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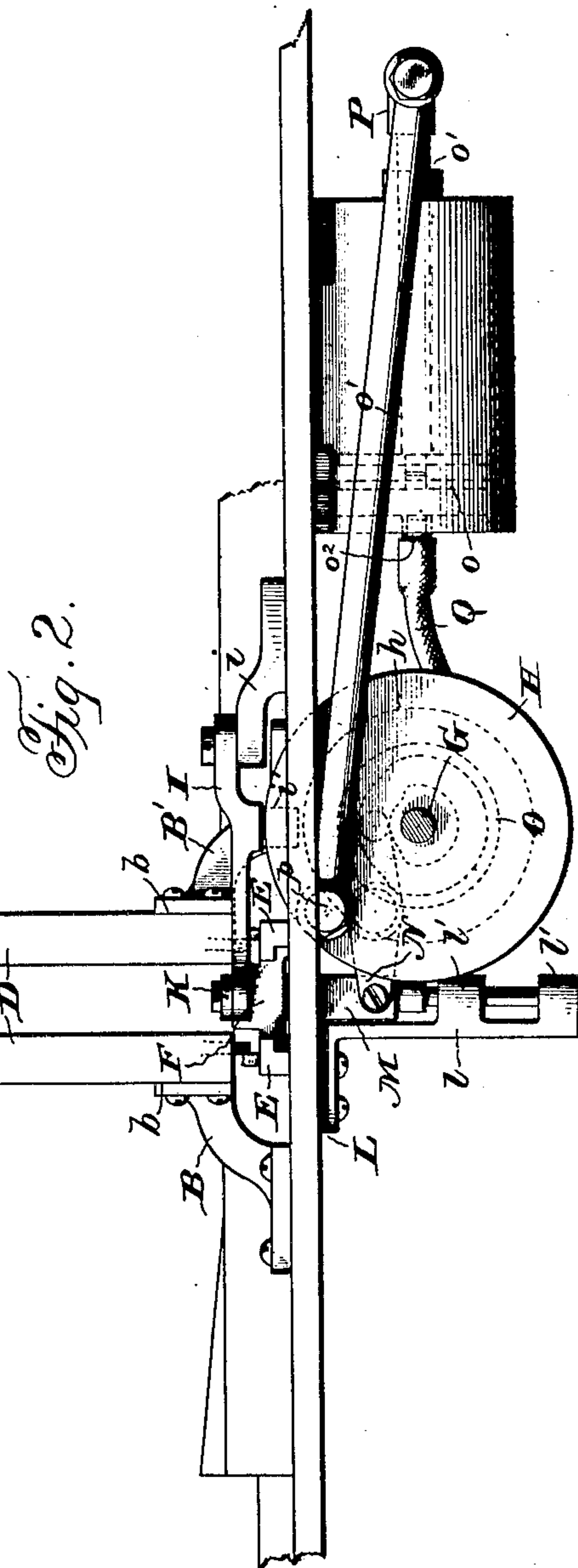
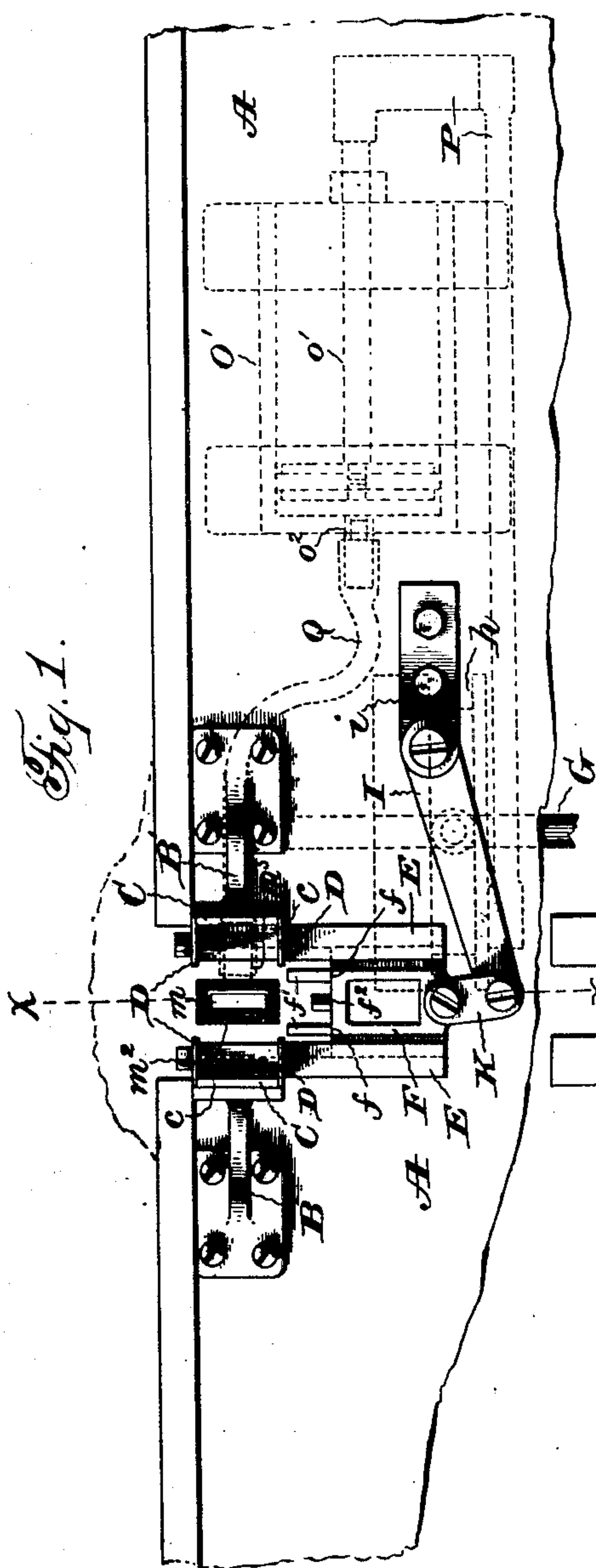
PATENTED NOV. 19, 1907.

J. P. WRIGHT.

MACHINE FOR FEEDING CARDS OR PAPER.

APPLICATION FILED JAN. 17, 1902. RENEWED MAR. 18, 1907.

4 SHEETS—SHEET 1.



Witnesses:
Jas. H. Hutchinson.
Henry C. Hazard.

Inventor.
Jacob P. Wright,
by Edwin J. Prindle,
his Atty.

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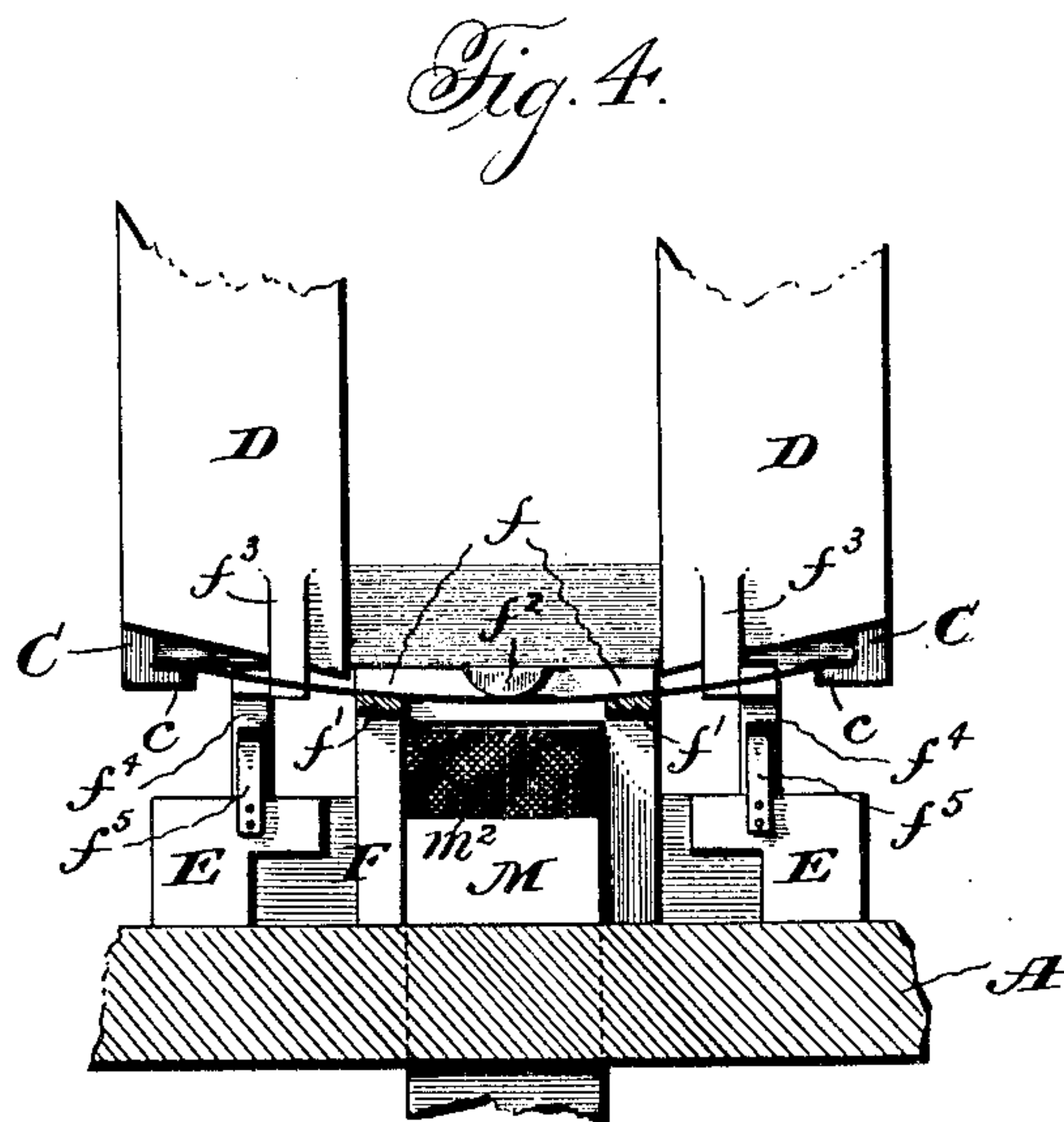
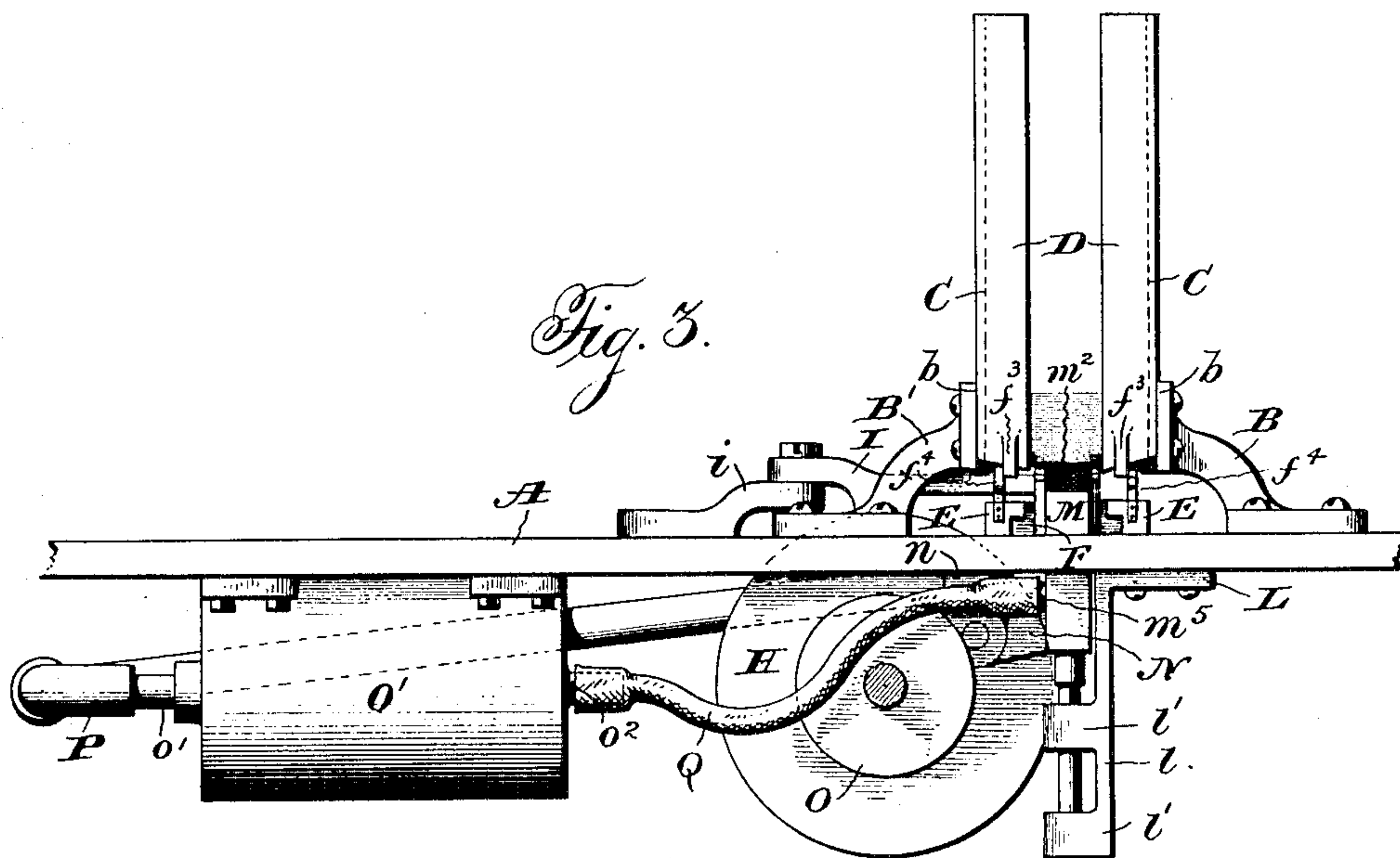
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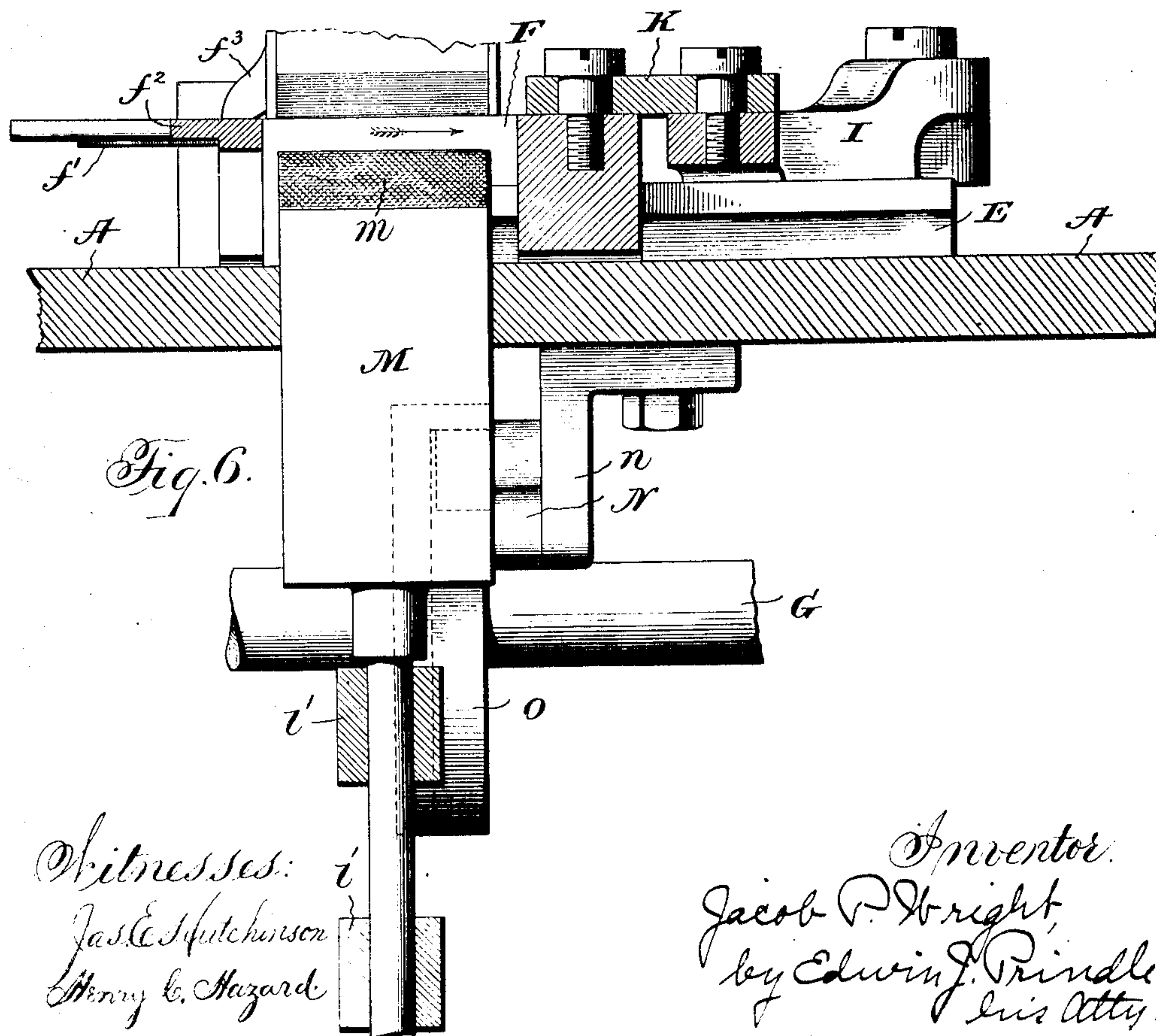
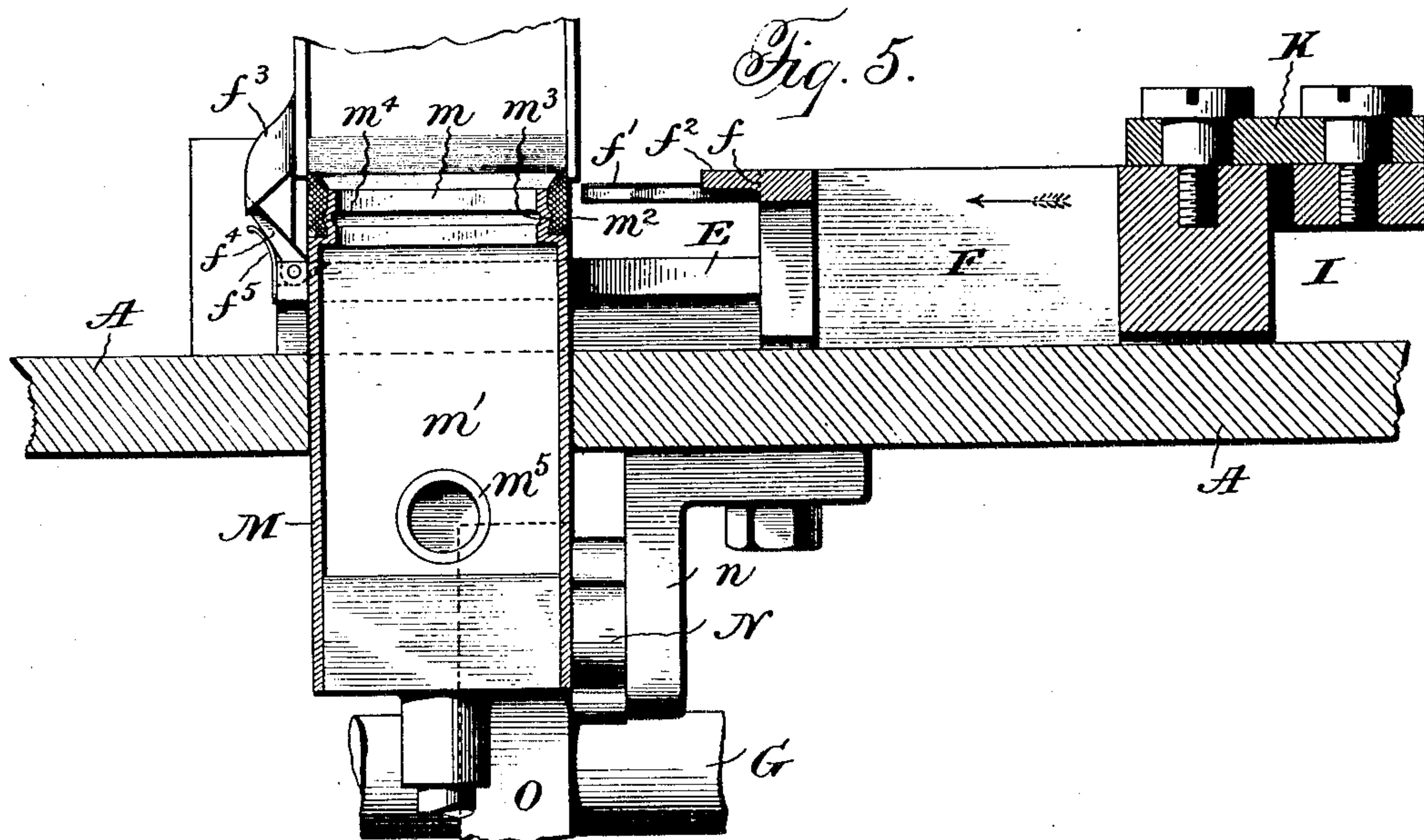
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4 SHEETS—SHEET 4.

Fig. 7.

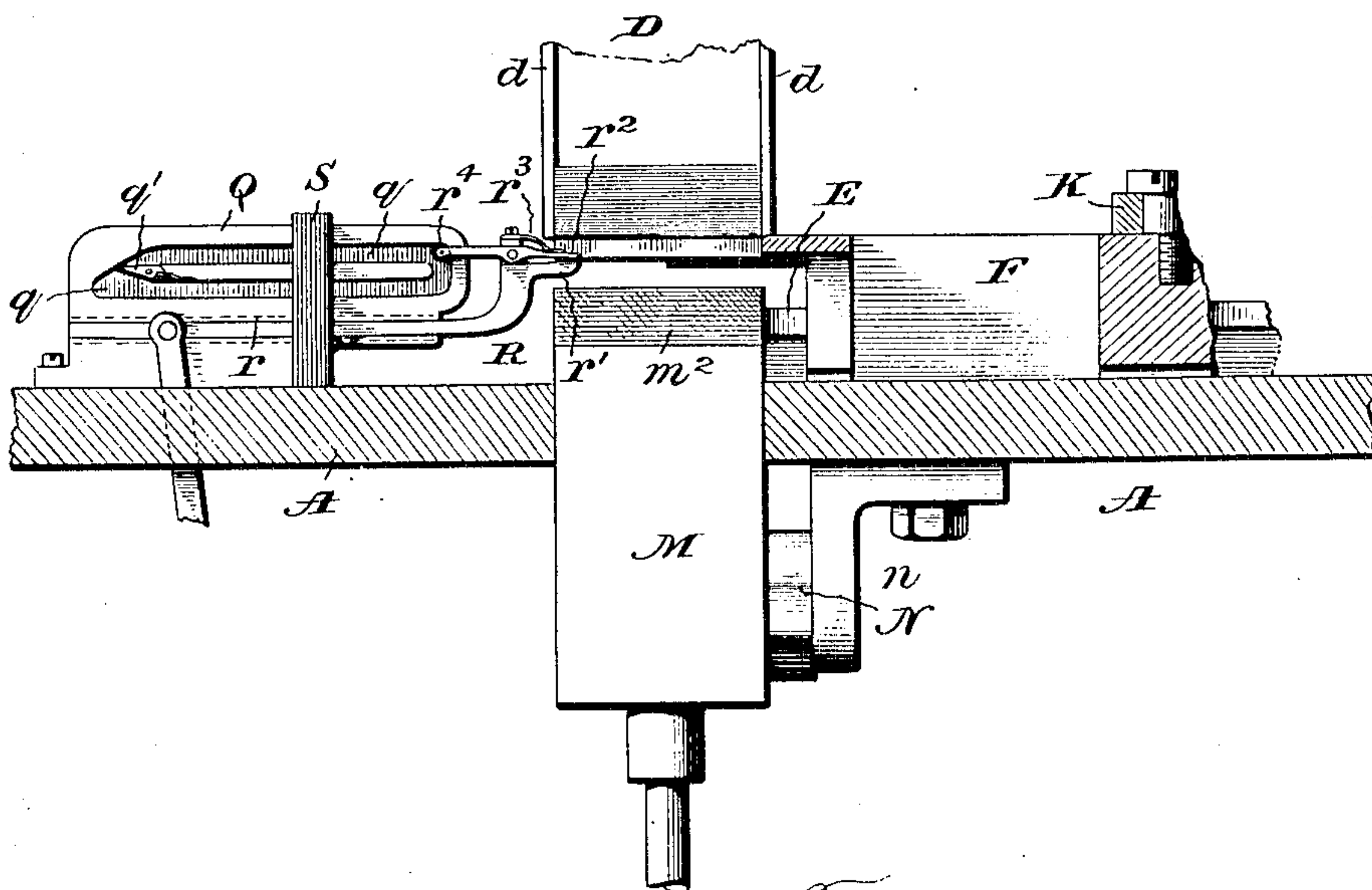
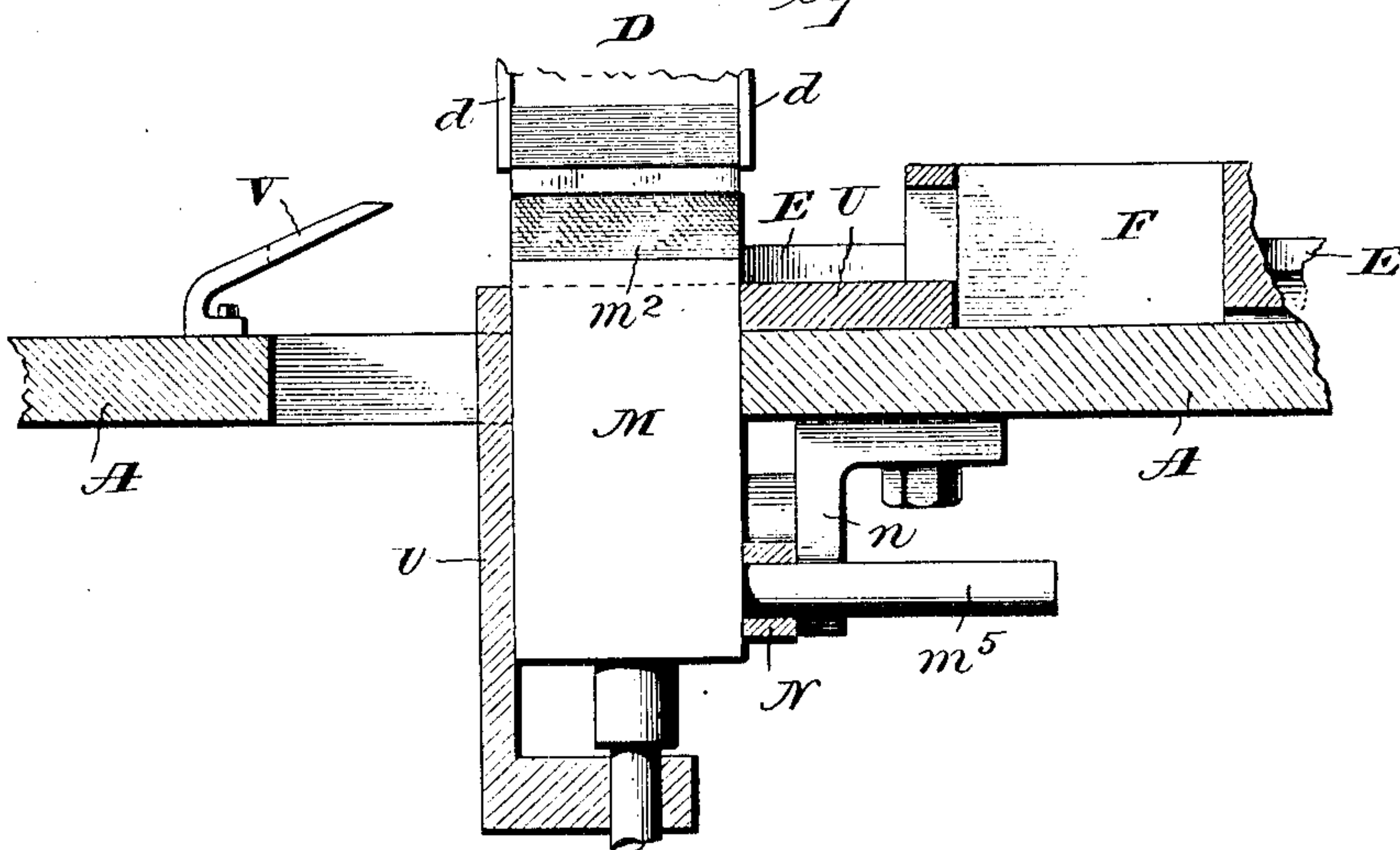


Fig. 8.



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UNITED STATES PATENT OFFICE.

JACOB P. WRIGHT, OF AKRON, OHIO, ASSIGNOR TO THE DIAMOND MATCH COMPANY, OF NEW YORK, N. Y., A CORPORATION OF ILLINOIS.

MACHINE FOR FEEDING CARDS OR PAPER.

No. 871,746.

Specification of Letters Patent.

Patented Nov. 19, 1907.

Application filed January 17, 1902, Serial No. 90,174. Renewed March 18, 1907. Serial No. 362,895.

To all whom it may concern:

Be it known that I, JACOB P. WRIGHT, of Akron, in the county of Summit, and in the State of Ohio, have invented certain new and useful Improvements in Machines for Feeding Cards or Paper, and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of a machine embodying my invention; Figs. 2 and 3 are, respectively, front and rear side elevations of the machine illustrated in Fig. 1; Fig. 4 is an enlarged, front view of the lower portion of the card chute and adjacent parts; Figs. 5 and 6 are vertical, transverse sections taken on the line $x-x$ of Fig. 1, showing different positions of the mechanism; Figs. 7 and 8 are similar views of alternative constructions to those shown in the preceding figures.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention has been to provide mechanism for automatically separating a single card or sheet of paper from a stack or other group of such articles, and feeding or placing such card or sheet of paper in a desired location and position, and to such end, my invention consists in the machine for feeding cards or paper, hereinafter specified.

In carrying my invention into practice, I provide a bed plate A which is supported in any convenient manner, and which may conveniently be a part of another machine which is to operate upon the cards after they have been delivered to it.

In describing my machine, I shall refer to the articles operated upon as cards, but it is to be understood that by such term I mean to include any flexible sheets of material, such as paper or other material having sufficient stiffness to enable it to be operated upon by my machine.

Upon the upper face of the bed plate are mounted brackets B and B', which rise from the bed plate and extend toward each other, and are provided with opposite vertical faces b and b . Upon the faces b and b are secured, as by screws, plates C and C, which form the side walls of a chute for the reception of the cards to be operated upon. At the bottom of each of such side walls a ledge c is formed, which ledges extend toward each other. The said ledges are comparatively

narrow and preferably extend the full width of the chute. Upon the front and rear faces of the sides C and C are secured strips D and D, which form the front and rear walls of the chute. The rearmost strips D and D terminate at their outer edges slightly above the ledges c and c , and their lower edges are inclined downwardly in a direction toward each other, so that the adjacent corners of such strips extend to or below the level of the ledges c and c . The strips D and D preferably do not meet, so that an opening is formed in the front and rear walls to enable the cards to be seen and to be easily reached for manipulation and arrangement. Beneath the chute two undercut bars E and E are secured to the bed plate, transversely thereof and parallel to each other, so as to form a slideway for a feeder bar F, which is thus adapted to slide transversely of the bed plate, and the bars E and E are so placed as to bring the feeder bar centrally beneath the chute. The upper surface of the feeder bar is situated just below the level of the ledges c and c , and at the rear end of such upper surface, shoulders f and f are formed at the corners thereof, beneath each of which is a horizontal surface f' and f' , upon which the card is adapted to rest.

A finger f^2 extends rearwardly from the feeder bar F, and the upper surface of such finger is preferably in the plane of the upper surface of the feeder bar. On the rear faces of the rear strips D and D are formed lugs f^3 and f^3 whose under surfaces are downwardly and rearwardly inclined below the level of the adjacent portions of the card when the latter is held by the feeder bar, the said lugs serving to depress the card as it passes beneath them, and after having passed the lugs the card springs upward, and upon the rear movement of the feeder bar comes in contact with the rear surfaces of the said lugs and is thereby prevented from moving upward with the feeder bar and is stripped from the same. Fingers f^4 and f^4 are pivoted in the slots formed in the guide bars of the feeder bar beneath and to one side of the lugs f^3 and f^3 , the said fingers being normally held in an upwardly and rearwardly inclined position by springs f^5 and f^5 fastened to the front ends of the bars. Shoulders on the fingers limit the upward movement of the fingers by contact with portions of the guide bars. The fingers normally

stand at a level above the adjacent portions of a card held by the feeder bar, so that when the card is carried rearward by the feeder bar the said fingers are depressed until the card has passed over them, when they rise to prevent a retrograde movement of the card with the feeder bar. Either the fingers f^3 or the fingers f^4 can be used alone to strip the card from the feeder bar, and the fingers f^3 can be pivoted like the fingers f^4 , while the fingers f^4 can, if desired, be made rigid like the fingers f^3 . Beneath the bed plate a cam shaft G is mounted in transversely extending bearings that are secured to said bed plate. Upon the forward end of such shaft is mounted a cylindrical block H having a face cam h for operating the feeder bar F. A lever I is pivoted on a bracket i that is secured on the upper face of the bed plate at a point preferably on the opposite side from the feeder bar F of a vertical plate passing through the shaft G. The free end of the lever I extends to a point in front of the feeder bar F, to which latter it is connected by means of a link K. The lever I carries upon its under surface an anti-friction roller i' which is engaged by the face cam h and which, by the movement produced by such cam, oscillates the lever I and reciprocates the feeder bar F. A bracket L is secured to the under side of the bed plate and has a vertically extending portion l from which project horizontal lugs l' and l'' . In the said lugs are formed vertically alining, preferably cylindrical, holes, in which is received the stem of a plunger M. The bracket L is so placed that the plunger is in line with the center of the chute. The plunger is reciprocated vertically by a lever N that is fulcrumed between its ends on a bracket n secured to the underside of the bed plate, one end of the lever being pivoted to a side of the plunger, and the opposite end of the lever carrying an anti-friction roller that is engaged by a box cam O formed in the side of the disk that is mounted on the cam shaft G. The upper end of the plunger is longer from front to rear than transversely of such direction, and is provided with an opening m which communicates with an exhaust chamber m' formed within the plunger M. An elastic washer m^2 is preferably secured around and extends above the upper end of the plunger. Such washer can be secured upon the plunger by having a groove m^3 formed in its inner walls that fits over and engages a bead m^4 formed on the exterior wall of the plunger. A nipple m^5 extends from a face of the plunger, and a passage in such nipple communicates with the exhaust chamber in the plunger M. An exhaust cylinder O' is secured upon the underside of the bed plate longitudinally thereof, and a piston o is mounted within

such cylinder, the piston rod o' thereof being connected by a connecting rod P to a crank pin p on a side of the cam body H. In the end of the cylinder nearest the plunger M, a nipple o^2 is secured, and a piece of flexible tubing Q connects the nipples m^5 and o^2 . A valve is placed in the nipple o^2 , which valve opens toward the cylinder; and a valve is placed in the piston o which opens away from the nipple o^2 .

In the operation of the machine above illustrated, the chute is filled with cards, the ends of the lowermost of which rest upon the ledges c and c' . The cam shaft is set in motion, and the plunger M is first elevated until the washer m^2 , upon its upper end, comes nearly or quite in contact with the under surface of the lowermost card. The piston is then moved in the exhaust cylinder to exhaust the air from the interior of the plunger M, thus causing the lowermost card to be forced upon the upper end of the plunger by the air above the card. The plunger then descends, drawing down with it the center of the card. The feeder bar is then, by its operating mechanism, moved rearwardly, when the finger f^2 passes over the card and beneath the next card above it of the stack, and the under surface of the card rests upon the surfaces f' and f'' at the rear of the shoulders f and f' . The suction of the plunger is then released by the return stroke of the piston toward the nipple m^5 and the plunger is drawn downward out of the way of the feeder bar. The card being now bent downwardly at its central portion is at all points below the lower edges of the strips D and D' on the rearward side of the chute and, therefore, has an unobstructed passage rearward. The feeder bar then engages the card by its shoulders f and f' , and moves it rearwardly until the card rides over the rearwardly inclined shoulders f^3 and f^4 upon the bed plate, when the card springs down behind said shoulders and upon the return movement of the feeder bar, is disengaged from the latter, and drops upon the bed plate.

I desire it to be understood that there are many changes which can be made which will be within the scope of my invention; and that the above-illustrated embodiment of my invention is but one way of carrying the same into practice. For instance, in feeding paper which is too thin to be pushed, as by the feeder bar above described, because such paper will buckle, a gripper can be used, which would engage the rearward edge of such paper and draw the paper laterally, instead of pushing it laterally. For instance, as illustrated in Fig. 7, a plate Q having in it a path cam q may be secured to the bed plate opposite the exit from the chute, and an arm R can be mounted in a guide r so as to move parallel to the said plate, the said arm

being connected by a link with the arm operated by a cam H, before described, so that the arm R can reciprocate in the said guide, the said arm being provided with a fixed finger r' and a movable finger r'' pivoted to said arm and pressed downward by a spring r''' , the opposite end of the movable finger carrying a roller or pin r'''' that is adapted to travel in the path cam. A switch q' is pivoted in the path cam and is pressed upward by a spring so that, as the arm R moves to the left, as seen in Fig. 7, the roller on the end of the movable finger will travel along the upper part of the path cam, allowing the spring to hold the movable finger against the stationary finger, the lowermost card being gripped between the said fingers, this being made possible by the action of the plunger M in drawing down or bowing the said card. As the arm R approaches the left-hand end of its travel, the roller, carried by the movable finger, is caused to travel downward by the switch cam and to release the card, the latter striking against a post or pin S mounted on the frame and being thus released from the fingers. The roller carried by the movable finger now passes beneath the switch q' and is thus caused on the stroke to the right, to travel along the lowermost groove or portion of the path cam, holding the jaws open as they approach the chute, so that the next card, which has been bowed down by the plunger M, is received between the said fingers. As the arm R reaches the right-hand end of its travel, as seen in the said figure, the roller on the movable finger, upon reaching the vertical portion of the path cam, is free to move upward; when the spring snaps the movable finger upon the lower card and grips the same in condition to repeat the before-described operation. It is also obvious that the suction plunger could be moved laterally to give the desired lateral movement to the card or piece of paper. For instance, as shown in Fig. 8, the plunger M can be mounted in a vertical guideway formed in a slide U movable in the guides E by the link K, arm I and cam H, the pin m^5 , to which the lever N is pivoted being extended, so that the said plunger can be given a lateral movement, as well as a vertical movement, and so that the said pin m^5 will remain in engagement with the said lever during the said lateral movement. By this construction, the lowermost card is drawn down beneath the level of the shoulders upon the lower inner edges of the strips d forming one side of the chute, and the said plunger is then moved laterally, parallel to the ledges c , thus detaching the said card from the stack of cards and moving it out from beneath the same. The plunger M carries the card laterally until it is passed over inclined guides V; and, when the suction of the plunger is released, the said card falls upon the said

guides and slides off to the left, as seen in Fig. 8, to be delivered upon any desired article.

Having thus described my invention, what I claim is—

1. In a card feeding machine, the combination of a chute having ledges at opposite edges of the bottom thereof for the support of cards, suction means for drawing down the body of the lowermost card intermediate said edges, a feeder provided with a support for the underside of the depressed portion of the card and with means to engage the card and move it edgewise from the chute, and means for actuating said feeder at predetermined intervals in respect to the operation of the suction means, substantially as described. 70

2. In a card feeding machine, the combination of means for supporting a stack of cards by two opposite edges only, suction means for drawing down the body of the lowermost card intermediate said edges, a feeder provided with a support for the underside of the depressed portion of the card and with means to engage the card and move it edgewise from the chute, and means for actuating said feeder at predetermined intervals in respect to the operation of the suction means, substantially as described. 75 80 85 90 95

3. In a card feeding machine, the combination of a chute having card-supporting ledges at opposite ends thereof, walls upon one side of the chute which extend to the level of said ledges, walls upon the opposite side of the chute which over the ledges are separated therefrom by a slight space, and which, between the ledges, descend to the level of the latter, means for drawing down the lowermost card, and means for moving said card laterally, substantially as described. 100 105

4. In a card feeding machine, the combination of means for supporting a stack of cards by two opposite edges only, suction means for drawing down the body of the lowermost card intermediate its edges, a feeder having a support for the underside of the depressed portion of the card, a finger adapted to pass over such depressed portion, and means to engage the card and move it edgewise from beneath the stack, and means for actuating said feeder at pre-determined intervals in respect to the operation of the suction means, substantially as described. 110 115

5. In a card feeding machine, the combination of means for supporting a stack of cards by opposite edges thereof, means for drawing down the lowermost card, a feeder bar to engage and move the lowermost card laterally, and shoulders inclined away from the stack of cards over which the card is carried by the movement of the feeder bar and by which the card is held from returning with the feeder bar, substantially as described. 120 125 130

6. In a card feeding machine, the combination of means for supporting a stack of cards by opposite edges thereof, a plunger having a chamber therein opening through its upper face, means for moving said plunger against the lowermost card and for moving said plunger away from said card, means for exhausting air from said chamber whereby the body of said card is drawn down intermediate its edges, a feeder provided with a support for the underside of the card and with means to engage the card and to move it edgewise from beneath the stack, and means for actuating said feeder at pre-determined intervals in respect to the operation of said plunger, substantially as described.

7. In a card feeding machine, the combination of means for supporting a stack of cards by opposite edges, a plunger having a chamber opening through a face thereof, means for moving said plunger so that said face approaches and recedes from the lowermost card, means for exhausting air from said chamber whereby the body of the card is drawn down intermediate its edges, a feeder having a support for the under side of the depressed portion of the card, having a finger adapted to pass over such depressed portion and having means to engage the card and move it edgewise from beneath the stack, and means for actuating said feeder at pre-determined intervals in respect to the operation of the air exhausting means.

8. In a card feeding machine, the combination with a chute having ledges at oppo-

site sides thereof, a feeder bar moving transversely to said chute, a suction plunger movable longitudinally in the direction of the length of said chute, means for operating said suction plunger, means for operating said feeder bar, and means for exhausting air from said suction plunger, whereby said suction plunger is first caused to draw down the lowermost card, said feeder bar is caused to engage and support said card, said suction plunger is then released from said card and moved out of the way of said feeder bar, and whereby said feeder bar is then caused to move the lowermost card laterally from beneath the stack, substantially as described.

9. In a card feeding machine, the combination of means for supporting a stack of cards at opposite edges thereof, a feeder movable transversely of said stack, a suction plunger movable longitudinally of said stack, an exhaust cylinder, its piston and piston-rod, operative connections between said cylinder and plunger, a shaft, a cam thereon, connections between said cam and plunger, a second cam on said shaft, connections between the latter cam and the feeder, and a pitman connection between the latter cam and the piston-rod, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of December, A. D. 1901.

JACOB P. WRIGHT.

Witnesses:

B. C. ROSS,

O. A. TICKNER.