No. 781,297. PATENTED JAN. 31, 1905.

H. PARSONS.

BEAM PRESSER.

APPLICATION FILED SEPT. 26, 1904.

6 SHEETS—SHEET 1.

Fig. 1

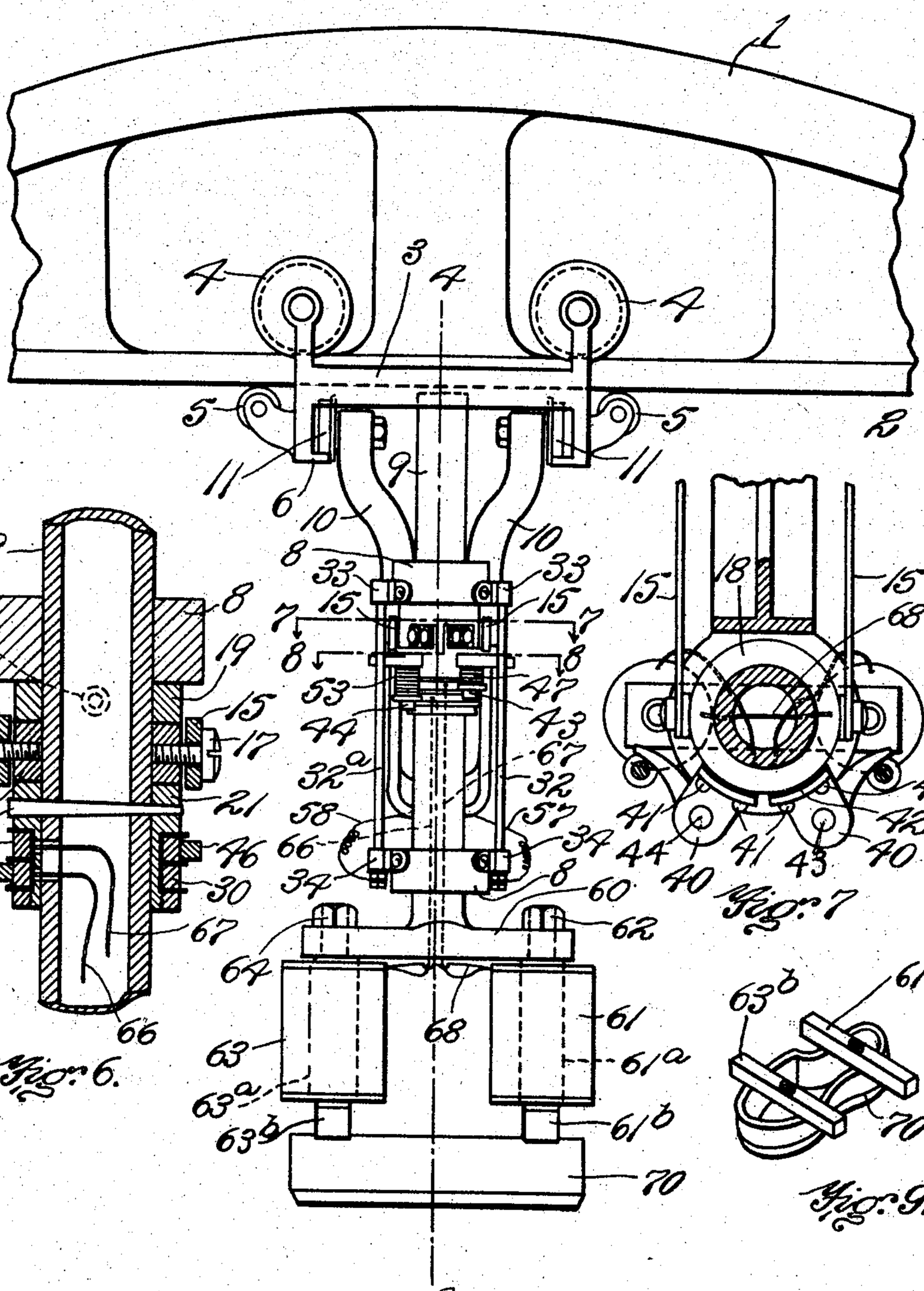

Fig. 6.

Fig. 7

Fig. 9.

Witnesses:

E. Batchelder

O. F. Leggett

Inventor:

H. Parsons

By Wright Brown Quinby & Otis

Attys.

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6 SHEETS—SHEET 2.

Fig. 2

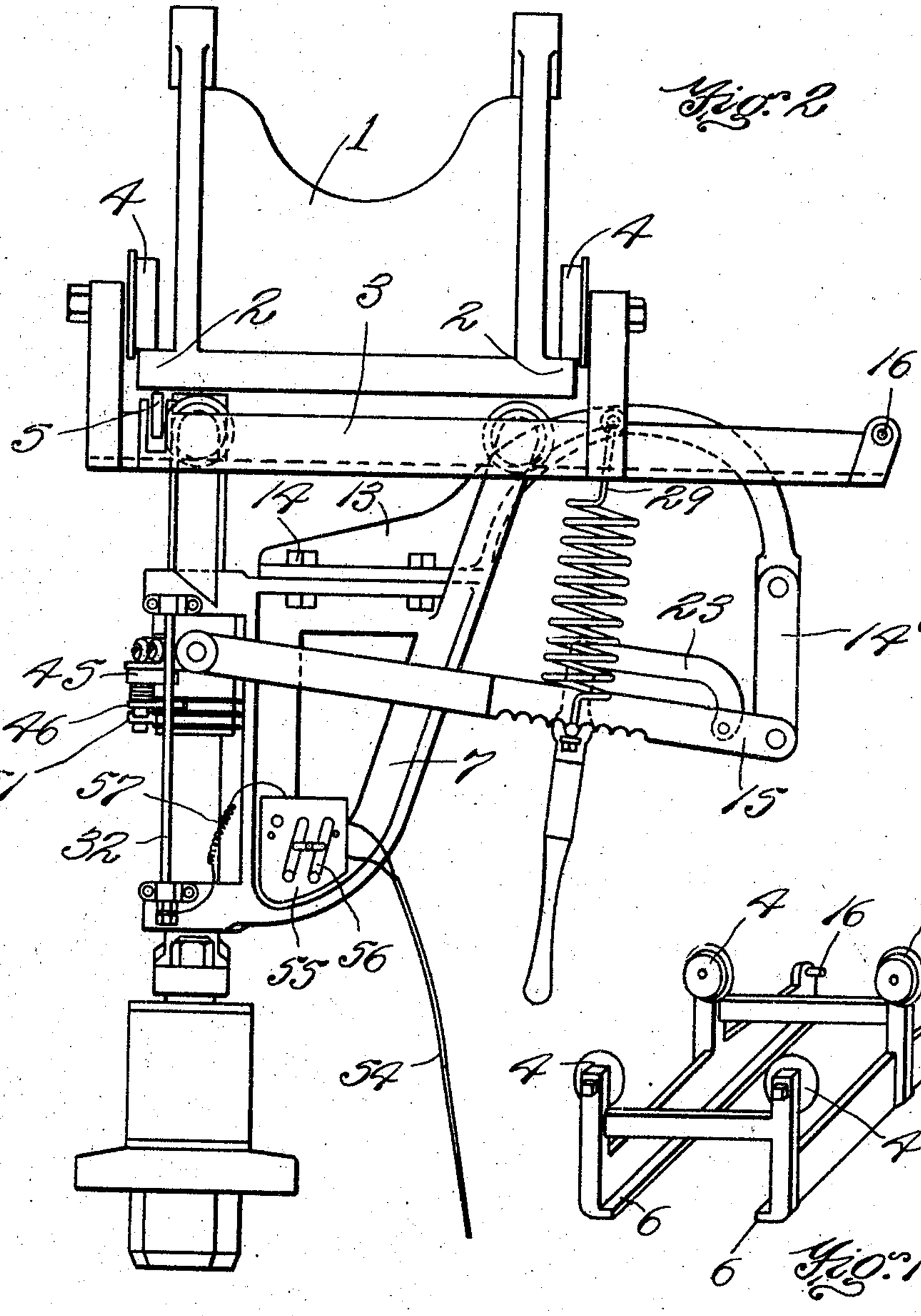
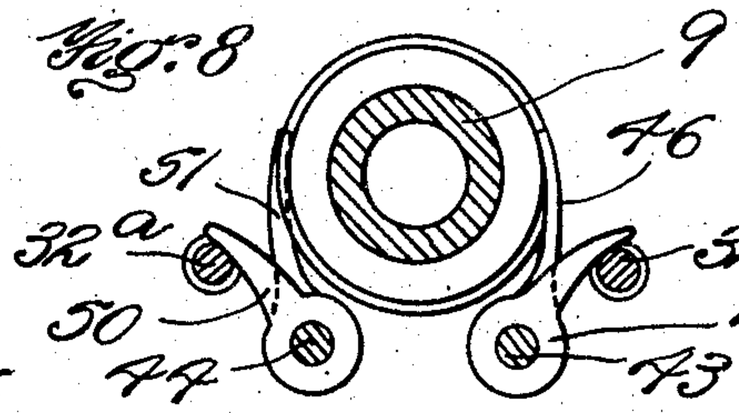


Fig. 10

Fig. 8



Witnesses:

E. Ratchelder

P. H. Boyle

Inventor:

H. Parsons

By Wright Brown Quinby & Ailing

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6 SHEETS—SHEET 3.

Fig. 4.

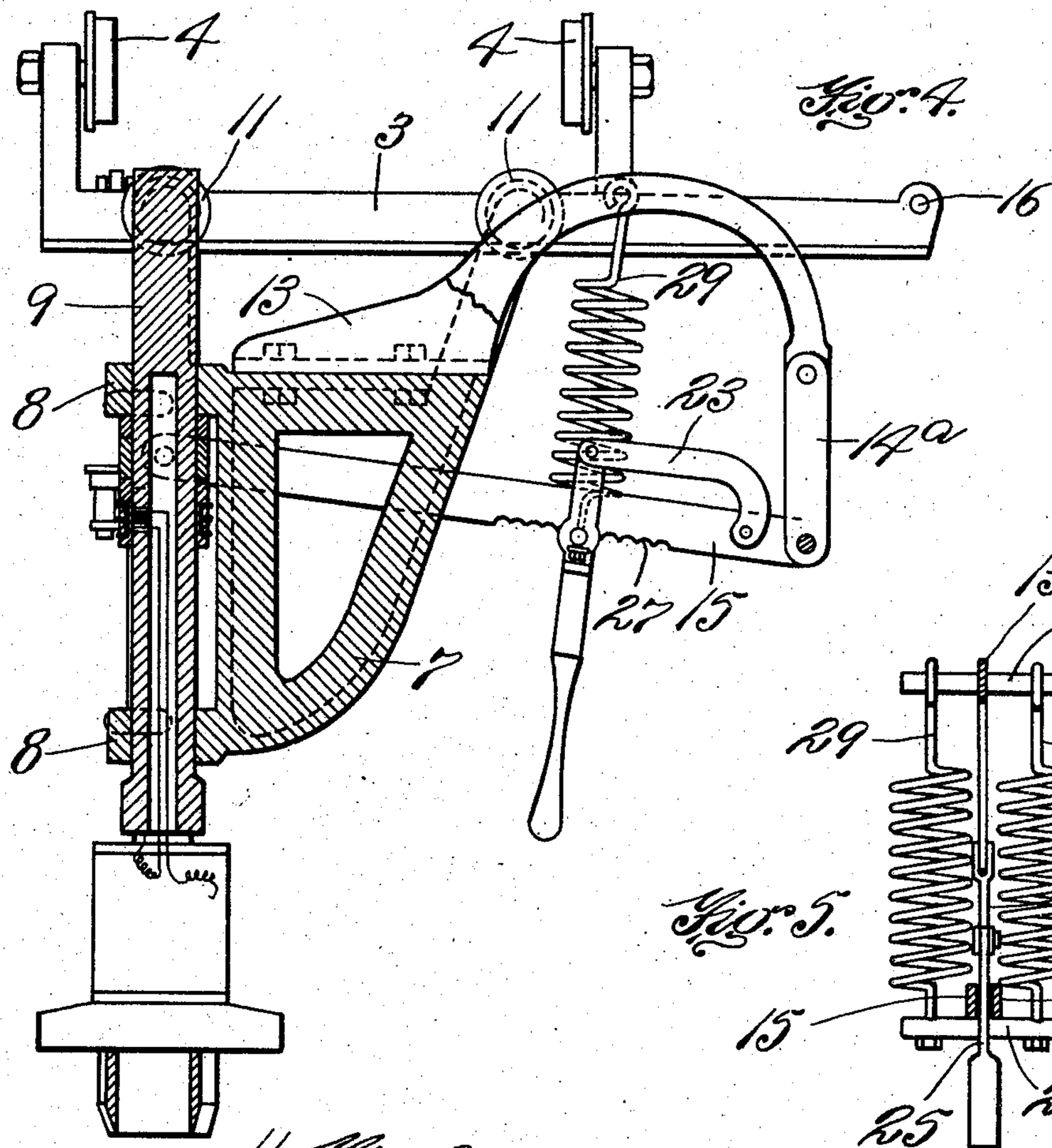
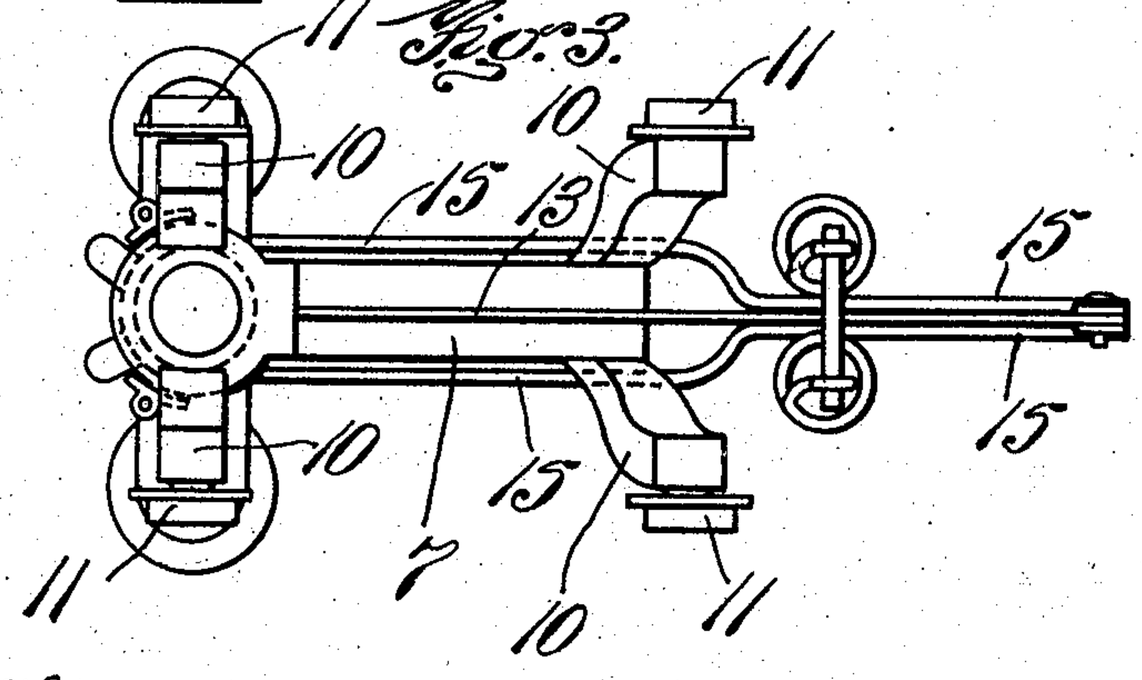


Fig. 5.

Fig. 3.



Witnesses:

E. Satchfield

C. H. Baggett

Inventor:

H. Parsons

By Wright Brown Quinby & Otis

Attys

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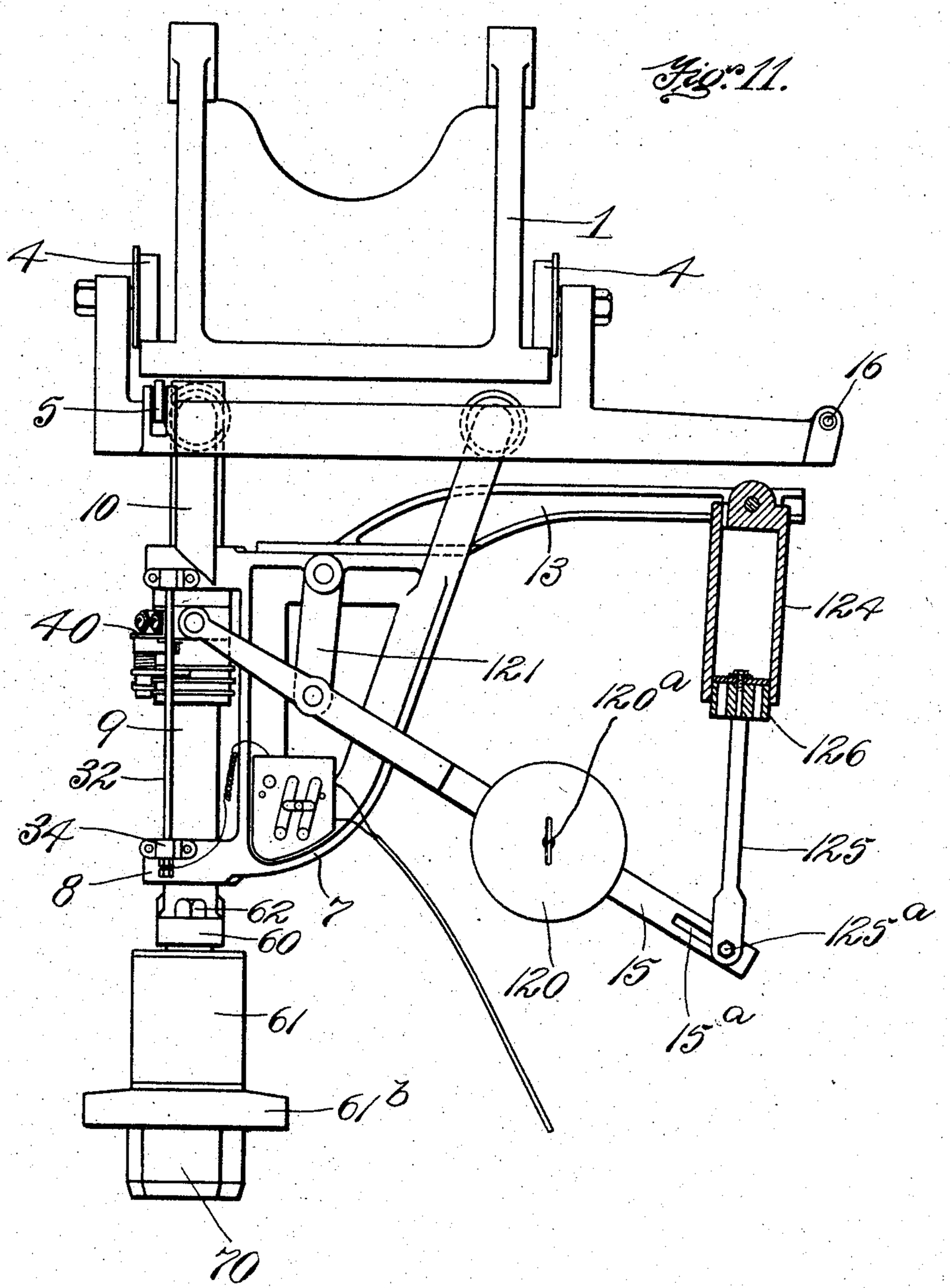
6 SHEETS—SHEET 4.

Fig. 11.



Witnesses:

E. Batchelder

P. H. Piggott

Inventor:

H. Parsons

By Wright Brown & Quinby

Atty's

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H. PARSONS.

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6 SHEETS—SHEET 5.

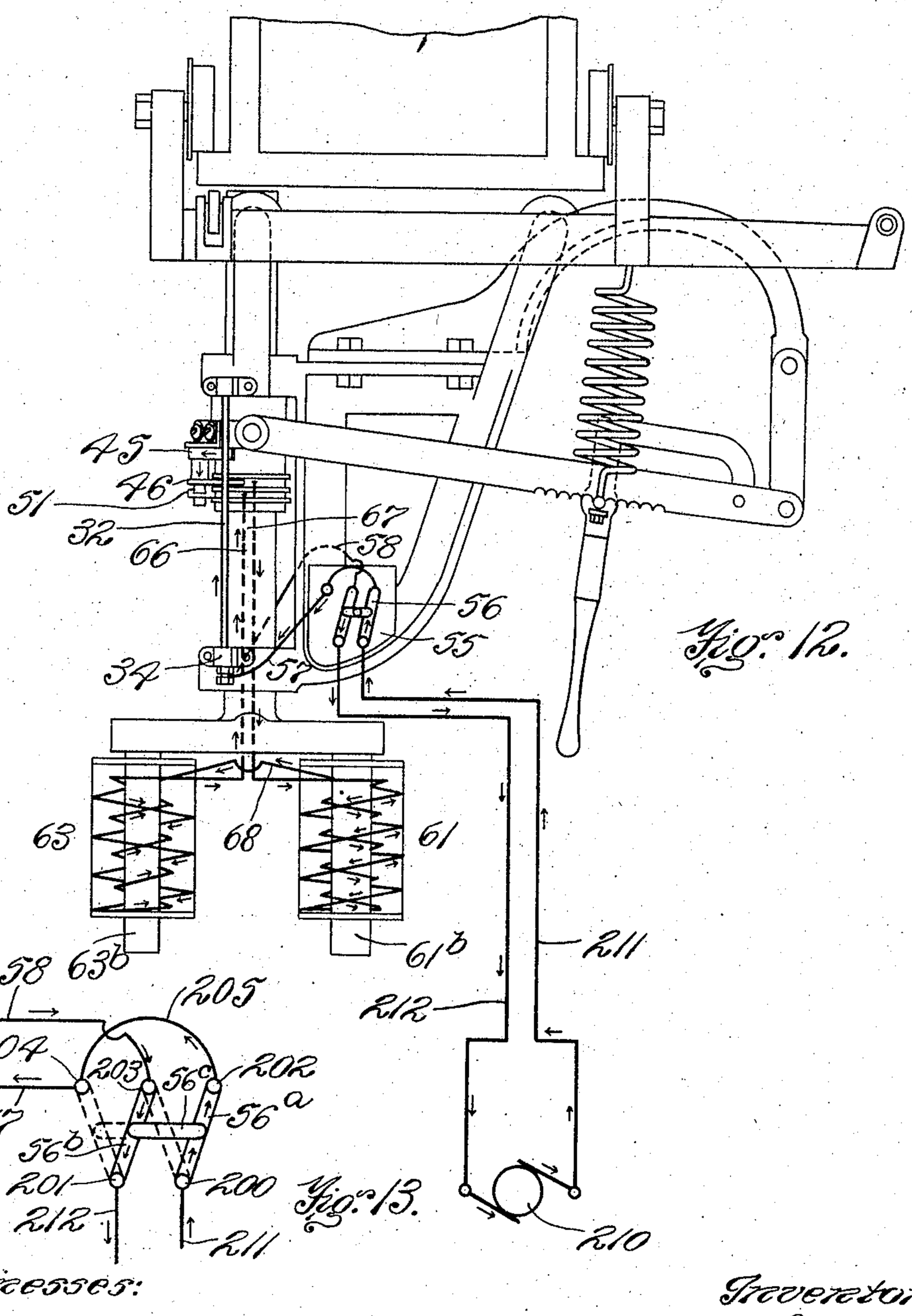

Fig. 12.

Fig. 13.

Witnesses:

E. Dalchelder

P. H. Piggott

Inventor:

H. Parsons

By Wright Brown & Quinby

Attys

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H. PARSONS.

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6 SHEETS—SHEET 6.

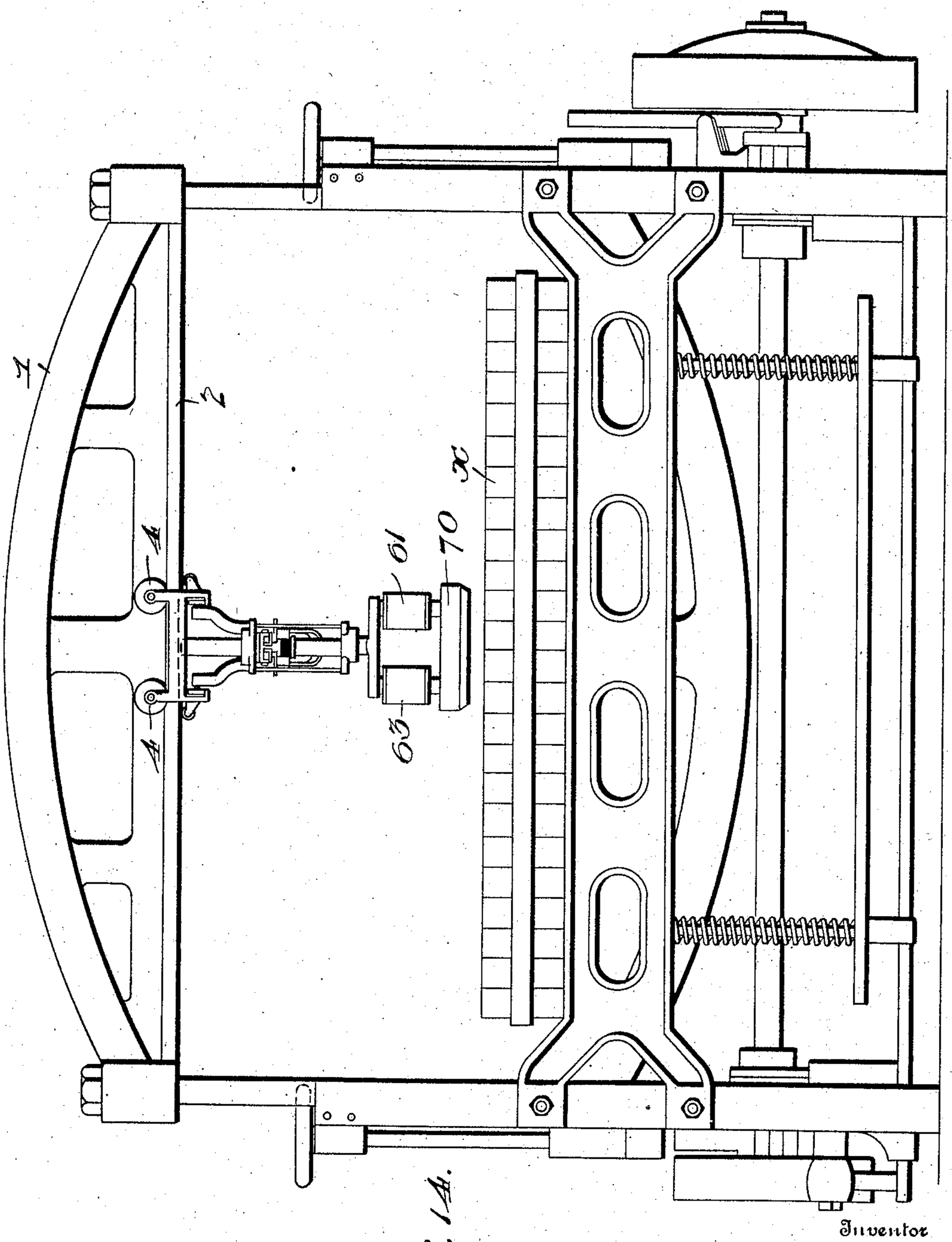

Fig. 14.

Witnesses
J. L. Mackaye
Lewis Hodges

Inventor
Henry Parsons

By Wright, Brown & Quinby
Attorneys

No. 781,297. Patented January 31, 1905.

UNITED STATES PATENT OFFICE.

HENRY PARSONS, OF MARLBORO, MASSACHUSETTS.

BEAM-PRESSER.

SPECIFICATION forming part of Letters Patent No. 781,297, dated January 31, 1905.

Application filed September 26, 1904. Serial No. 225,968.

To all whom it may concern:

Be it known that I, HENRY PARSONS, of Marlboro, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Beam-Pressers, of which the following is a specification.

This invention relates to a class of machines known as "beam-pressers," and has for its object the production of new and improved means for handling the die.

Of the accompanying drawings, forming a part of this specification, Figure 1, in front elevation, shows a machine constructed in accordance with my invention, a portion only of the beam of the machine being shown. Fig. 2 is a side elevation of the parts shown in Fig. 1, the beam appearing in end elevation. Fig. 3 is a top plan view of the parts shown in Fig. 2, the beam and the main carrier being omitted, showing the arrangement of the spindle-carrier and the parts carried thereby. Fig. 4 is a vertical sectional view on the line 4 4 of Fig. 1, showing the arrangement of the spindle and the spindle-carrier, the latter being shown as supported by the main carrier. Fig. 5 is a detail view of the counterbalancing return-springs. Fig 6 is a detail view, on an enlarged scale, of a portion of the spindle shown in Fig. 4, to which the levers and counterbalancing return-springs are connected by means of a collar. Fig. 7 is a cross-sectional view on the line 7 7 of Fig. 1, showing the connection of the return-levers with the collar and also showing the contact-fingers and wires. Fig. 8 is a cross-sectional view on the line 8 8 of Fig. 1 looking in the direction of the arrows, showing the arrangement of the sliding contact-fingers. Fig. 9 is a detail perspective view of the die, showing the pole-pieces in position on the die, the magnets being removed. Fig. 10 is a detail perspective view of the main carrier. Fig. 11 is a view similar to Fig. 2, showing a weight and dash-pot substituted for the springs to serve as a balance to the die-spindle and to insure the return of the latter to its initial position. Fig. 12 is a diagrammatic view showing the circuit to the magnets and the means whereby the direction of the current through the magnets is reversed. Fig. 13 is a diagrammatic view of the switch-levers, binding-posts, and their connecting-wires. Fig. 14 is a front view of the machine, showing the carriers and spindle with the main carrier in position on the beam.

The same numerals of reference indicate the same parts in all the figures.

1 represents a beam of the class illustrated in United States Letters Patent to me, No. 368,108, granted August 9, 1887, and is adapted to be readily reciprocated by suitable mechanism.

The bed and operating parts of the machine are not shown, as they form no part of the present invention, the position of the top of the bed, however, being indicated in Figs. 1, 2, and 11 by a line marked *x*. The lower part of the beam on either side is formed with a ledge 2, (see Fig. 2,) constituting tracks.

3 represents a main carrier provided with a pair of rolls 4 4 at either end, arranged upon the tracks 2, (see Fig. 2,) adapted to travel from one end of the machine to the other along the beam 1.

5 5 represent rolls, one at either end of the carrier 3, bearing on the under side of the beam and on either side of the spindle hereinafter described, the purposes of the rolls 5 being to steady the parts and keep them in proper relationship. The side members of the carrier 3 are formed with complemental ledges 6 6, constituting tracks and extending crosswise of the direction of travel of the main carrier and parallel with each other.

The spindle-carrier is made up of a bracket 7, formed with two bearings 8 8, one above the other, adapted to receive and guide the spindle 9. The bracket 7 is formed at either end with a pair of diverging upwardly-extending arms 10 10, each carrying a roll 11, adapted to rest on and travel along the tracks 6 6. (See Figs. 1, 4, and 10.)

By the above-described arrangement the main carrier and the spindle-carrier may be moved along the beam 1 lengthwise of the machine, while at the same time the spindle-carrier may be adjusted crosswise of the machine in order to bring the spindle and its die to any desired position. The carrier 3 is provided with pins 16 16 to prevent the rolls

of the spindle-carrier running off their tracks 6 6. The upper part of the spindle 9 is solid, while the lower end is cored out to serve as a passage for the wires hereinafter described.

13 represents an arm secured by bolts 14 to the top of the casting. (See Figs. 2 and 4.) This arm extends in a curved gooseneck fashion toward the rear of the machine. To the lower end of this arm 13 is pivoted a link 14^a.

15 15 represent two complemental levers, each pivoted at their rear ends to the end of the link 14^a. (See Fig. 3.) These levers 15 15 for a part of their length are arranged parallel and close to each other below the arm 13. Thereafter these levers diverge from each other and straddle the casting 7. (See Fig. 3.) At their front ends each of these levers 15 is pivoted by a screw 17 to a collar 18, loose on the spindle 9. (See Fig. 6.)

19 represents a collar arranged on the spindle 9 above the collar 18 and rigidly secured to the spindle by a pin 20.

21 represents a collar rigidly secured on the spindle 9 below the collar 18 by means of a pin 22, passing through the collar 21 and the spindle. By this means as the spindle is raised and lowered the collar 18 is maintained upon the spindle in a predetermined position. These collars, it will be observed, are arranged on the spindle between the two bearings 8 8.

23 represents a short curved lever, one end of which is pivoted to one of the levers 15.

24 represents a handle formed with a blade 25. This blade is arranged between the levers 15 and pivoted at its upper end to the free end of the lever 23 above the levers 15.

26 represents a pin secured in the blade 25 below the levers 15, adapted to engage notches 27, formed in the under side of the levers 15. A complemental pin 28 is secured in the arm 13. (See Fig. 5.)

29 29 represent two springs, one on either side of the arm 13 and levers 15, respectively. The upper ends of these springs are connected to the pin 28. The lower ends of these springs are connected to the pin 26. By this construction the handle can be moved back and forth on the levers 15, thereby changing the direction of the leverage and power of the springs, the latter tending to hold the spindle 9 and the parts carried thereby, with the collar 19, against the upper bearing 8 (see Fig. 6) and to raise the spindle 9 to the position stated when it has been depressed. The described adjustment of the springs 29 provides means whereby the power to be exerted by the springs may be adjusted to satisfactorily perform the desired function.

The collar 21 below the pin 22 is recessed, and in this recess are arranged two lugs 30 31, respectively, of copper or other suitable conducting material, each lug being insulated from the collar 21 and from each other.

33 represents two lugs secured at the upper bearing 8 to the front thereof and insulated from said bearing. 34 34 represent a complemental pair of lugs secured to the lower bearing 8, but insulated therefrom.

32 32^a represent rods of conducting material. Each rod is held at its upper end by a lug 33, and at its lower end by a lug 34, and thus maintained in parallel position with relation to each other.

40 40 represent two lugs secured to the ring 18 at the front of the machine by screws 41, the screws and the lugs being insulated from the ring 18 by any suitable insulating material. The lug 40 at the right carries a spindle 43, while the lug 40 at the left carries a spindle 44, (see Figs. 1, 7, and 8,) the spindle 44 being longer than the spindle 43. Upon the spindle 43 are arranged two fingers 45 46, one over the other, the finger 45 engaging the conducting-rod 32 and the finger 46 engaging the ring 31. A coiled spring 47, arranged on the spindle 43 and suitably connected to the fingers 45 46, serves to press them in opposite directions, keeping the finger 45 yieldingly in engagement with the rod 32 and the finger 46 yieldingly in engagement with the ring 31.

50 51 represent a pair of fingers arranged upon the spindle 44, the finger 50 being arranged to engage the rod 32^a, while the finger 51 engages the ring 30. A coiled spring 53, arranged on the spindle 44 and suitably connected to the fingers 50 51, serves to force them in opposite directions, holding the end of the finger 50 yieldingly in engagement with the conducting-rod 32^a and the end of the finger 51 yieldingly in engagement with the ring 30, it being understood, of course, that the rings 30 and 31 and the fingers 45 46 50 51 and the rods 32 32^a are of conducting material and arranged together to form a circuit while insulated from other parts of the machine.

54 represents a pair of wires leading from a suitable source of power to a switch 55, fast on the bracket 7, the passage of the current through the switch being controlled by a pair of levers 56. From one of the binding-posts of the switch a wire 57 leads to the conducting-rod 32, while a wire 58 leads from the other binding-post to the rod 32^a. By this means the circuit is completed from the switch to the rings 30 31.

The lower end of the spindle 9 is formed as a bar 60, extending either side from the spindle.

61 represents an electromagnet suitably secured, by means of a nut 62, to one end of the bar 60, but insulated therefrom. 63 represents an electromagnet connected by a nut 64 to the opposite end of the bar 60 and insulated therefrom, the cores 61^a 63^a of the electromagnets being shown in dotted lines in Fig. 1. A wire 66 leads from the lower ring 30 to the electromagnet 63, while the wire 67 leads from the upper ring 31 to the electro-

magnet 61. The wires 66 and 67 are passed down through the hollow part of the spindle 9 and corresponding aperture in the bar 60. A wire 68 forms the connection between the windings of the two spools of the magnets. This completes the circuit. When the lever 56 is turned to make proper connection between the contact-points of the switch, the current passing through the coils of the electromagnets will vitalize the cores of said magnets 61^a 63^a, respectively.

70 represents a die, here shown as the form employed for cutting out soles of boots and shoes. The lower end of the core 61^a is extended in a horizontal position to form a shoe 61^b, while the end of the core 63^a is in like manner extended to form a shoe 63^b, these shoes being at right angles to their respective cores. In Fig. 9 these shoes are shown detached from the cores of the magnets in order to show the arrangement of the shoes with the die. The die being made of magnetic material, such as steel or iron, when it is brought into proper relation to the shoes 61^b 63^b the magnets are vitalized, thereby firmly binding the die 70 to the shoe. In this position the machine may be operated to cut the desired material in the desired way, the fingers 45 and 50 keeping the circuit closed by their sliding contact with their respective rods 32 32^a as the spindle 9 is forced down by the beam 1 to cut the material or is raised by the springs 29. When it is desired to change dies, all that it is necessary to do is to turn the switch to reverse the current through the magnets, causing the die to drop from the shoes. Another die will be gripped by the shoes when brought in contact with them, so long as the current is passing through the coils. The arrangement of the shoes with respect to the die serves to maintain the latter firmly in the desired position. By this means dies can be rapidly and readily changed.

Referring to Fig. 11, I have shown a weight 120 connected to the lever 15 in place of the springs 29 and adapted to be secured at any desired position on the lever by means of a nut or other clamping device 120^a. This weight tends to draw down the rear end of the levers 15. 121 represents a link pivoted at one end to the upper end of the bracket 7 and at its other end to the levers 15 between the weight and the ends of the levers that are pivoted to the ring 18. By this construction as the beam 1 forces the spindle down the weight 120 will be raised. Then as the beam returns to its initial position the weight will maintain the ring 18 against the bearing 8, and thus raise the spindle. To prevent sudden shocks or jars to the parts, due to the action of the weight, a dash-pot 124 is pivoted to the arm 13. 125 represents a lever pivoted to the free end of the lever 15 and provided on its upper end with a piston 126, adapted to work in the cylinder of the dash-pot 124. The connection between the levers 15 and the lever 125 is effected by means of a slot 15^a, formed in the lever 15, and a bolt 125^a, carried by the lever 125, a wing-nut or any other suitable device being employed to bind the parts together when they are adjusted to permit the required movement of the lever 125.

Referring to Figs. 12 and 13, wherein I have shown diagrammatically the circuit used in connection with my die-holding magnets, the switch 56 is shown as composed of two levers 56^a 56^b, connected by a link 56^c. The end of the lever 56^a is pivoted at its lower end to a binding-post 200, while the lever 56^b is pivoted at its lower end to a binding-post 201. At the upper side of the switchboard are three binding-posts 202 203 204, the binding-posts 204 and 202 being connected by a wire 205. The wire 57 from the rod 32 runs to the binding-post 204, while the wire 58 from the rod 32^a runs to the binding-post 203. As the switch is shown in Fig. 12 the upper end of the lever 56^b is on the binding-post 203, while the upper end of the lever 56^a is on the binding-post 202. This would send the current through the magnets in the direction of the arrows. If, however, the switch were shifted to bring the end of the lever 56^b on the end of the binding-post 204 and the end of the lever 56^a on the end of the binding-post 203, the direction of the current through the magnets would be changed. This would produce a momentary repellant action on the die instead of attractive, allowing the latter to drop. This condition of the magnet, however, is only momentary, and the same die or another one will be immediately seized and controlled by it if brought into its field. This arrangement permits of the removal of one die and the substitution of another by a single movement of the switch and without loss of time, or if the current were merely cut in and cut out of the magnet, since in this case there would be more or less time elapse before the magnet lost its strength. In Figs. 12 and 13 I have also shown diagrammatically a dynamo 210. From this dynamo a wire 211 leads to the binding-post 200, while a return-wire 212 runs from the binding-post 201 back to the dynamo in the ordinary way.

It will further be noted that the spindle may be revolved, the fingers 46 and 51 rubbing on their respective rings after the manner of a commutator, the die therefore being capable of three adjustments—one by means of the main carriage longitudinal of the machine, another by means of the die-carriage crosswise of the machine, and a third by the rotary motion of the spindle.

While I have shown in the drawings a die of the form ordinarily used for cutting out soles of boots or shoes, I of course do not wish to be understood as restricting my invention to such a die or such work, since any desired form of die may be used in the machine, de-

pending upon the work to be done and the kind of material to be operated on.

Having thus explained the nature of my invention and described a way of making and using the same, although without attempting to set forth all of the forms in which it may be made or all of the modes of its use, what I claim, and desire to secure by Letters Patent, is—

1. In combination with the coöperative elements of a machine of the class described, magnet-supporting means, a pair of magnets carried by said means and each formed with a die-engaging shoe, said shoes being separated from each other, a die having a shoe-engaging portion composed of magnetic material arranged to be engaged at different points by said shoes to prevent movement of the die, and means for vitalizing said magnets.

2. In a machine of the class described, magnet-supporting means, an electromagnet carried thereby adapted to hold a die, and means for reversing the current through the magnet to effect a removal of the die held by the magnet.

3. In a machine of the class specified, a reciprocating die-spindle, a collar carried thereon, a lever connected to said collar, and means connected to said lever adapted to yieldingly resist the motion of the spindle in one direction.

4. In a machine of the class specified, a reciprocating die-spindle, a collar carried thereon, a lever connected to said collar, means including springs connected to said lever adapted to yieldingly resist the motion of the spindle in one direction, and means for adjusting the tension of the springs.

5. In a machine of the class specified, a reciprocating spindle carrying contact-fingers, a die-holding electromagnet carried by said spindle, rods arranged for sliding engagement by said fingers, a switch, and connections between the switch and said fingers for keeping the circuit closed through the magnets in any position of the spindle.

6. In a machine of the class described, a reciprocating rotatable die-spindle, a die-holding electromagnet carried by said spindle, a switch, a commutator carried by said spindle, and connections between said commutator and said switch and said magnet whereby the movement of the spindle does not affect the circuit or the wires.

7. In combination with the coöperative elements of a machine of the class described, a reciprocating die-spindle, a commutator device carried thereby, a magnet carried by the end of said spindle, a conduit formed in said spindle between said devices and said magnet, and electric connections arranged in said conduit and connecting said devices and said magnet.

8. In a machine of the class specified, a reciprocating die-spindle, a collar carried thereon, a pivoted lever, one end of which is connected to said collar, an adjustable holding device, and a spring connecting said lever and said device.

9. In a machine of the class described, a reciprocating die-spindle, a collar carried thereon, a lever, one end of which is connected to said collar, the opposite end of said lever having a yielding connection with the framework, a saddle arranged on said lever, and a spring, one end of which is connected to said saddle, the opposite end of said spring being connected to the framework whereby the tension of said spring may be varied by movement of said saddle.

In testimony whereof I have affixed my signature in presence of two witnesses.

HENRY PARSONS.

Witnesses:
C. F. Brown,
R. Bullvik.