

MACHINE FOR PRINTING FROM ENGRAVED PLATES.

APPLICATION FILED JAN. 21, 1909.

945,281.

Patented Jan. 4, 1910.

3 SHEETS—SHEET 1.

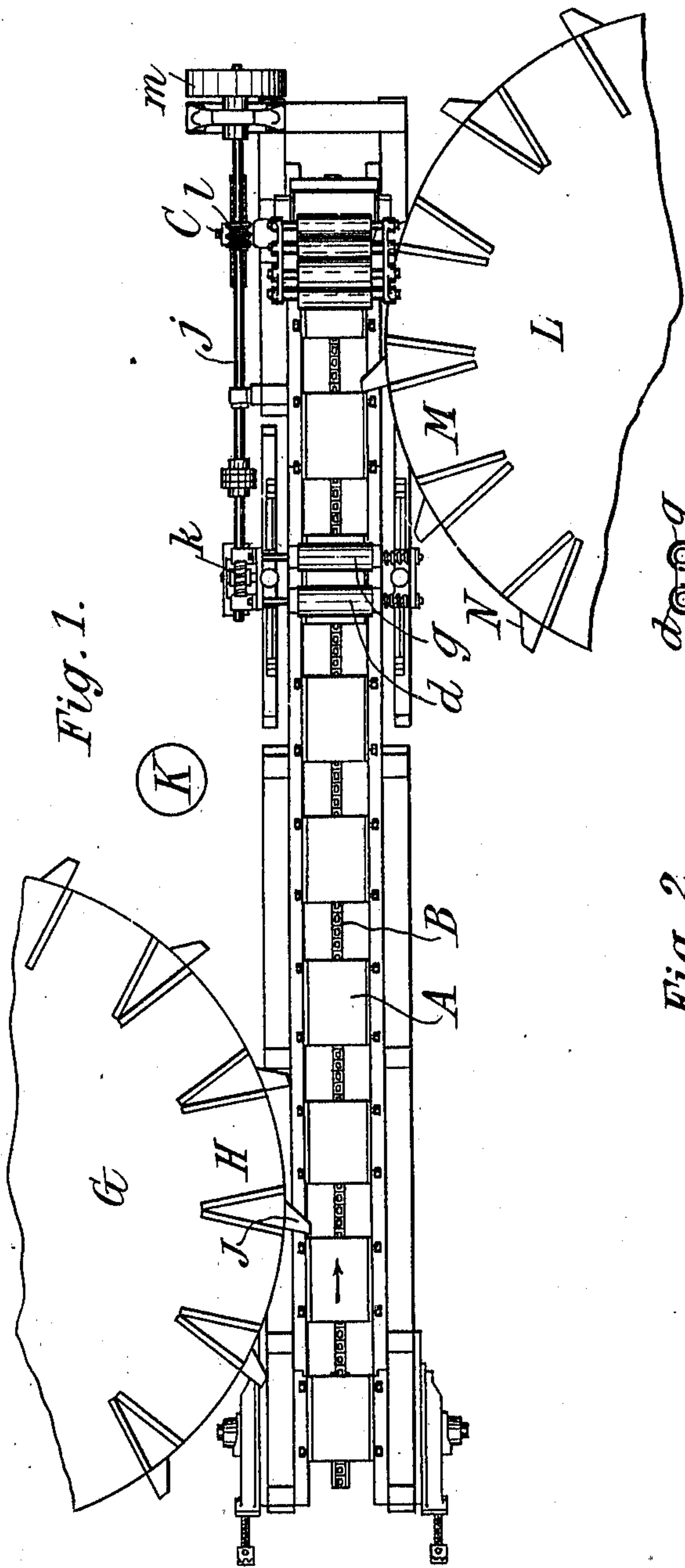


Fig. 1.

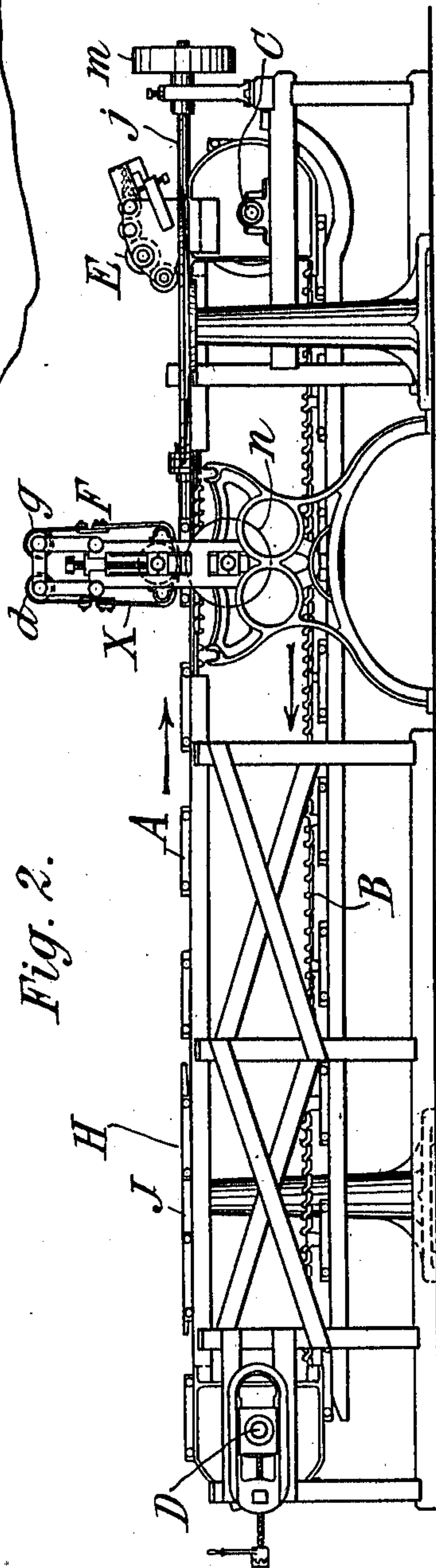


Fig. 2.

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Fig. 3.

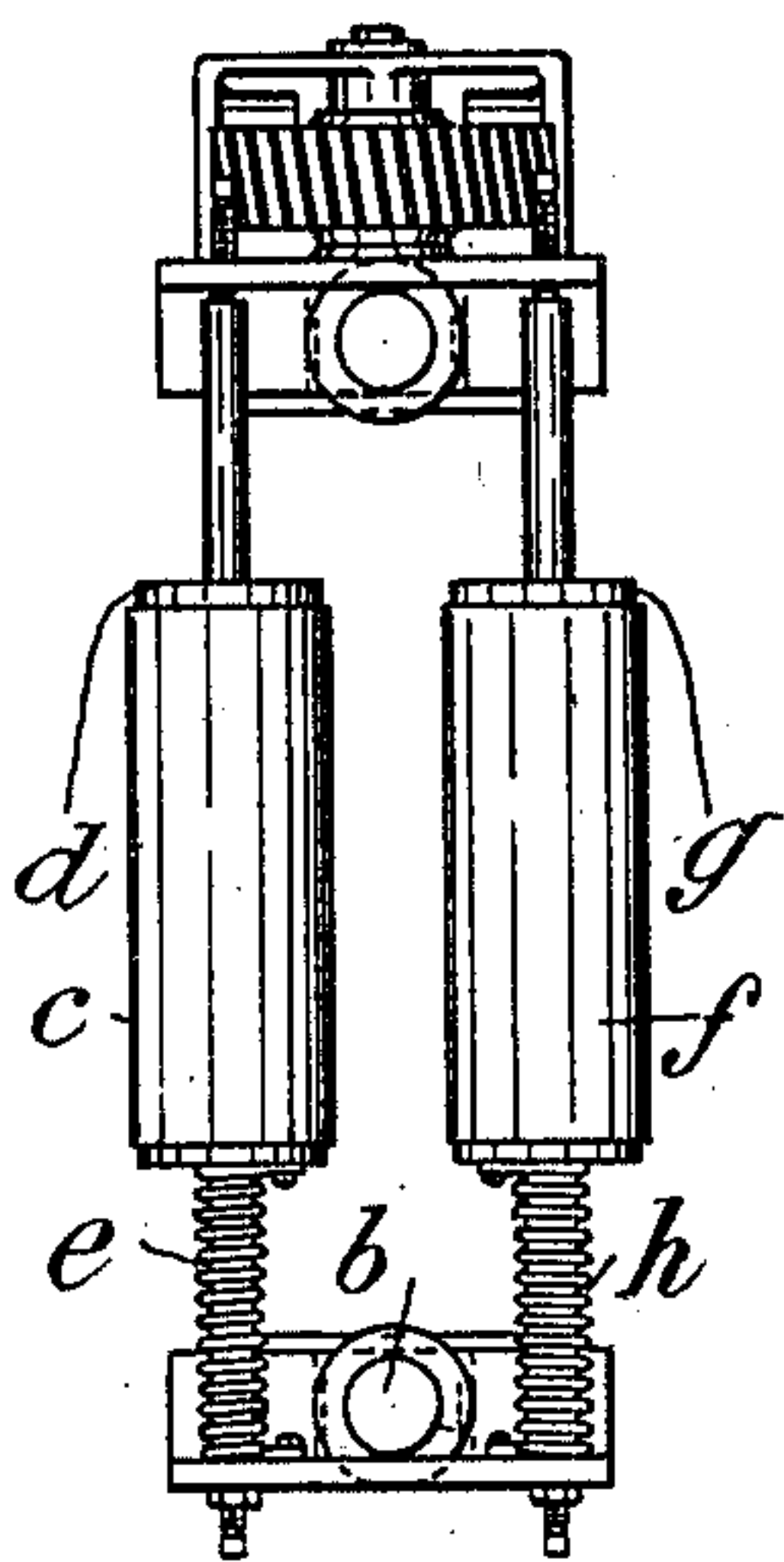


Fig. 4.

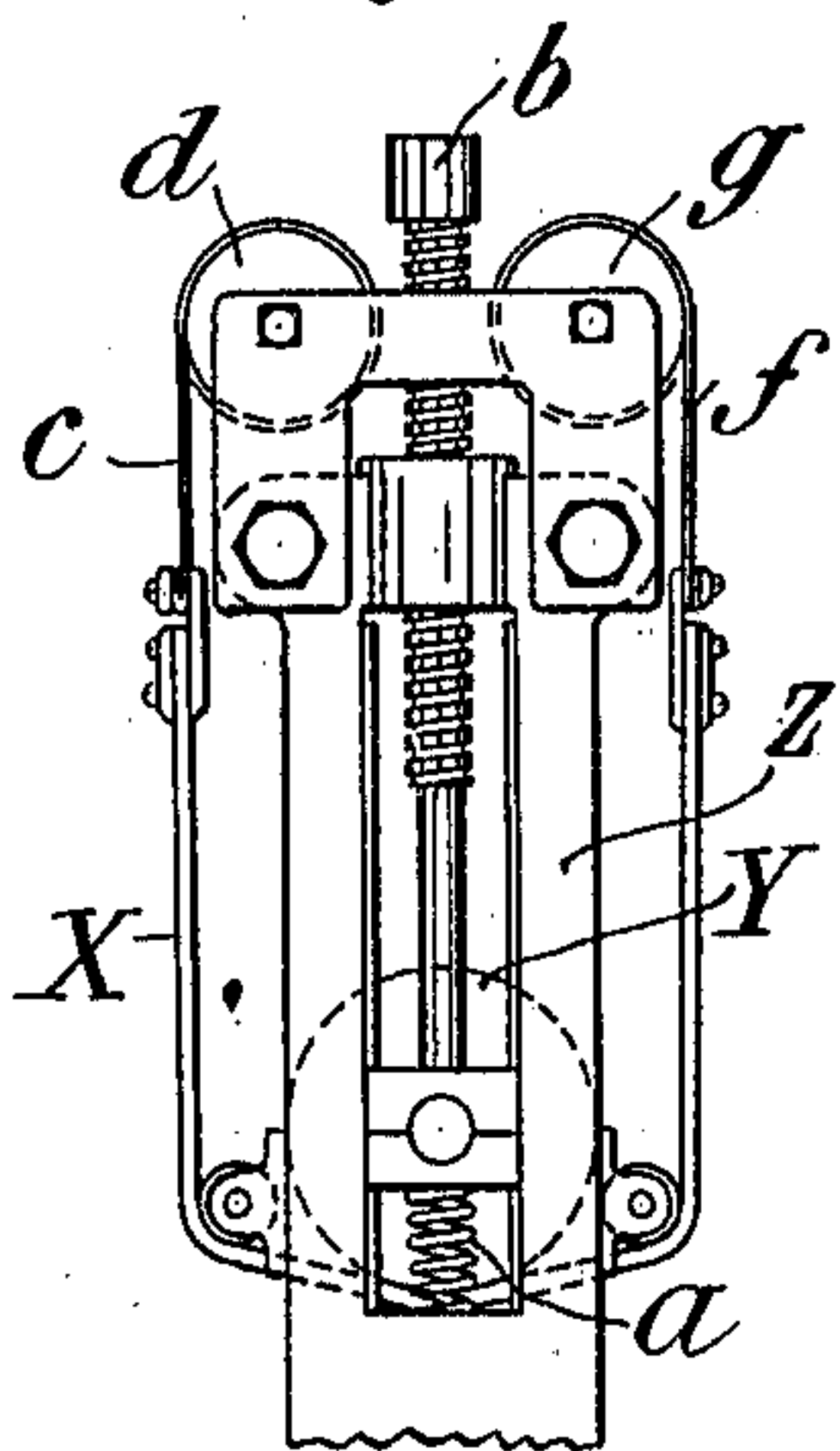


Fig. 7.

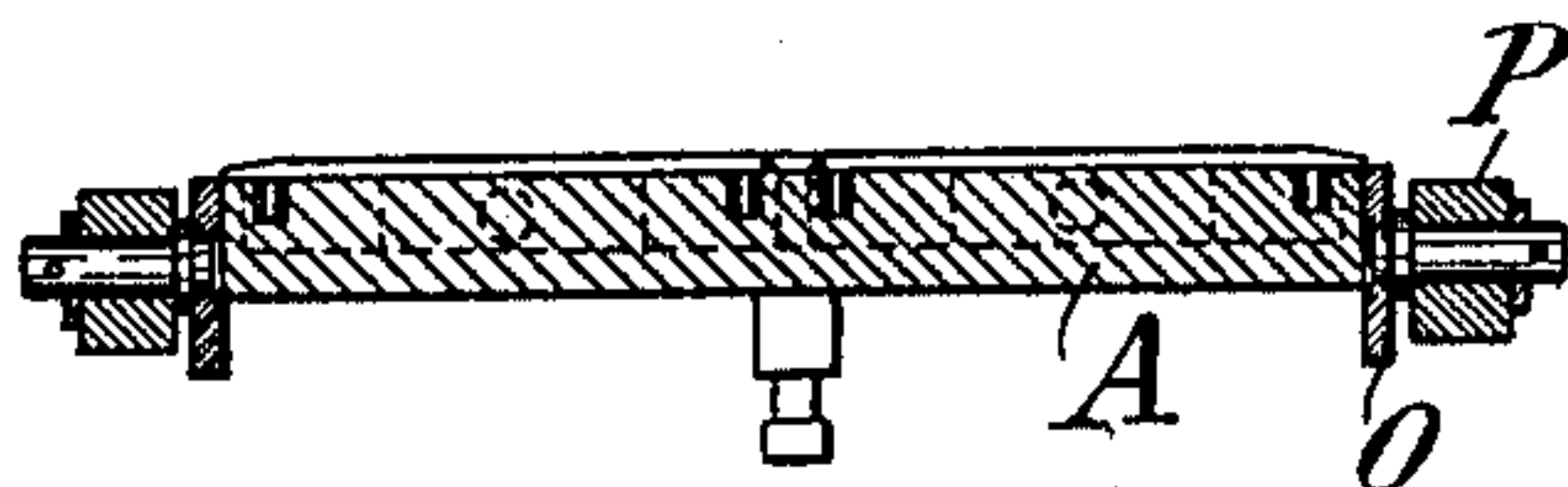


Fig. 8.

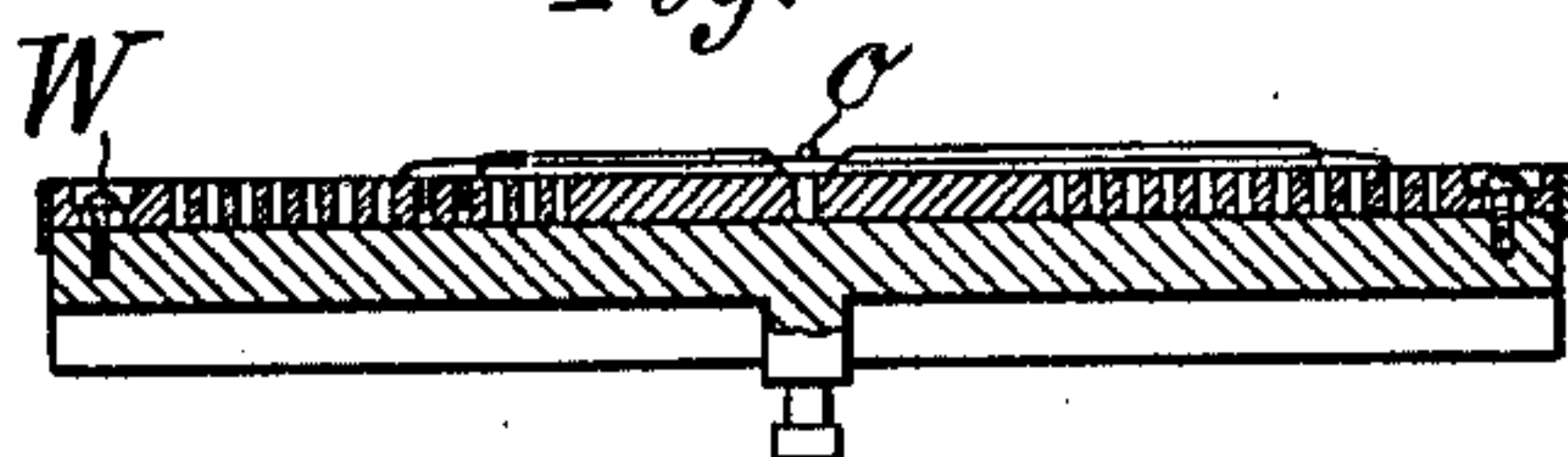


Fig. 5.

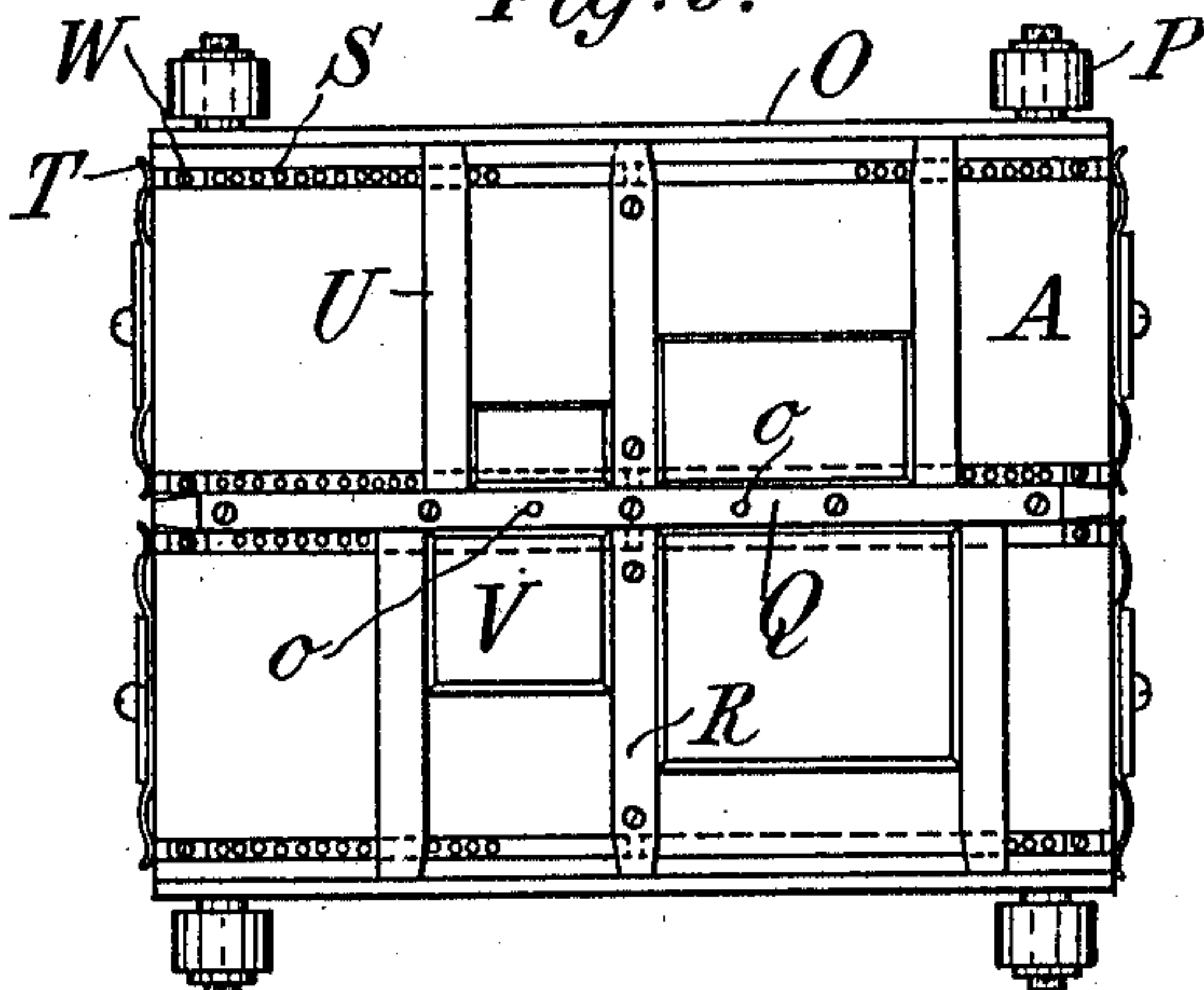
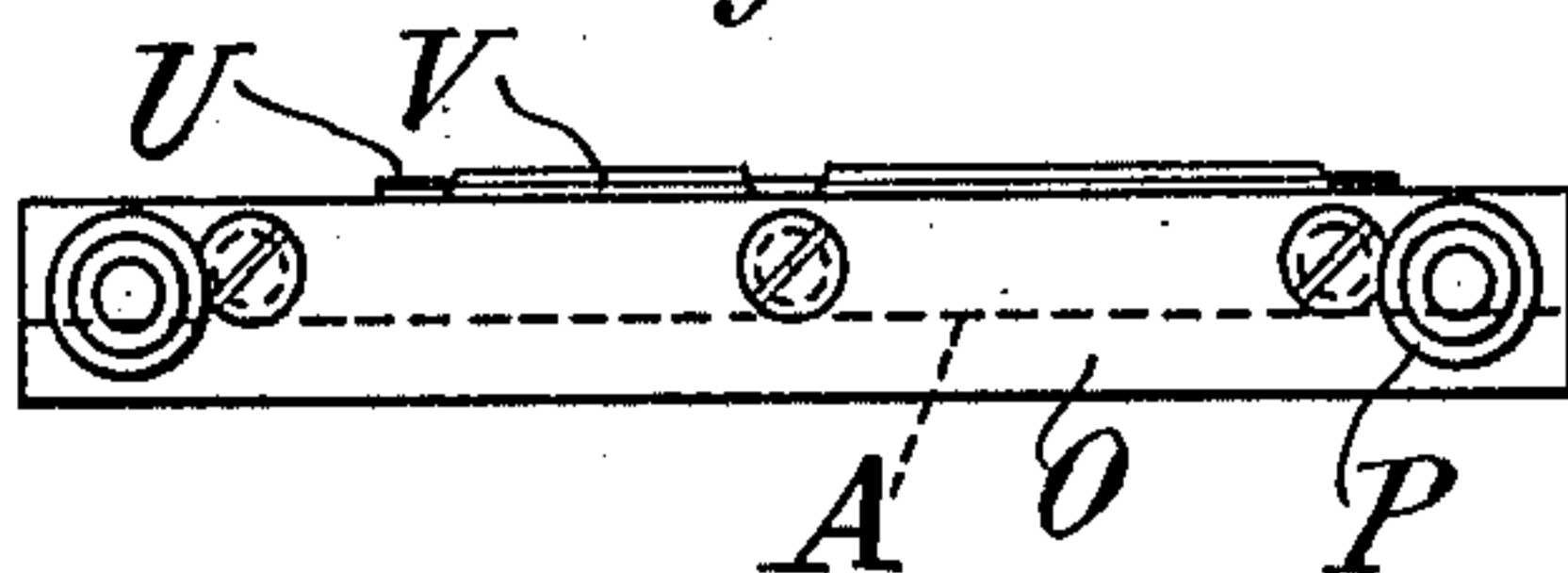


Fig. 6.



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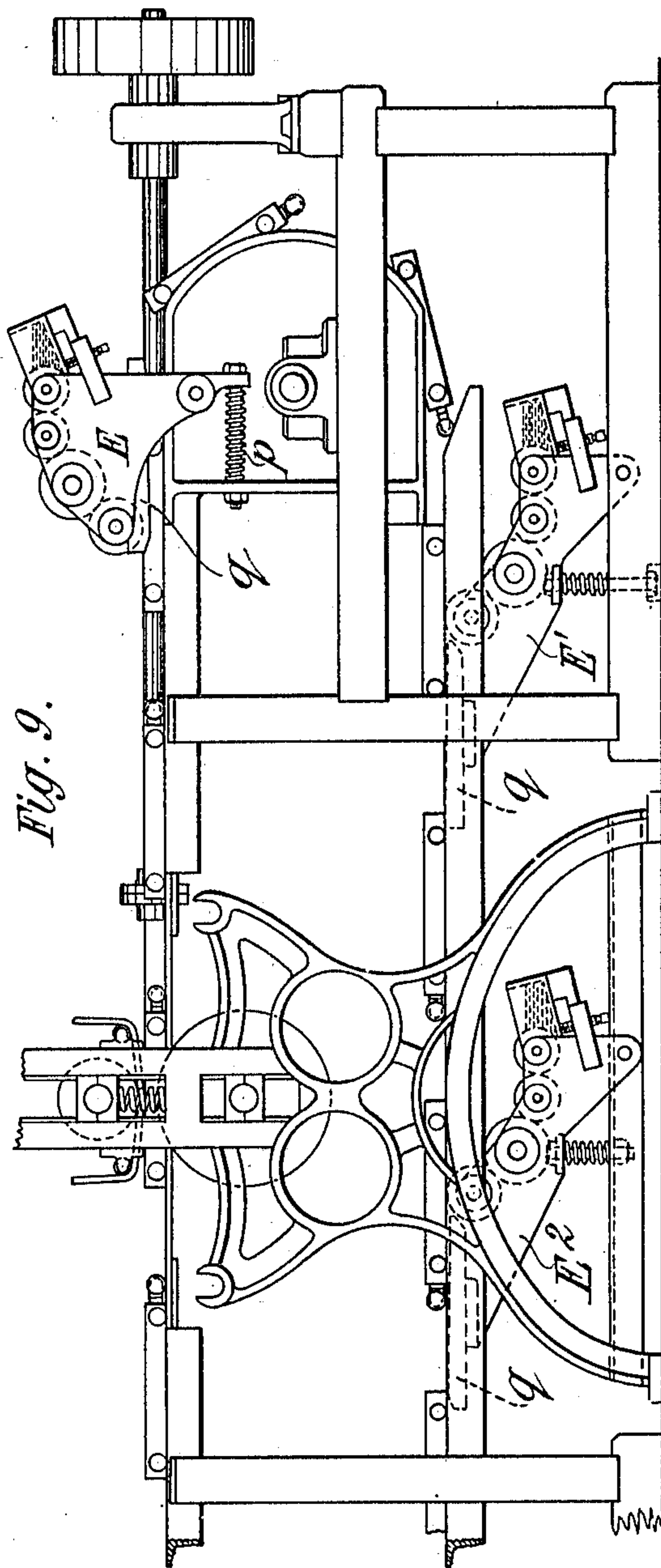
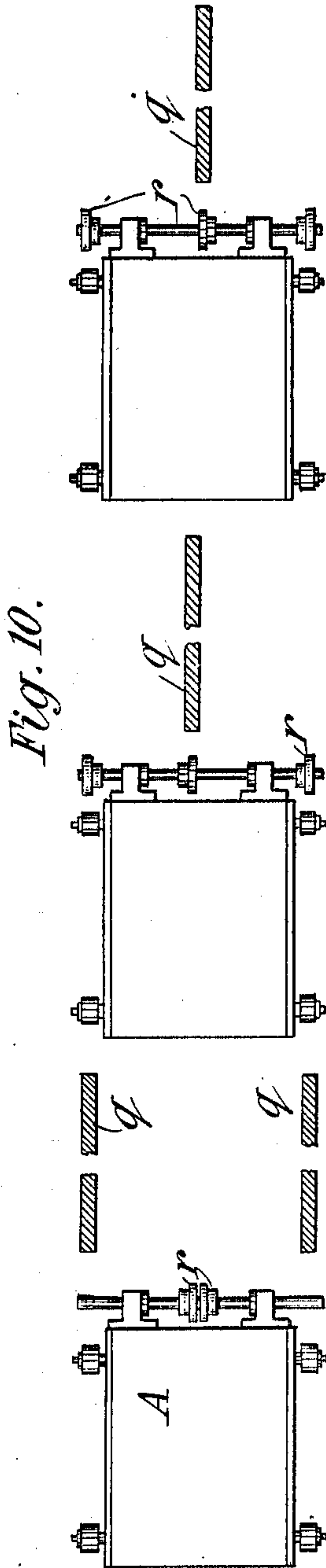
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR PRINTING FROM ENGRAVED PLATES.

945,281.

Specification of Letters Patent.

Patented Jan. 4, 1910.

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To all whom it may concern:

Be it known that I, JOHN A. MALLON, a citizen of the United States, residing in Carlstadt, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Machines for Printing from Engraved Plates, of which the following is a specification.

This invention aims to provide a machine for facilitating the printing of cards, sheets or the like from engraved or other printing plates, such for example as bank note printing from steel or copper plates, photogravures, wet or dry work, and especially to increase the speed with which such printing can be effected. The plates are carried continuously past the points at which the cards are fed upon and withdrawn therefrom, and feeding and receiving carriers are provided with pockets corresponding to the number of printing plates for feeding the cards and for receiving the printed cards in succession from the successive plates.

The accompanying drawings illustrate an embodiment of the invention:—

Figure 1 is a plan. Fig. 2 is a side elevation. Fig. 3 is a plan on an enlarged scale of the mechanism carrying the blanket and pad for pressing the cards upon the plates. Fig. 4 is a side elevation of the same. Figs. 5 and 6 are respectively a plan and side elevation of a section of the plate carrier. Figs. 7 and 8 are respectively a cross section and a longitudinal section of the same. Fig. 9 is a side elevation and,—Fig. 10 is a diagrammatic plan illustrating another embodiment of the invention.

Referring to the embodiment of the invention illustrated a continuous chain of sections A constitutes a plate carrier, the sections being connected on their under sides to a sprocket chain B which runs over a driving sprocket wheel on the shaft C at one end, and an adjustable sprocket wheel whose shaft is indicated at D at the other end. The movement of the chain is in the direction of the arrows of Fig. 2. Each section of the carrier carries one or more printing plates which are inked by the inking mechanism indicated at E, and then pass below the table. At the left hand end of the table they are wiped preferably by hand so as to leave the ink only in the engraved lines. The cards are then placed on the plates, and carried under the blanket or pad mechanism in-

dicated as a whole by the letter F, and are removed before the plates reach the inking mechanism E.

The feeding device may consist of a disk G provided with pockets H corresponding in number with the sections A of the printing plate carrier, the disk being free to rotate and being provided with teeth J in a position to be engaged by the successive sections of the carrier, so that as the plate carrier advances, the feeding device G also advances at the same rate. Any suitable apparatus for transferring the cards from the pockets H to the printing plates may be used. In the apparatus illustrated, however, this work is supposed to be done by hand, the operator standing at the point indicated at K and taking the cards from first one and then another of the pockets H as the successive plates pass. The card of proper size and color will always be presented to the operator's hand at the same time that the corresponding printing plates are in front of him, so that cards bearing the same name or matter will always be of the desired quality and size. The machine can be speeded up consequently to the best speed of the operator, and a determined number of cards per hour can be reliably expected.

The delivery device L is similar to the feeding device G in having a number of pockets M and in having projections N which are engaged by the plates so as to rotate the device L synchronously with the movements of the printing plates, and to bring the same pocket M always opposite the same printing plate. The cards may be removed by any mechanism from the successive printing plates and deposited in the appropriate pockets, this work being supposed to be done by hand in the machine illustrated.

Each of the sections A consists of a plate secured between a pair of side bars O which carry rollers P running on suitable rails on the frame of the machine. The chain B runs in a vertical plane and inverts the beds or sections A so as to necessitate fastening the printing plates positively on the beds. Where it is desired to carry a number of printing plates on a single section A of the carrier, the sections are preferably divided by under-cut longitudinal members Q, and similar cross members R projecting

upward slightly from the supporting section A, and the latter is provided with longitudinal grooves in which are located slidable perforated rods S, the ends of which
 5 are pressed inward by means of springs T; and cross battens U are provided with pins on their under sides adapted to engage the holes in the slides S. Preferably these battens are also under-cut, and the printing
 10 plates V are held between the fixed cross battens R and the adjustable cross battens U, with their inner edges against the longitudinal batten Q. The outer ends of the cross battens are slightly flared so that after
 15 the adjustable batten U is set at approximately the width of the printing plate, the latter may be forced between the two battens, the springs T yielding slightly and holding the plate with a slight spring pressure. The slides S are held against escape
 20 from the grooves by having their inner ends under the fixed cross battens R, and their outer ends engaged by screws W passing through slots in the slides to permit the
 25 necessary longitudinal movement.

The blanket or pad consists of a strip X of rubber, felt, or other material according to the character of the cards or the work to be done. A press roll Y is carried in adjustable bearings in the frame Z, being held
 30 up by a spring *a* and forced down by a screw *b*. The blanket X lies between the press roll Y and the printing plate, something less than the thickness of a card above the plate; so that as a card passes below
 35 the blanket it presses the latter into closer engagement with the press roll Y. The latter is continually rotating at an appropriate rate so that it carries the blanket
 40 along with the card and presses it down upon the latter simultaneously. When the card escapes, the friction between the blanket and the press roll Y is materially reduced or eliminated, and the blanket re-
 45 turns to its starting position. For this purpose the blanket is detachably connected at its forward end to a tie *c* which runs over a roller *d* which is provided with a heavy retracting spring *e*, this spring being
 50 wound up by the movement of the blanket X in printing the card, and serving to retract the blanket when the friction is released. The other end of the blanket is detachably connected to a tie *f* which runs
 55 over a roller *g* provided with a comparatively weak take-up spring *h* which serves to take up the slack of the blanket during the printing movement.

The driving mechanism may be of any
 60 suitable type. A shaft *j* (Fig. 1) may for example be used to drive the press roll Y of the blanket mechanism by means of a worm engaging a worm gear *k* on the shaft of said roller; and the same shaft *j* may drive the
 65 shaft C of the driving sprocket by means of

a worm *l*; the shaft *j* being driven from a belt pulley *m*. The plate may be held up to the blanket by a special roller *n* over which it runs while it is passing under the blanket, this roller being grooved for the passage of
 70 the chain.

The printing plates V are all located as near the center of the carrier section A as possible, and the card or sheet is cut of a
 75 suitable size to cover all the printing plates on one section; the sheet being afterward divided and the edges of the several parts trimmed to the desired size. Means are preferably provided in the machine for facilitating the subsequent cutting and trimming.
 80 These means may be for example a pair of pins *o* carried on one of the central battens and projecting upward only slightly, so as to be below the levels of the printing plates V so as not to strike the hand of the operator
 85 who wipes off the plates. The blanket will preferably have a strip of paper, cloth, or the like along its center to increase its thickness sufficiently to cause the pins *o* to perforate the card. Two perforations are thus
 90 formed which serve to register the card exactly in the machine in which it is subsequently put for cutting it.

The inking mechanism may be of any known type either positively driven or
 95 driven by the frictional engagement of the plates with the inking roller.

Any usual or suitable throw-off mechanism may be provided, preferably accessible from all points so that the polisher, or the
 100 feeder or remover of cards may stop the machine at any time to correct mistakes or to substitute new plates. The table G which carries the cards to the operator may be provided with registers for showing when any
 105 particular order is completed, so that a new plate may be substituted. It will be observed that the battens Q, R and U are all below the face of the plates V. This is in order to leave a space in which a thin tool may be in-
 110 serted so as to enable the operator to remove the card easily. Automatic take-offs with fingers entering under the margin of the card may likewise be used.

Where a long and narrow plate is to be
 115 used, such for example as in printing bank checks one or more of the cross battens R may be removed, the plate being then held between the adjustable battens U. Where a
 120 plate is to be used larger than can be otherwise accommodated, the battens Q and R may all be removed from the carrier section and only the adjustable battens U used.

It is often desired to print with inks of different colors, and the machine of my in-
 125 vention may be adapted for this purpose by providing a plurality of inking mechanisms, each carrying a different color and tripped into action by the passage of the appropriate carrier section. Figs. 9 and 10 illustrate
 130

such a construction. The inking mechanisms E, E' and E² are arranged in succession in the path of the carrier, each being pivoted and pressed toward the carrier by a spring *p*, and each being provided with one or more projections *q* by which it is forced out of operative position by rollers *r* carried upon rods *s* at the forward ends of the several carrier sections A. Fig. 10 is a diagrammatic view illustrating the positions of the successive projections *q* for the successive inking mechanisms. Double projections *q* are provided for the first inking mechanism. The several projections *q* it will be understood are offset laterally from each other. Where the first inking mechanism is to be utilized, the carrier section A is provided as at the left hand of Fig. 10 with rollers *r*, only in such positions as to act upon the projections *q* of the succeeding inking mechanisms. The next carrier section is shown with rollers adapted to act upon the first and second inking mechanisms, and to throw them out of operation, so as to receive ink from the third only; and so forth.

What I claim is:—

1. In an apparatus of the character described, the combination of means for carry-

ing a number of printing plates, and means for feeding a number of different cards moving at the same rate as said carrying means, said feeding means having separate pockets for the different cards. 30

2. In an apparatus of the character described, the combination of means for carrying a number of printing plates adapted to receive cards, and means for receiving the printed cards from said plates, said means having a series of pockets corresponding to the different plates and moving synchronously therewith. 35 40

3. In an apparatus of the character described, the combination of means for carrying a number of printing plates, means for feeding a number of different cards moving at the same rate as said carrying means, and a delivery means having a series of pockets corresponding to the successive plates and moving synchronously therewith. 45

In witness whereof, I have hereunto signed my name in the presence of two subscribing witnesses. 50

JOHN A. MALLON.

Witnesses:

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THEODORE T. SNELL.