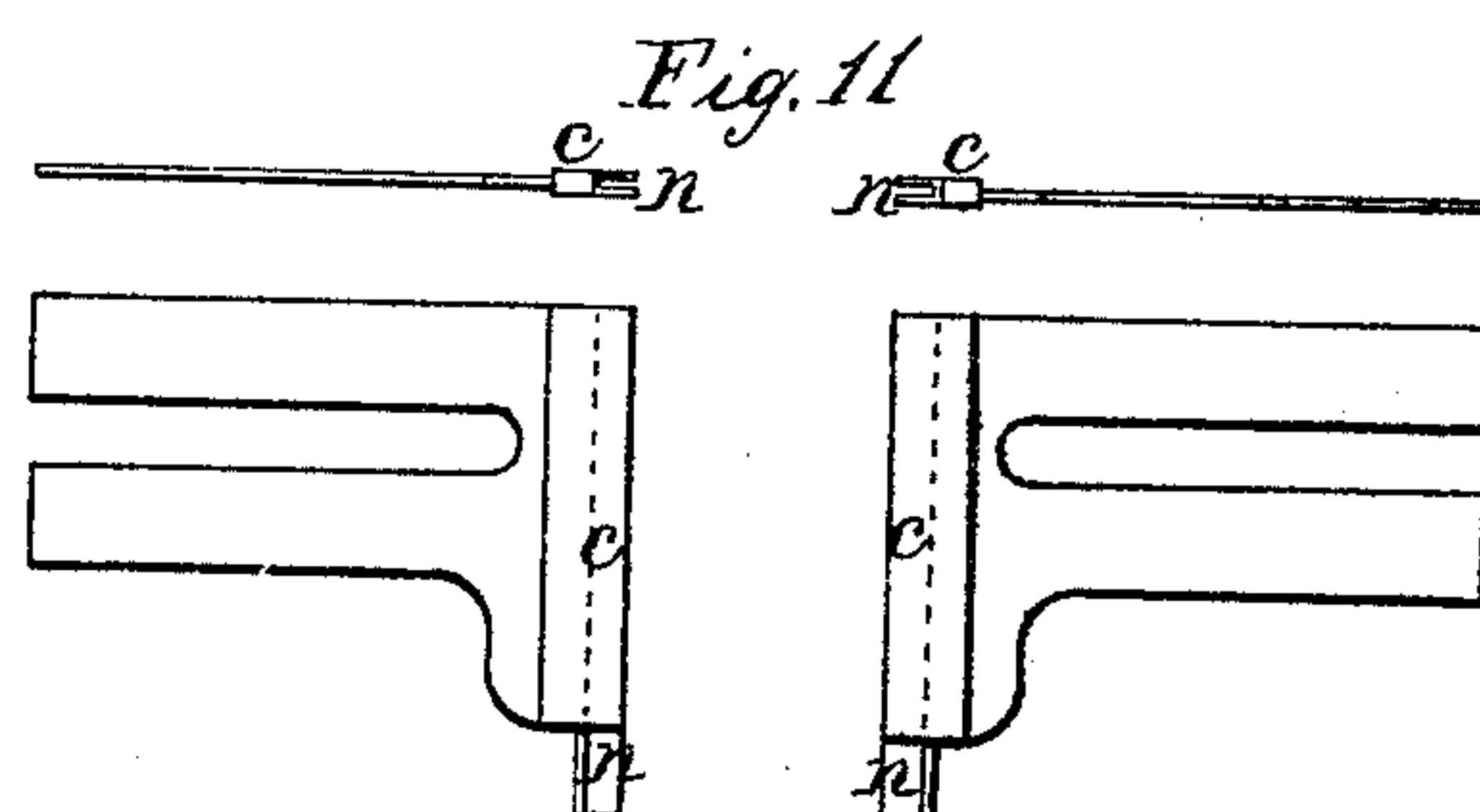
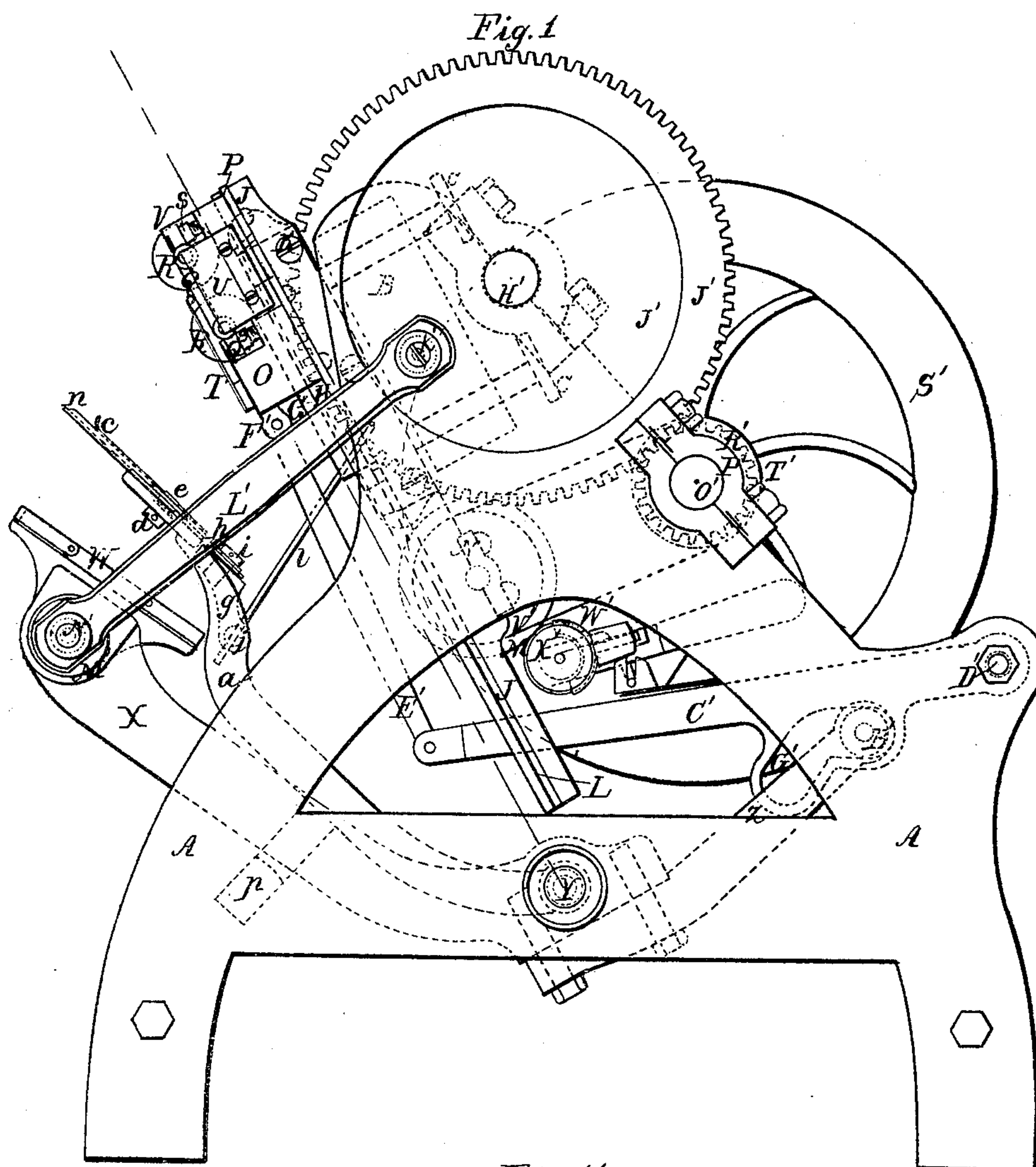


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MAGIC CARD PRESS.

No. 18,812.

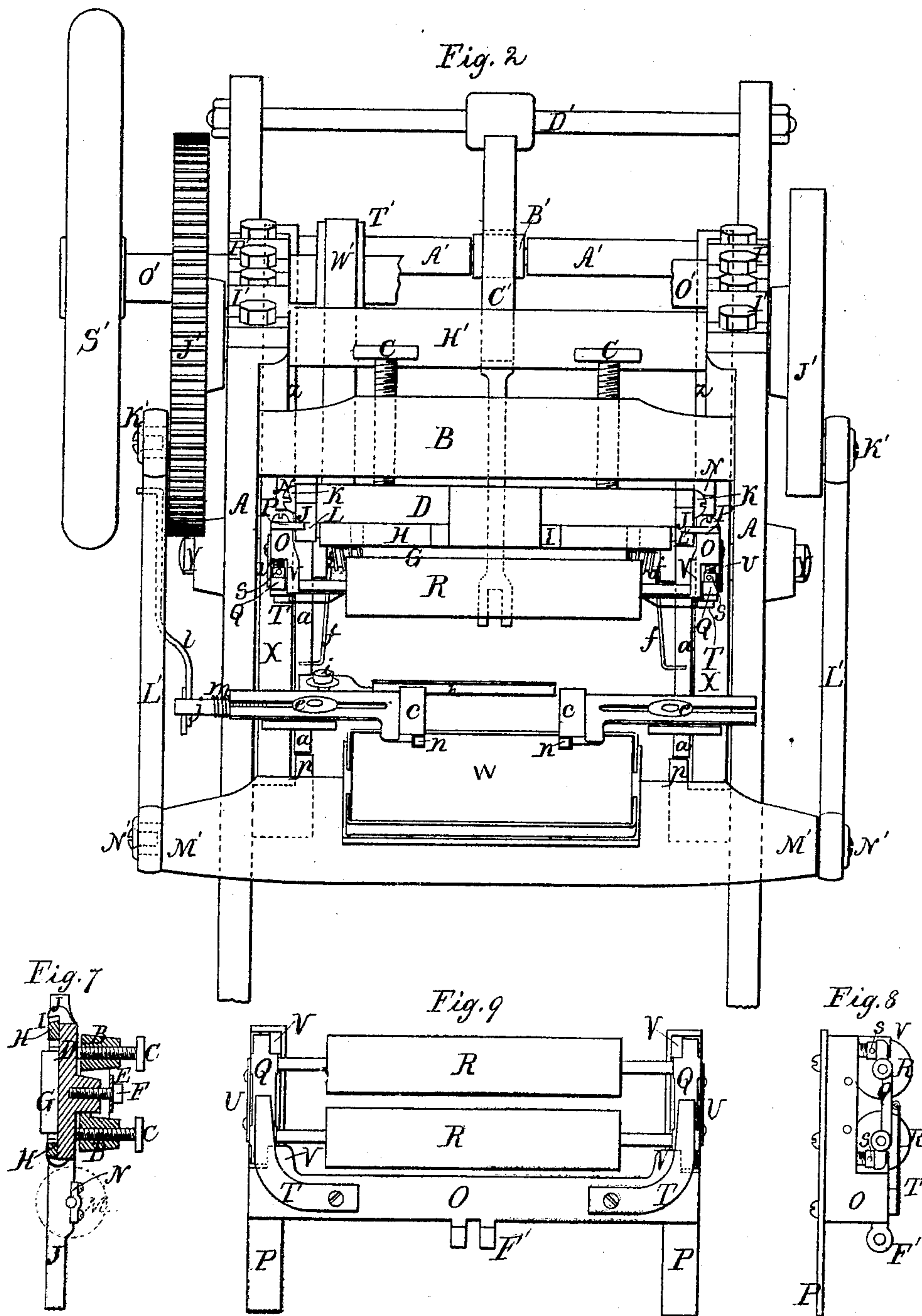
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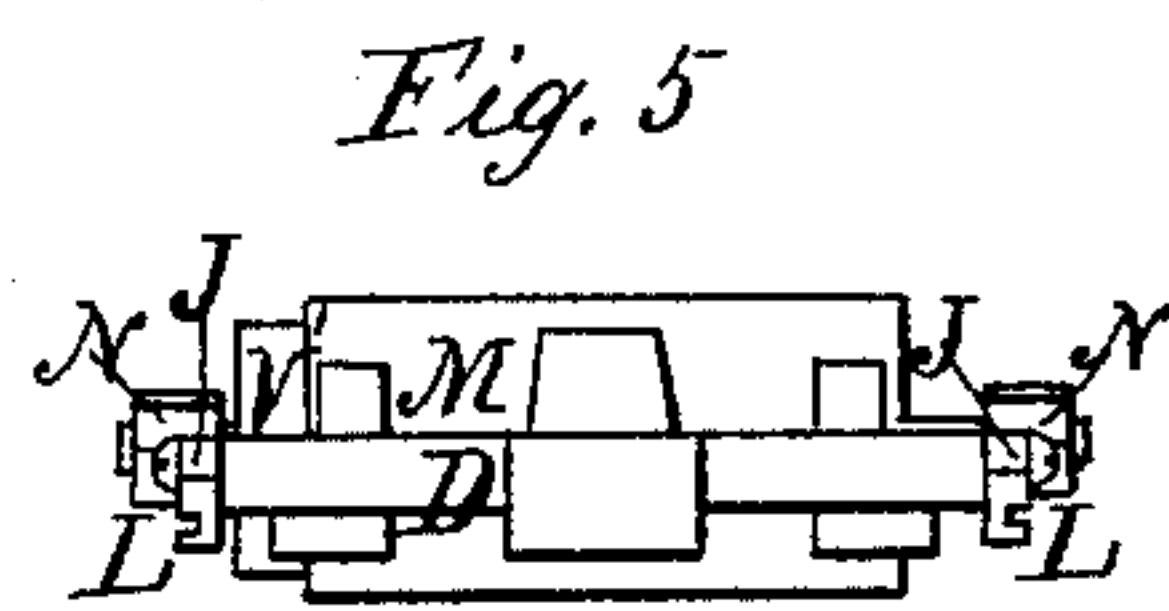
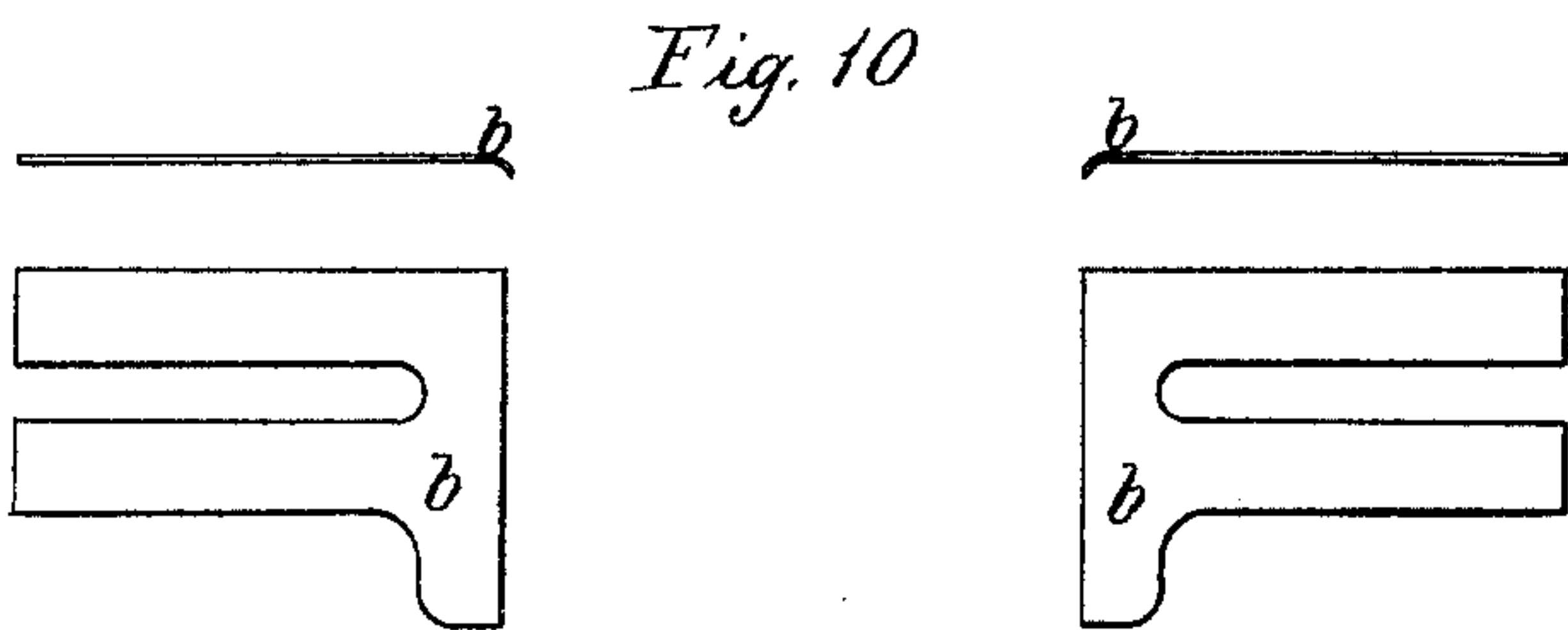
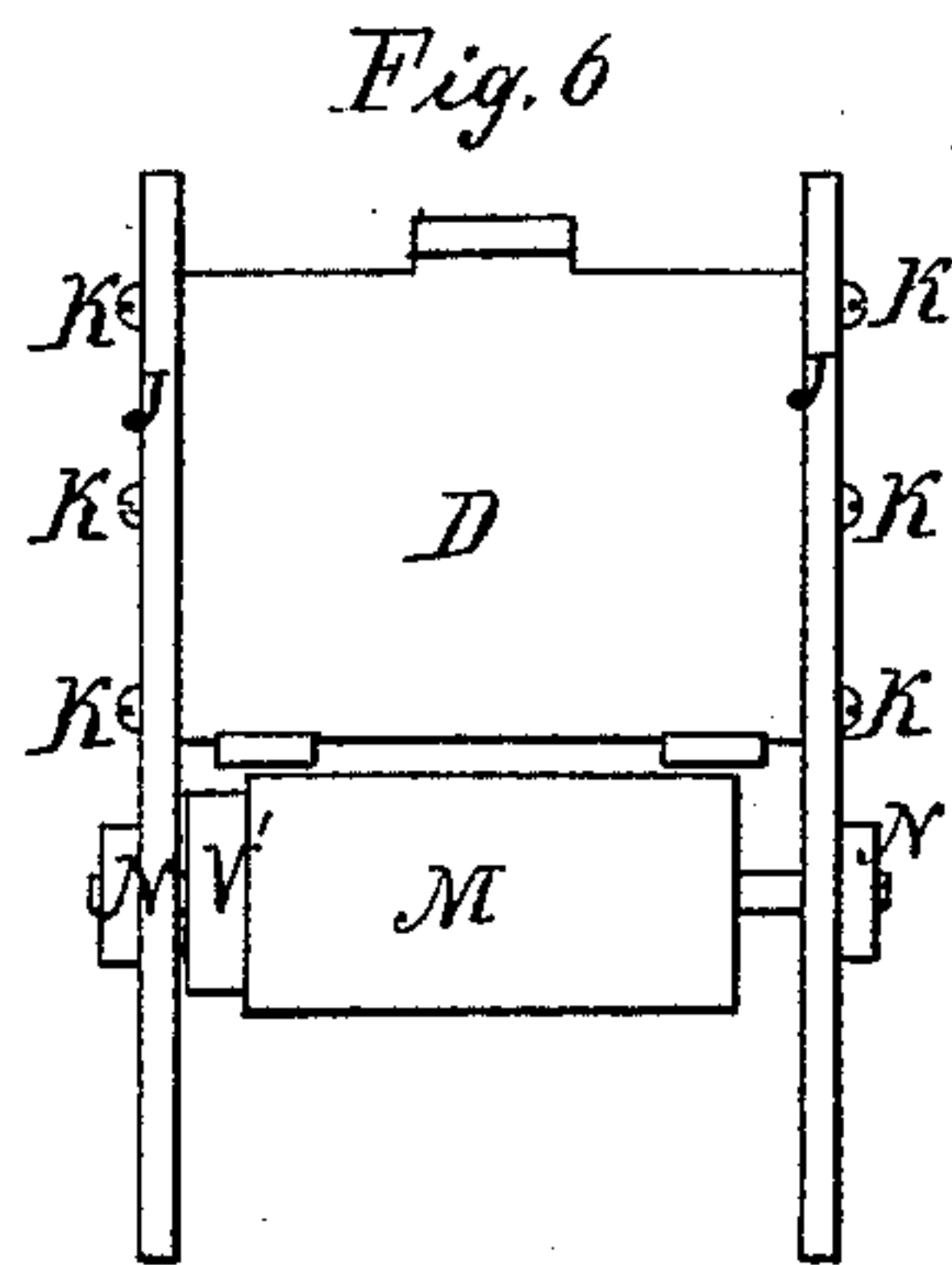
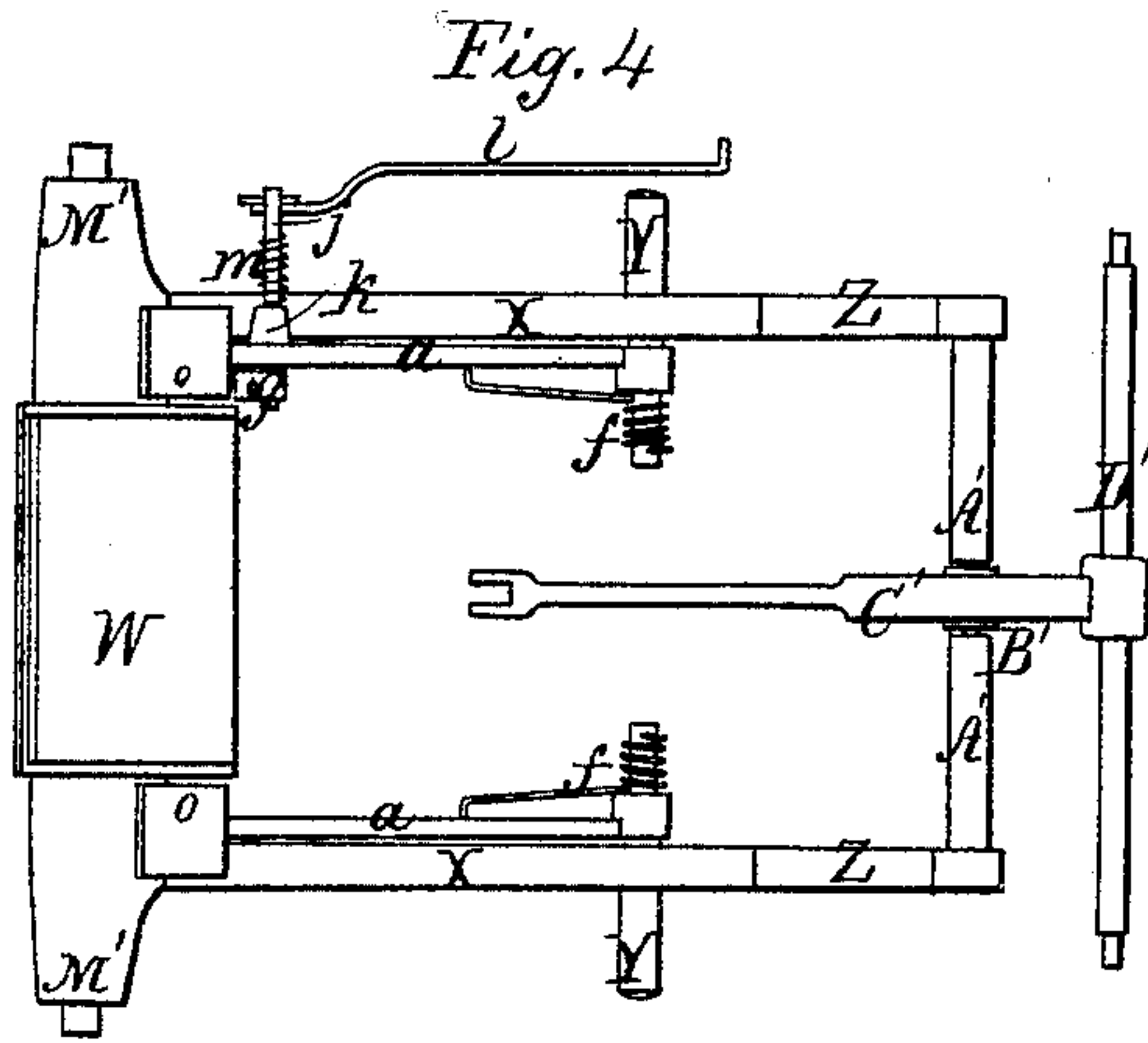
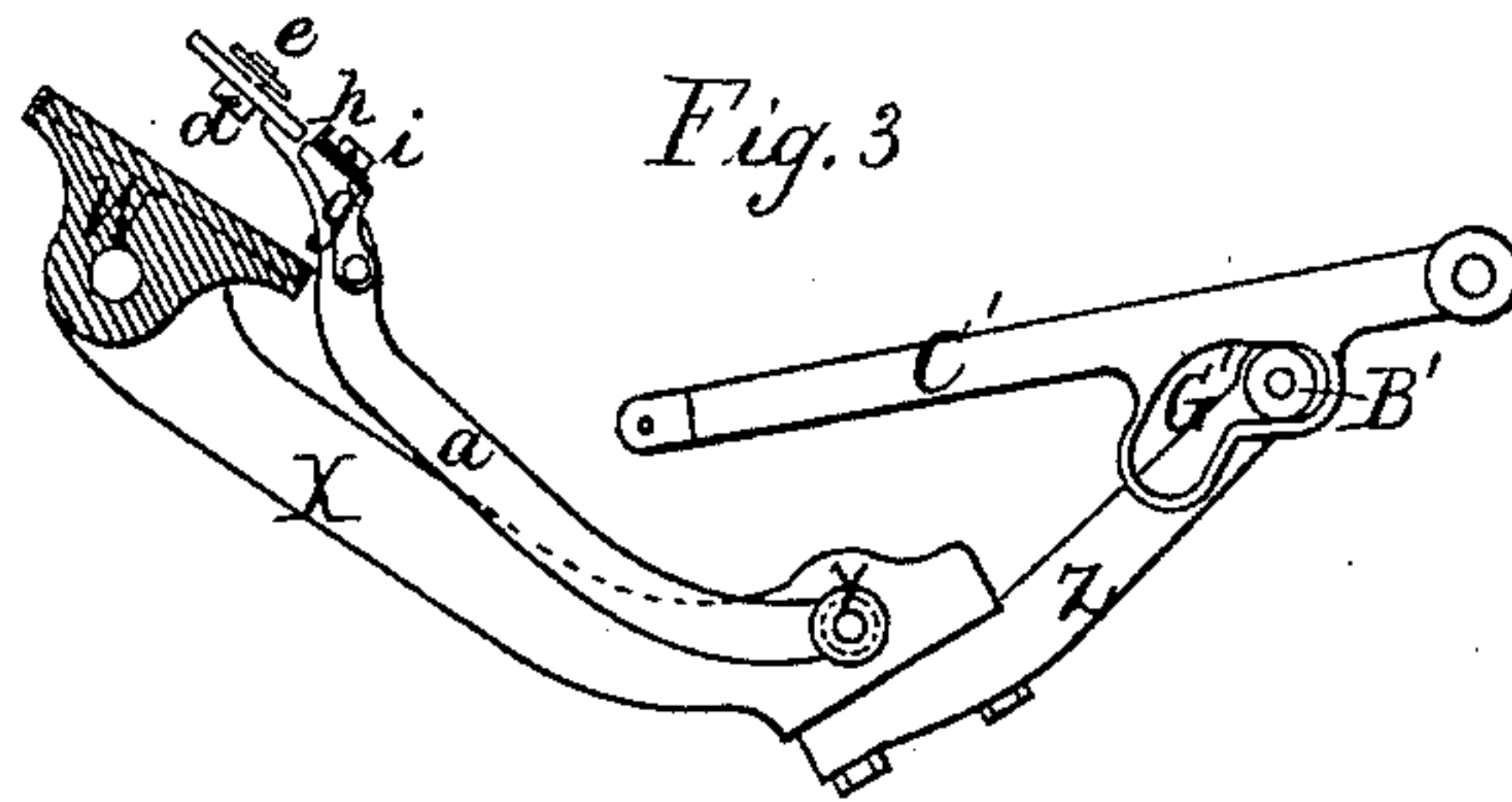
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UNITED STATES PATENT OFFICE.

CHARLES W. HAWKES, OF BOSTON, MASSACHUSETTS.

PRINTING-PRESS.

Specification of Letters Patent No. 18,812, dated December 8, 1857.

To all whom it may concern:

Be it known that I, CHARLES W. HAWKES, mechanical engineer, of Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented certain new and useful Improvements on Printing-Presses; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, and to the letters of reference marked thereon, in which—

Figure 1 is a side elevation; Fig. 2 is a plan representing the form bed in a vertical position; Figs. 3 and 4 represent the platen, the nipper levers and the cam lever; Figs. 5 and 6 represent the form bed, the carriage ways and the inking drum; Fig. 7 shows the manner in which the form bed is secured to the main girt; Figs. 8 and 9 represent the roller carriage; Fig. 10 represents the nippers or sheet holders; Fig. 11 represents the card holders.

The same letters refer to like parts in all the figures.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

I construct a printing press with my improvements therein, together with all the working parts necessary to operate the same as represented in Figs. 1 and 2.

A A represent the frame.

B is the main girt which holds the two sides of the frame together. C C are the bed screws, there are four of these screws set in the main girt and extending through it, one at each corner of the bed, they are to regulate the impression, or in other words, to adjust the face of the form to the face of the platen so as to produce an even impression when the platen is brought in a position to give an impression.

D is the form bed, it is placed in front of the main girt and is held firmly against the bed screws by the spring E, and bolt F. The form G is locked up within the chase H and secured by the key I to the face of the bed.

J J are the carriage ways for the roller carriage to run in. There is one at each end of the bed secured by screws K K firmly thereto. They have a longitudinal groove L cut in the outer side of each, running parallel to the face of the bed. The inking drum M is hung to the carriage ways a little below

the bed and is made to revolve in boxes N N on the backside of the carriage ways.

O is the roller carriage. It has a slide P secured to each end. These slides are fitted to run up and down in the grooves cut in the carriage ways.

Q Q are the roller beams in which the journals of the inking rollers R R revolve. There are two of them, one in each end of the carriage, and under each end of these roller beams there is a set screw S for the purpose of setting the rollers to or from the form as occasion may require; and T T are springs for pressing the roller beams hard against the heads of the set screws. There is a thin plate U secured to each end of the carriage which nearly covers the ends of the journals of the rollers and prevents them from sliding endwise, and also holds the roller beam in its place. There are projections V V on each end of the carriage which come up against the inner side of the roller beams at each end of said beams and serve as guides to keep them in place. By this method of constructing a roller carriage it will be perceived that the rollers can be set to any point of nicety required so as to roll hard or lightly over the form.

W is the platen with two legs X X extending downward; it is made to swing to and from the form on the fulcrum pins Y Y, which are set in the lower part of the frame, extending through the platen legs, and in a plane with the face of the form and also in a plane with the face of the platen.

Z Z are stands secured to the platen legs forming a continuation of the platen legs beyond the fulcrum pins. At the extreme end of these stands there is a stud A' projecting inward as represented in Figs. 2 and 4; and between the inner ends of these studs there is a friction roller B', which is made to revolve on a pin extending from the end of one stud into the end of the other.

C' is the cam lever. It is hung on the bolt D' for its fulcrum in the back part of the frame. One end of the connecting rod E' is attached to the forward end of the cam lever and the other end is connected to the center of the roller carriage at F'.

The cam lever has a peculiar cam shaped slot G' made through it in which the friction roller B' is made to play. This slot is made in a suitable shape and in a proper position in the lever to give the required mo-

tion to the roller carriage as the platen vibrates to and from the form.

H' is the main crank shaft. It is made to revolve in the boxes I' on the frame; it also
 5 has a crank wheel J' on each end outside of the frame, and each crank wheel has a crank pin K' to which the connecting rods L' L' are attached, one on each side of the machine outside of the crank wheels. There is
 10 a projection M' on each end of the platen extending out by the frame and even with the outside of the crank wheels; in the outer end of each projection there is a wrist pin N'; one end of the connecting rod L' is attached to this wrist pin and the other end
 15 is attached to the crank pin K'. Thus by giving motion to the main crank shaft, the platen is made to vibrate to and from the form, giving an impression and rolling the
 20 form at every revolution of the main shaft.

O' is the driving shaft. It is made to revolve in boxes P' on the frame.

R' is a fixed pinion on the driving shaft which meshes into teeth cut in the periphery
 25 of one of the crank wheels and gives motion to the same.

S' is a fly wheel on the end of the driving shaft outside of the pinion.

T' is a fixed pulley on the driving shaft.

30 V' is a fixed pulley on the end of the inking drum.

W' is a belt, running from the pulley on the driving shaft to the pulley on the inking drum, which gives motion to the drum.

35 X' is the distributing roller which rolls on the drum; it also has a lateral motion for the purpose of distributing the ink more evenly over the surface of the drum. This machine may be driven by a belt attached to
 40 the fly wheel or it may be supplied with a treadle and driven by foot. The nipper levers *a a* are hung and made to swing on the fulcrum pins inside of the platen legs; there are two of these levers, one at each end
 45 of the platen; they may be used independent of each other or they may be connected together by a girt. The upper end of the nipper levers extend up opposite to the end of the platen and are made flat to receive the
 50 sheet holders *b b* or the card holders *c c*. The sheet or card holders extend over the face of the platen and are held to the upper end of the nipper levers by the screws *d d* and nuts *e e*; they are made to slide to
 55 or from the center of the platen to suit the different sizes of sheets or cards to be printed. There is a spiral spring *f* coiled around the fulcrum pin inside of each nipper lever; one end of this spring is made fast to the
 60 fulcrum pin and the other end is made fast to the nipper lever, the tendency of these springs is to press the sheet or card holders down on to the face of the platen. I do not wish to confine myself particularly to a spi-
 65 ral spring for holding the sheet holders to

the platen, for other kinds of springs may be used or a weight may be used to a very good advantage. For the purpose of delivering cards after they are printed I use a trip gage which is attached to the inside of
 70 one of the nipper levers below the card holder and near the lower edge of the platen.

g is the trip; *h* is the trip gage; *i* is the screw which holds the gage to the trip; *j* is a trip rod passing through the nipper lever
 75 and also through a boss *k* on the nipper lever. This trip rod is made to turn in the nipper lever, and the trip is secured firmly to the end of the trip rod inside of the nipper lever; the other end of the trip rod,
 80 which extends outside of the frame, has a trip wire *l* attached to it extending back under the rear end of the connecting rod L'. There is a spiral spring *m* coiled around the trip rod between the trip wire and the
 85 boss; one end of this spring is fastened to the boss and the other end is fastened to the rod. The office of this spring is to hold the trip gage down in its place and prevent it from rising excepting when it is necessary
 90 that a card should drop out. The sheet holders *b b* are made of sheet steel or any other suitable metal, the forward edge or the edge toward the center of the platen is rather sharp and is made to turn down a
 95 very little as represented in Fig. 10, the sharp edge lies flat upon the platen and holds the margin of the paper firmly there to. The card holders *c c* are made similar to the sheet holders with the exception of
 100 the forward edges which are made thicker and have a groove *n* made in them to receive the cards, as represented in Fig. 11. The trip gage is made of thin metal with the upper edge turned up, or made thick enough
 105 to hold a card when it drops against it. This gage is made to slide up or down a very little to suit different sizes of cards, and when properly adjusted in the position required, it is held firmly to the trip by the
 110 screw *i* which screws into the trip. There is a stop *p* under each nipper lever, secured to the inside of the frame, which hold the nipper levers up from the platen when the
 115 platen is in its lowest position as represented in Figs. 1 and 2. The nipper levers are held up from the platen for the purpose of giving a convenient opportunity to lay on a sheet of paper or to feed the cards into the card holders.
 120

When it is designed to print cards the card holders are set a proper distance apart to admit of dropping the cards into the grooves of the card holders, and there secured firmly in that position. When a card
 125 is dropped into the card holders it slides down until it strikes the trip gage and there remains until it is carried up to the form to receive the impression.

In Fig. 1 the platen is represented in its 130

lowest position, the proper position to receive the card; the card is then dropped in, and as the crank wheels revolve, the connecting rods pull the platen, together with
 5 the card and card holders, up to the form, and there give the impression, and as the motion continues, the platen and card holders recede, and just before the nipper levers strike the stops, one of the connecting rods
 10 L' strikes the back end of the trip wire and carrying it downward turns the trip gage up, so that the card will drop out, and immediately after the card drops out the connecting rod leaves the trip wire and
 15 allows the trip gage to drop down to place again to receive another card. About the same time that the trip gage drops down to its place, the nipper levers strike the stops and there remain at rest until the platen
 20 goes to its lowest position and returns again, when they are then carried up with the platen as before. When it is designed to work a job on thin paper, the card holders are removed and the sheet holders put on in
 25 their place and secured just far enough apart to strike upon the margin of the sheet required to be printed. When the platen is in its lowest position the sheet is then laid upon it, and as the crank wheels are made
 30 to revolve, the connecting rods pull the platen up toward the form, and when the platen comes up to the sheet holders, the action of the spiral springs f upon the nipper levers press the sheet holders down on
 35 to the margin of the paper and hold it firmly to the platen while the platen carries it, together with the sheet holders, up to the form to receive the impression. As the platen recedes the sheet holders still hold the paper
 40 to the platen until the nipper levers strike the stops, thereby effectually relieving the paper from the form after the impression has been given. As soon as the platen begins to rise, the action of the friction
 45 roller B' upon the cam lever forces the carriage down, causing the inking rollers to roll over the form in their passage downward. The peculiar shape of the slot cut in the cam lever allows the carriage to remain at
 50 rest a portion of time when the platen is passing to its highest position. The carriage therefore comes to its lowest position just before the platen arrives to the form and there remains at rest allowing the inking
 55 rollers to roll on the inking drum to receive a fresh supply of ink while the platen continues on its upward course to the form to give the impression. When the platen proceeds on its downward course the carriage is again forced upward to roll the

form. By this arrangement the form is rolled and the impression given by the vibration of the platen. By hanging the drum to the carriage ways and securing the carriage ways firmly to the bed one grand difficulty is overcome which I never before have seen.

In all job presses heretofore made where a roller carriage is used, the carriage ways are secured to some part of the frame and never to an adjustable bed; the drum also is hung in a part separate from the ways or bed, consequently when the impression is altered, which frequently has to be done, by changing the position of the bed, the bed is thrown either to or from the rollers and out of line with the track of the carriage, therefore the rollers will not bear on all parts of the form alike. In my arrangement this difficulty is fully overcome, as the carriage ways together with the drum are secured to the bed, they move with it, and as the form of type is secured to the bed, in whatever position it is necessary to set the bed in order to give a good impression, the rollers are always in a true position to roll the form evenly, as they travel in a plane parallel to the surface of the type.

Having thus fully described the construction and operation of my improvements, I will proceed to point out the parts which I claim as my invention and desire to have secured by Letters Patent.

1. I claim the cam lever C' operated by a vibrating platen substantially in the manner and for the purpose herein set forth.

2. I claim securing carriage ways to the adjustable bed, so that when the bed is moved by altering the impression the roller carriage will move with it and keep the rollers always in a proper position to roll the form evenly, in combination with the roller carriage, substantially as herein described and set forth.

3. I claim the nipper lever operating in the manner and for the purpose herein set forth.

4. I claim the trip in combination with the nipper lever substantially in the manner and for the purpose herein specified.

5. I claim the combination and arrangement of mechanism herein specified, for receiving the cards to be printed and delivering them after they are printed, substantially as herein described.

CHARLES W. HAWKES.

Witnesses:

SAML. G. PARSONS,
 JOS. NICKERSON.