from its normal position, for the purpose specified.

9. In a plate-printing machine, guides, a plate-carriage mounted slidably thereon, means for compressing said carriage in transit, and a card-carriage mounted slidably on said guides, an arm adjustably secured to the said card-carriage, and projecting toward said plate-carriage and means for securing a card to the free end of said arm consisting

of a plate hinged to the said arm at its free end and normally spring-closed, an inclined-faced lug on the lower side of said plate, a plunger seated so as to be reciprocable on said arm so situated that the inclined face of said lug lies in and crosses its path and means for moving said plunger into and out of contact and across said inclined face respectively on the approach and departure of said card-carriage to and from its normal position, and a latch projecting into the plane of the joint between said hinged plate and arm and in operative relation with said slide to be projected outwardly in said joint upon the opening of the clamp for the purpose specified.

10. In a plate-printing machine, guides, a plate-carriage mounted slidably thereon, means for compressing said die-carriage in transit, and a card-carriage mounted slidably on said guides, an arm secured to the said card-carriage adjustable edgewise thereon and projecting toward said plate-carriage and an adjustable abutment on said card-carriage in a position to contact with said plate-carriage to adjust the registry of the card and plate and means for securing a card to the free end of said arm, for the purpose specified.

11. In a printing-machine, guides, a plate-carriage mounted slidably thereon, means for compressing said carriage in transit, and a card-carriage mounted slidably on said guides, an arm secured to the said card-carriage adjustable edgewise thereon and projecting toward said plate-carriage and an adjustable abutment consisting of a screw carrying a jam-nut and mounted on said card-carriage in a position to contact with the said plate-carriage to adjust the registry of the card and die and means for securing a card to the free end of said arm, for the purpose specified.

12. In a plate-printing machine, guides, a plate-carriage sliding thereon, means for applying pressure on the face of said die-carriage, and a card-carriage provided with means for holding a card over said die-carriage and slidably mounted on said guides and means for interlocking said carriages consisting of a hook on the said card-carriage, and a finger on the said plate-carriage adapted to engage the said hook, for the purpose specified.

13. In a plate-printing machine, guides, a plate-carriage thereon, slidably mounted, a card-carriage adapted to carry a card to, and hold it over said die-carriage, an interlocking hook on said card-carriage, and finger on said plate-carriage and means for causing the disengagement thereof upon the said die and card carriages reaching the limit of their con-

tinued movement after printing, for the purpose specified.

14. In a plate-printing machine, guides, a plate-carriage thereon slidably mounted, a card-carriage adapted to carry a card to and hold it over said plate-carriage, an interlocking hook on said card-carriage, and a finger on said die-carriage and means for causing the disengagement thereof upon the said plate and card carriages reaching the limit of their continued movement after printing, consisting of an inclined block secured to one of said guides and operating to tilt the said carriage so as to lift said hook thereon for the purpose specified.

15. In a plate-printing machine, guides, a plate-carriage slidably mounted thereon, means for compressing said carriage and an automatic inking device consisting of an arm pivotally secured and adapted to swing downwardly over the path of said plate and carriage on said guides, an inking-roller on the free end of said arm, means for causing the said movement of said arm consisting of a toggle-lever supported laterally of the said guides and means for connecting same operatively to said arm and said plate-carriage and distributing ink and transferring it to said roller, for the purpose specified.

16. In a plate-printing machine, guides, a plate-carriage slidably mounted thereon, means for compressing said carriage and an automatic inking device consisting of an arm pivotally secured and adapted to swing downwardly over the path of said plate and carriage on said guides, an inking-roller on the free end of said arm, means for causing the said movement of said arm consisting of a toggle-lever supported laterally of the said guides and means for connecting same operatively to said arm and said plate-carriage the latter comprising a lever fulcrumed on the frame, a pitman connecting said lever to the die-carriage and distributing ink and transferring it to said roller, for the purpose specified.

17. In a plate-printing machine, guides, a card-carriage slidably mounted thereon, compression mechanism, an arm carrying an inking-roller on its extremity and pivoted to the frame, a hook on said arm and a latch adapted to engage same and lying in the path and at the backward limit of the movement of said die-carriage, whereby the inking-roller is permitted to move to and across the ink-platen.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

JOSIAH PERCY STEVENS.

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PAUL DIXON.