

(No Model.)

3 Sheets—Sheet 1.

S. SMALL.
Gate.

No. 236,099.

Patented Dec. 28, 1880.

Fig. 1.

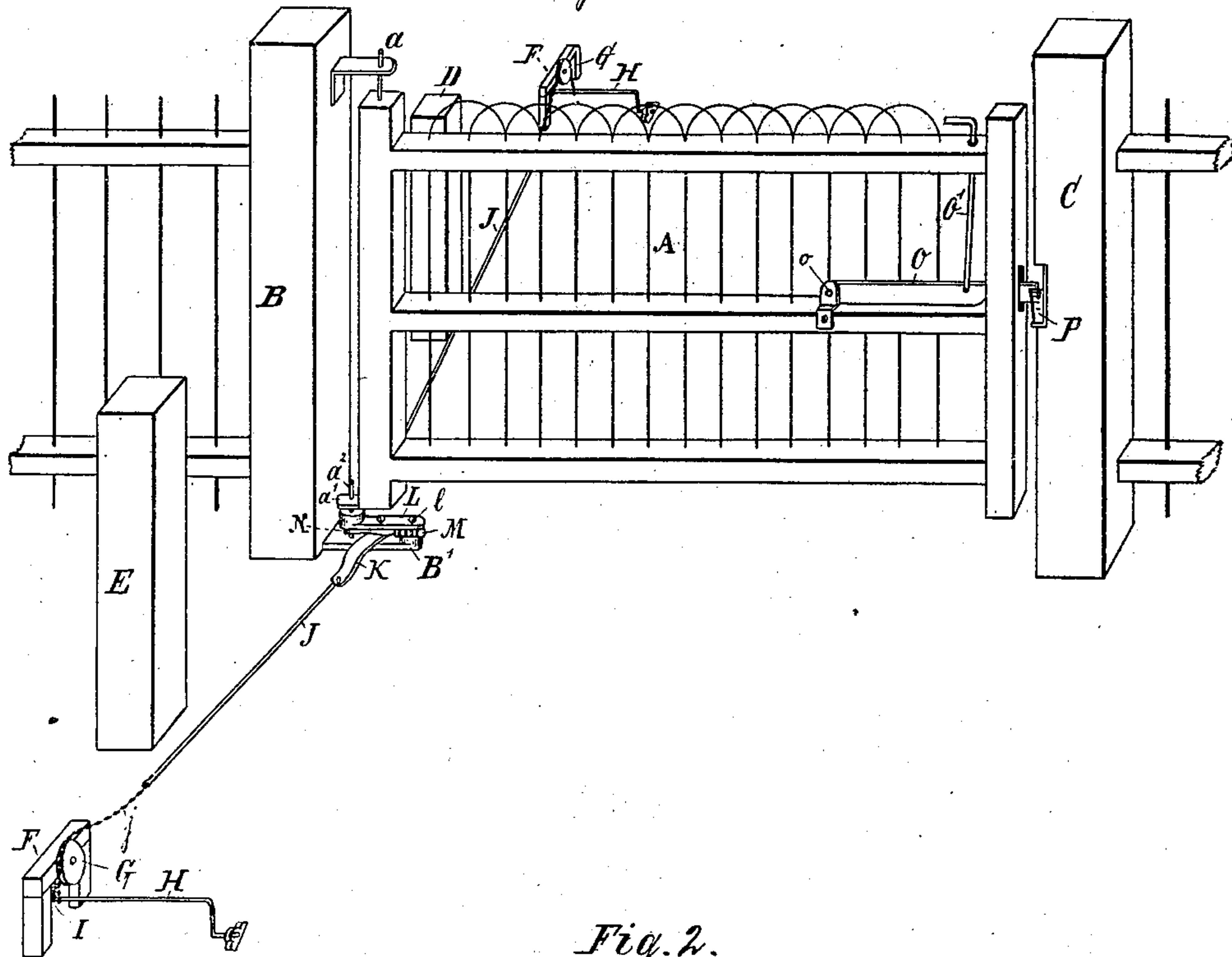
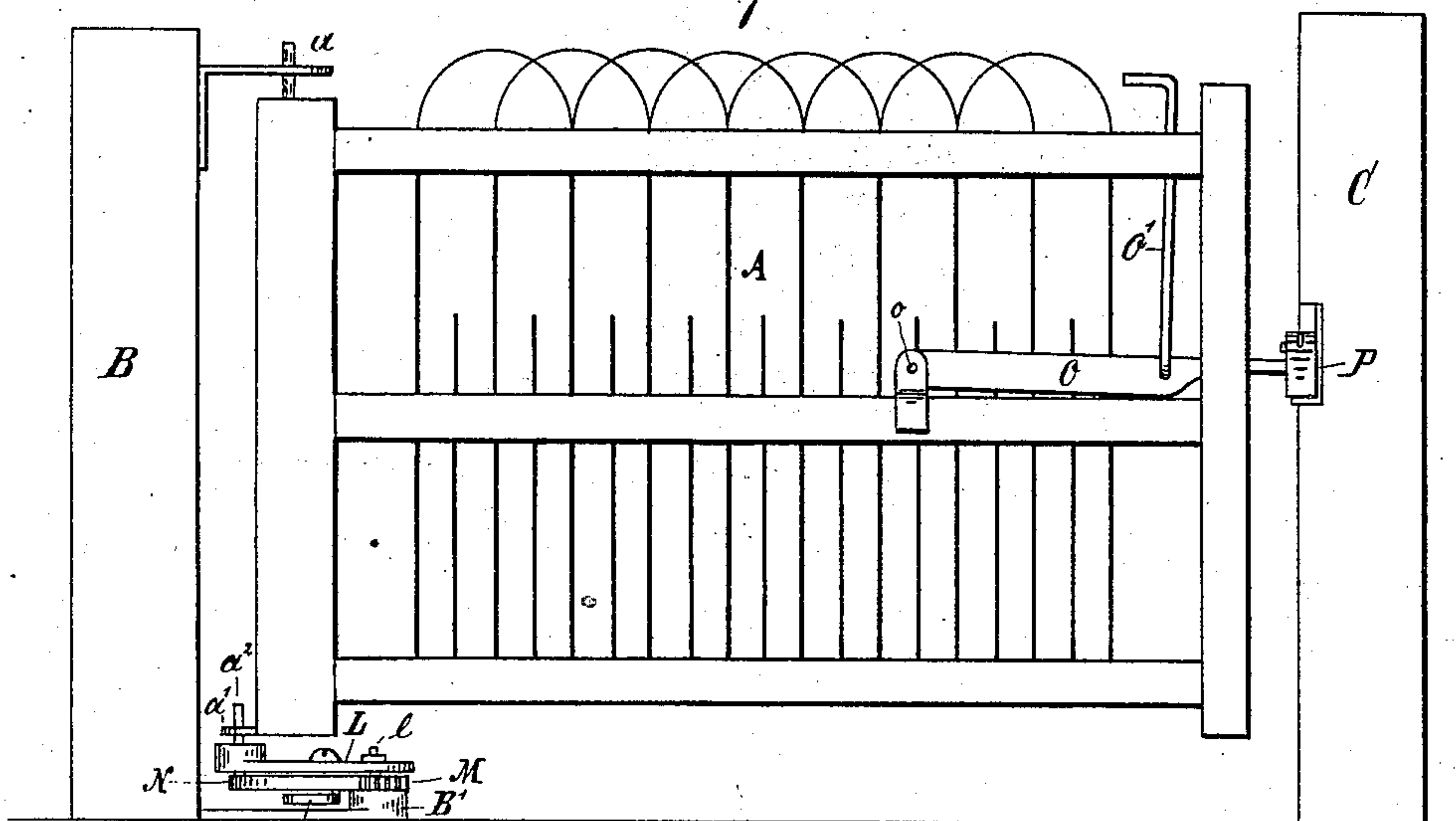


Fig. 2.



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Fig. 3.

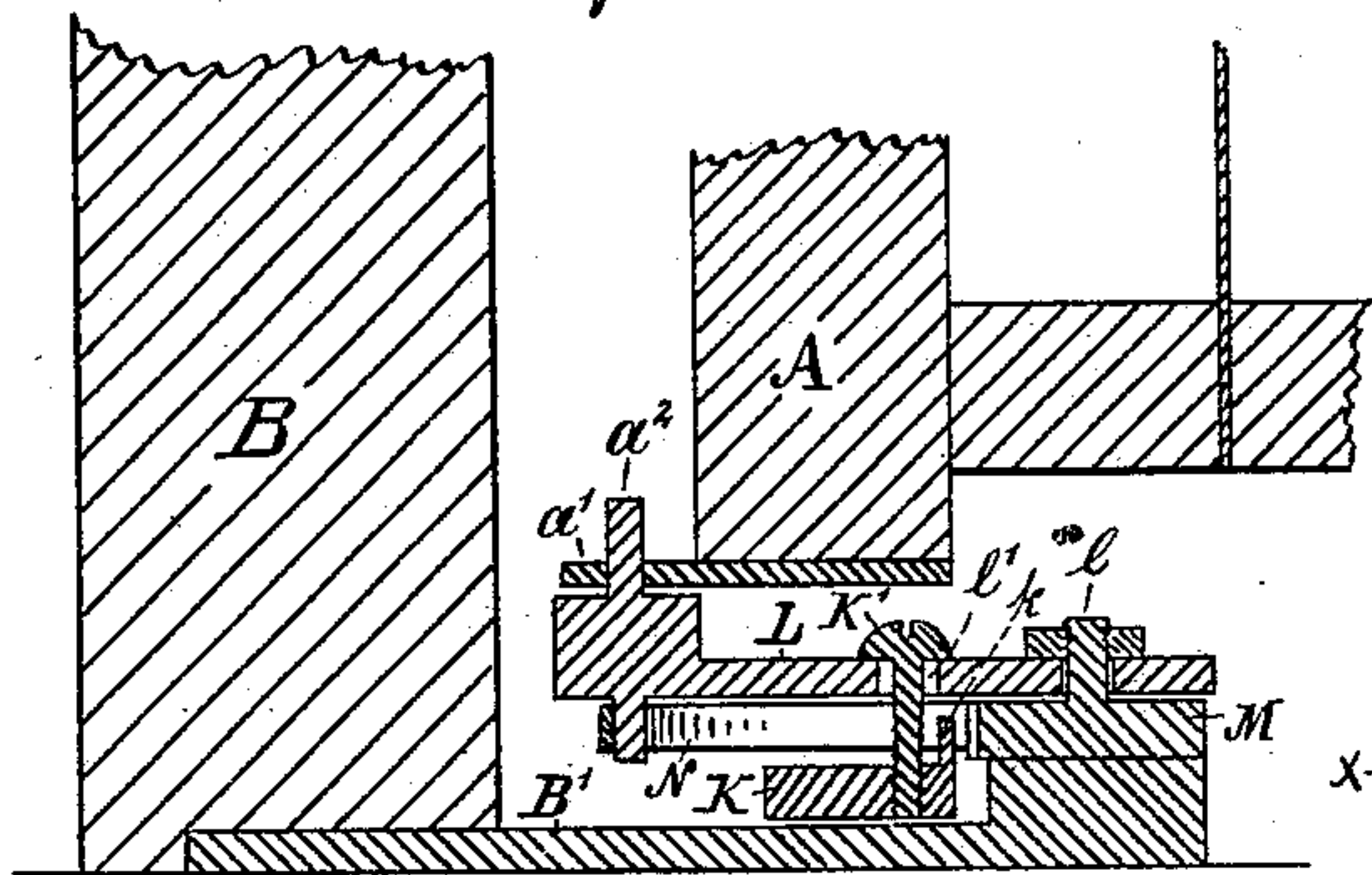


Fig. 5.

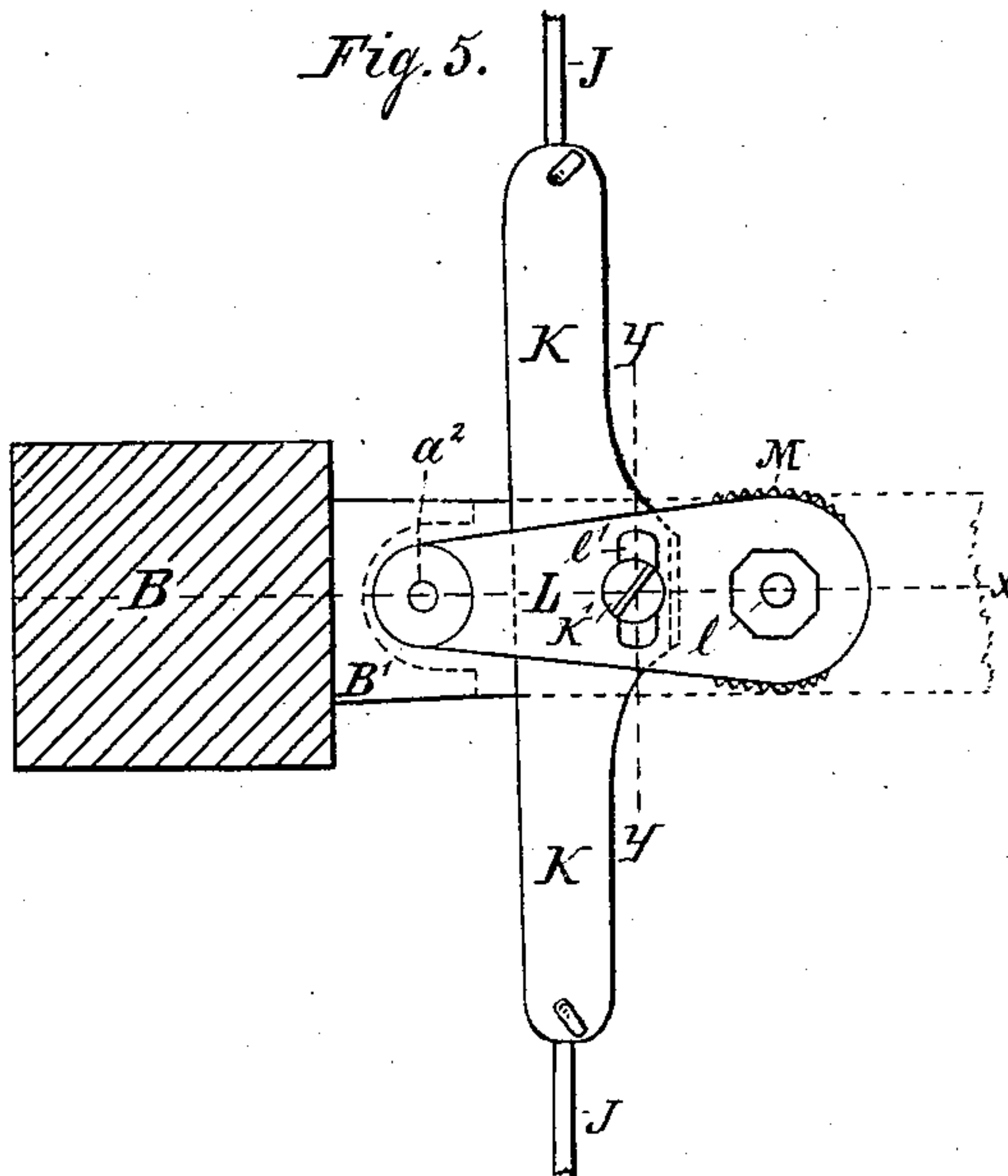


Fig. 4.

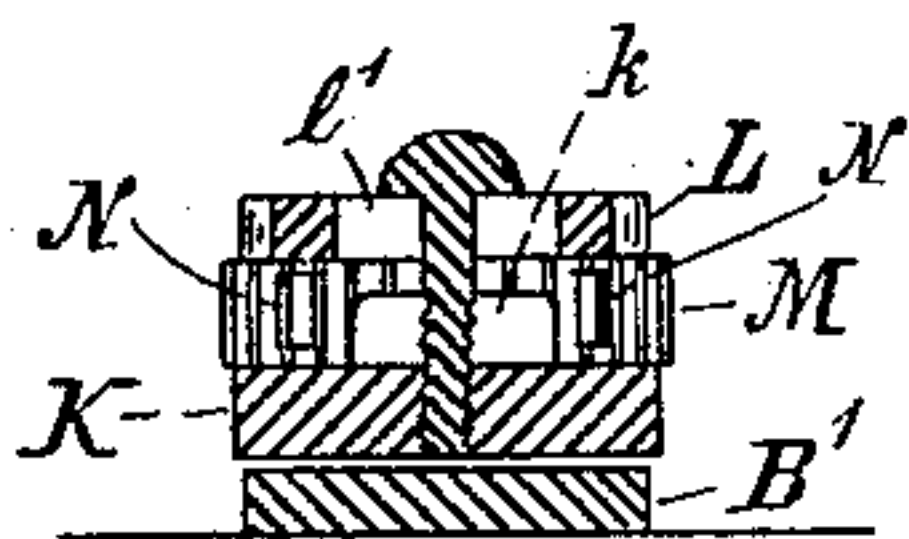


Fig. 6.

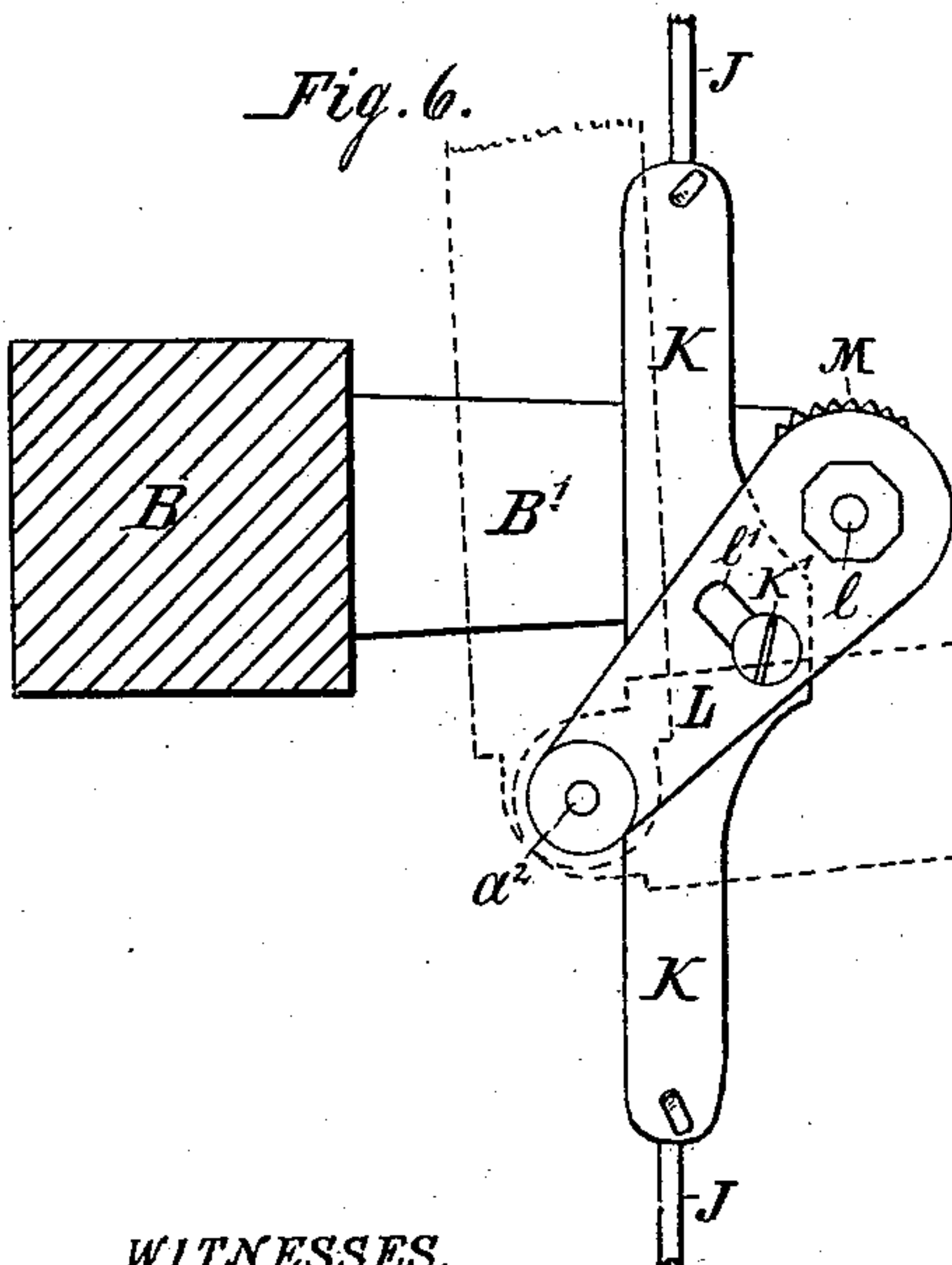
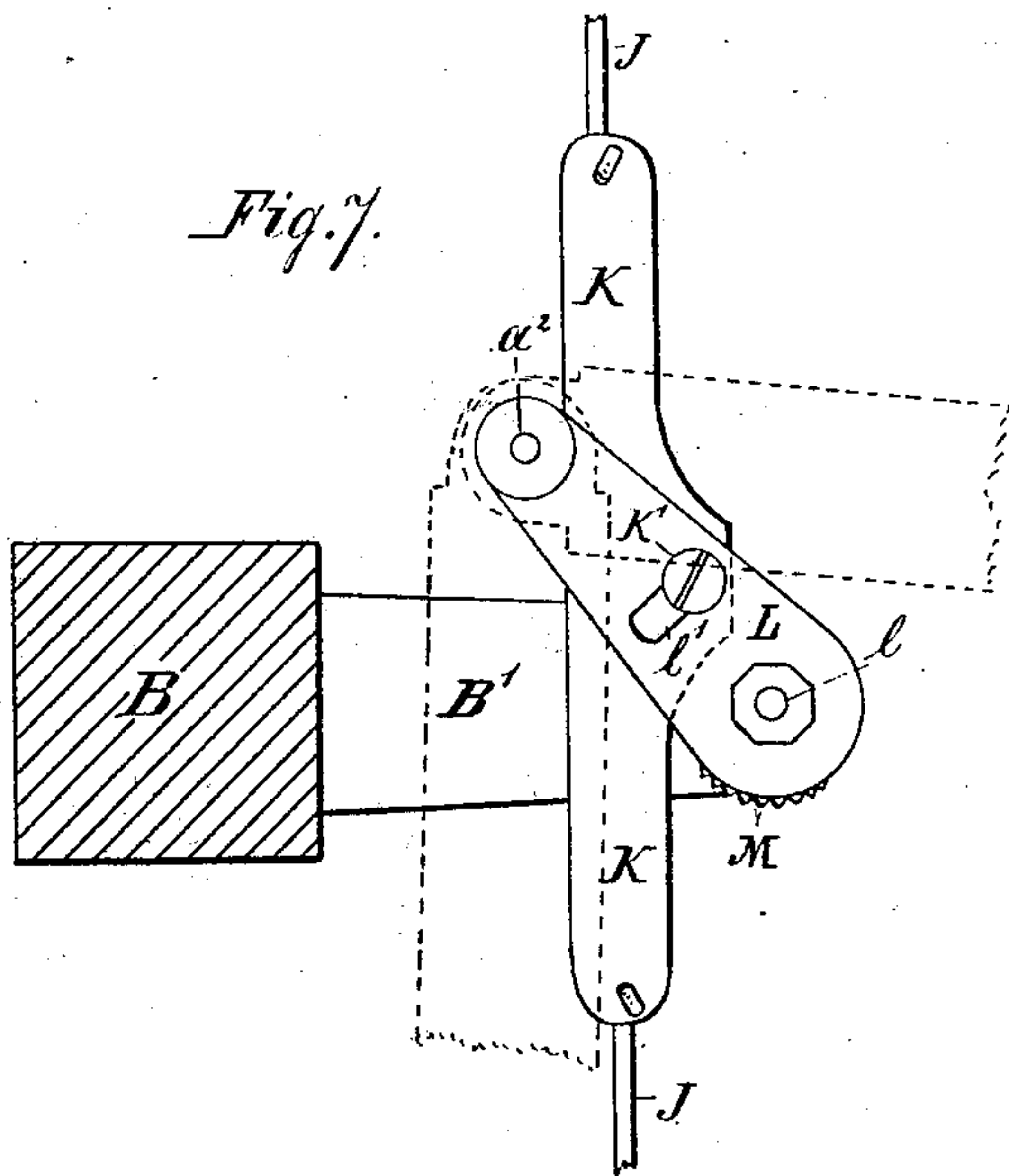


Fig. 7.



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Gate.

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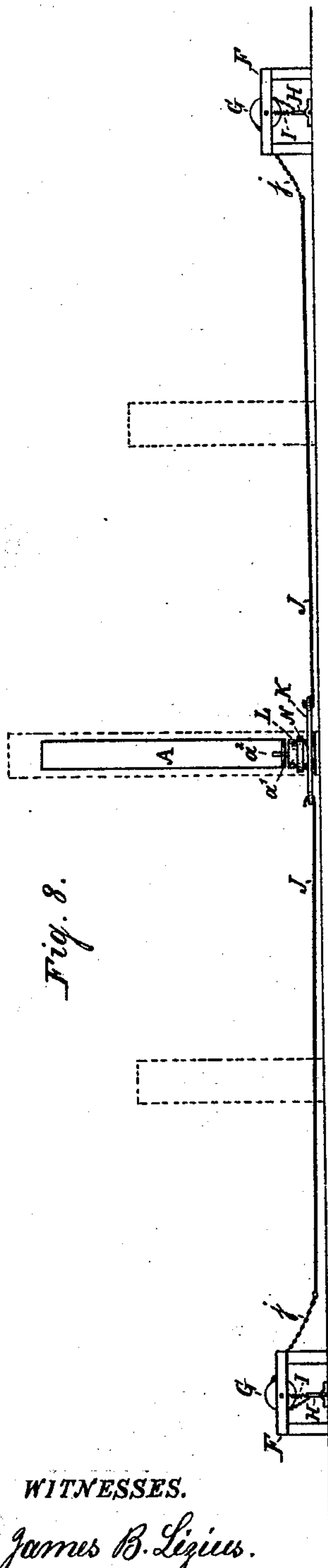


Fig. 8.

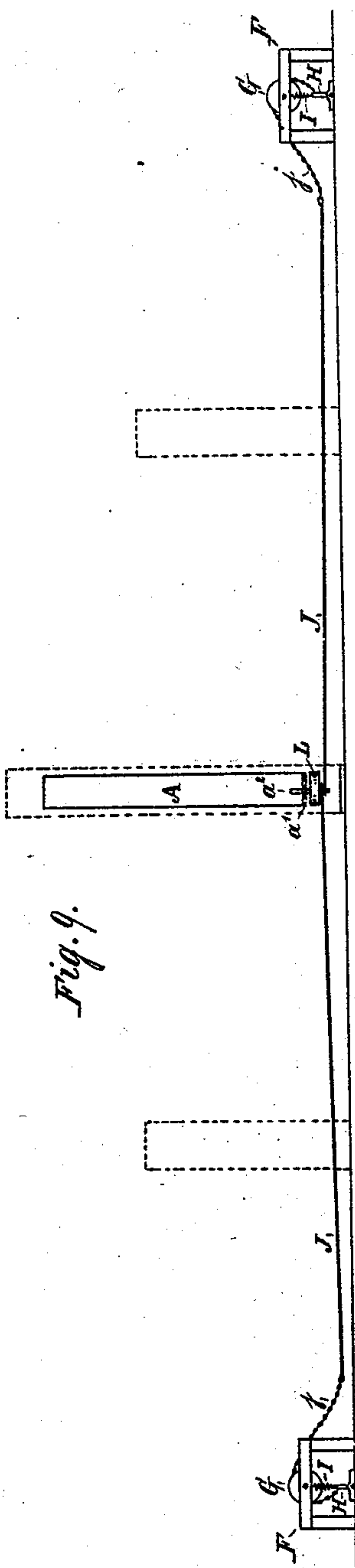


Fig. 9.

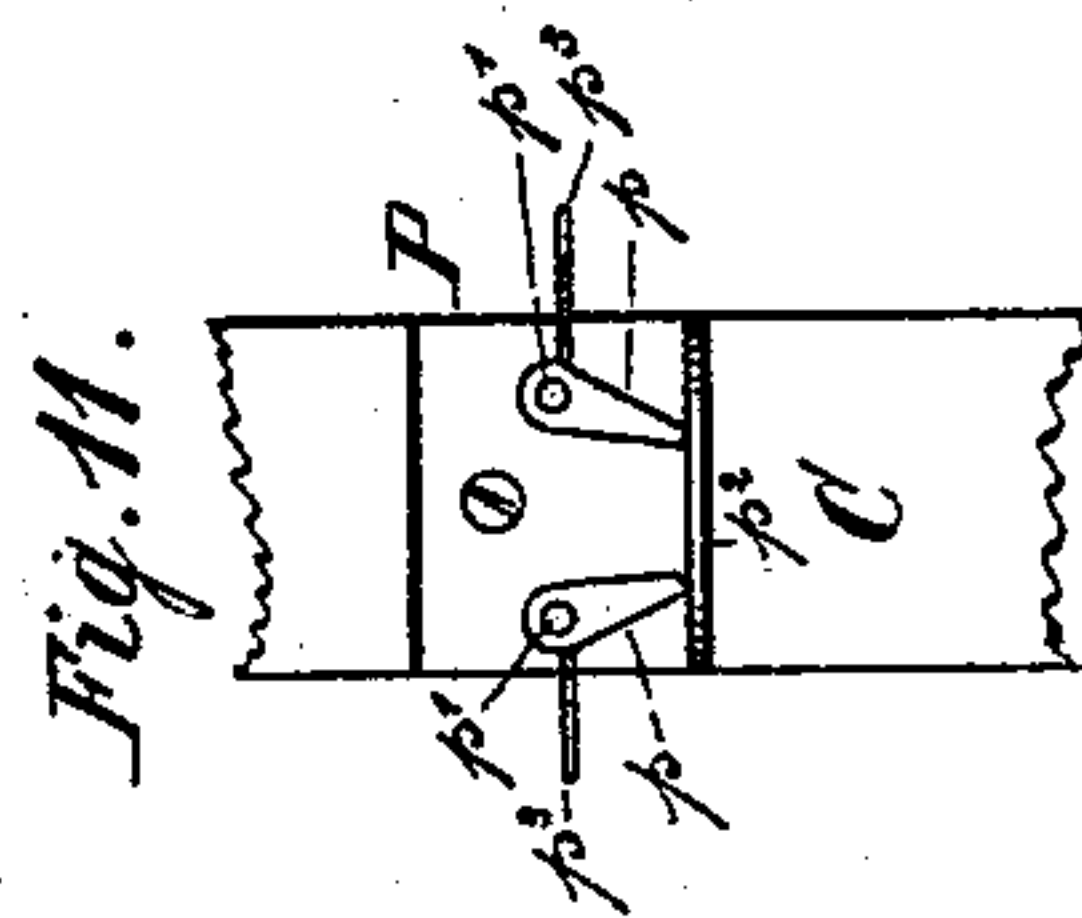


Fig. 11.

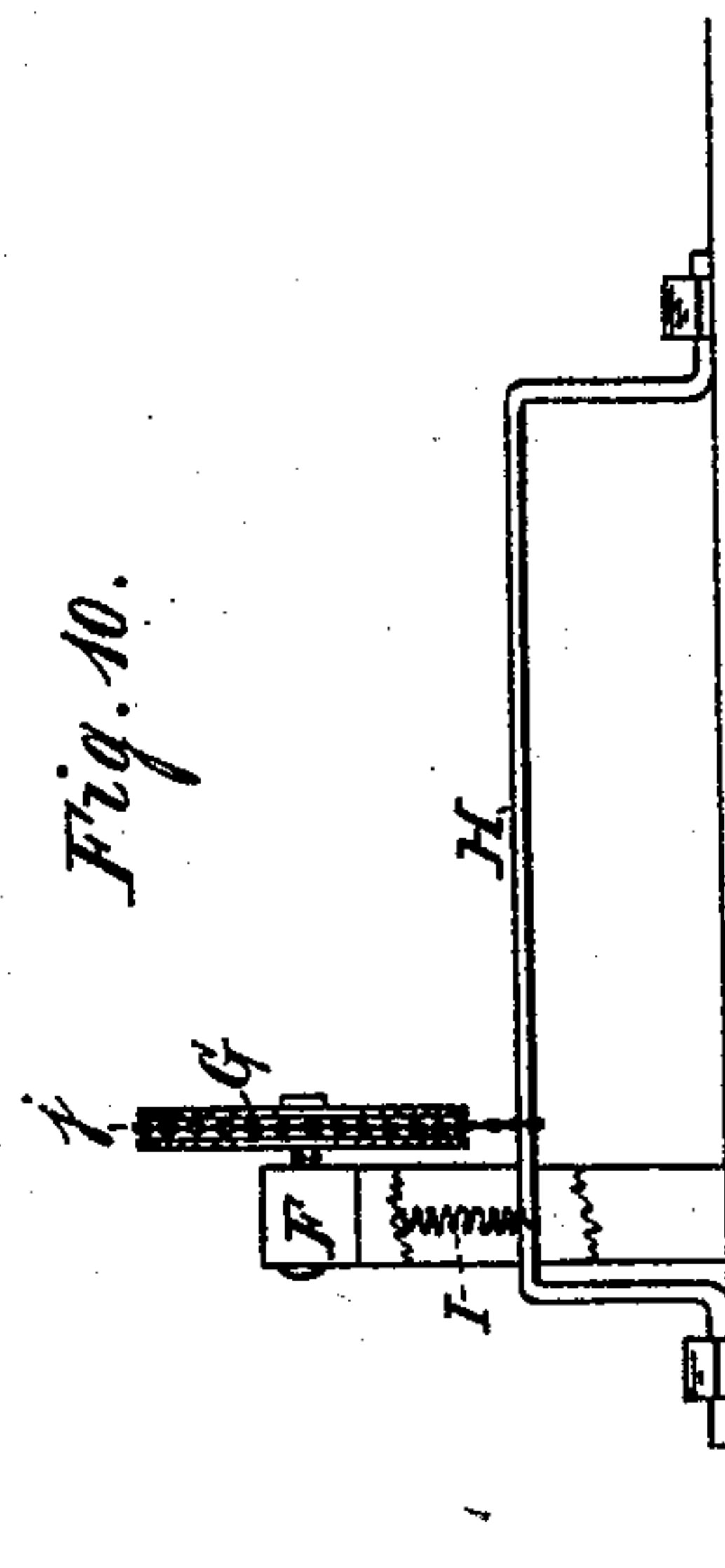


Fig. 10.

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UNITED STATES PATENT OFFICE.

SAMUEL SMALL, OF CLAY TOWNSHIP, HAMILTON COUNTY, INDIANA.

GATE.

SPECIFICATION forming part of Letters Patent No. 236,099, dated December 28, 1880.

Application filed April 23, 1880. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL SMALL, of the township of Clay, county of Hamilton, and State of Indiana, have invented certain new and useful Improvements in Automatic Gates, of which the following is a specification.

The object of my invention is to produce an improved automatic gate of that class which open from the approaching team as it approaches from either direction.

It consists, principally, in the construction of a peculiar form of tilting mechanism, and, secondarily, in some details of construction in the other portions of the operating mechanism; and the object is thus accomplished, as will hereinafter be more fully set forth.

Reference is had to the accompanying drawings, forming a part hereof, of which—

Figure 1 is a perspective view of a gate embodying my invention; Fig. 2, a side elevation of the gate in closed position; Fig. 3, a longitudinal vertical section of the tilting mechanism and adjacent parts on the dotted line *xx*; Fig. 4, a transverse vertical section on the dotted line *yy*; Fig. 5, a plan view of the tilting mechanism, either when the gate is at rest in closed position or being closed from either direction; Fig. 6 is a plan of the tilting mechanism when operated to swing the gate toward the post D, showing, by means of dotted lines, the relative positions of the gate thereto, both when just starting to open and when completely open; Fig. 7, a similar view to Fig. 6, except that the mechanism has been operated to swing the gate toward the post E instead of the post D; Fig. 8, a rear elevation of the gate in closed position, the several posts being shown in dotted lines only; Fig. 9, a like view to Fig. 8, except that the mechanism is shown in its simplest form, without the ratchet devices. Fig. 10 is an elevation of one of the bails H and surrounding parts, a portion of the frame being broken away to show the spring; and Fig. 11 an elevation of the catch P attached to the post C.

In said drawings the portions marked A represent the gate proper; B, the post to which it is hung; C, the post against which it shuts; D, the post against which it opens when swinging to the left; E, the post against which it opens when swinging to the right;

F, frames or equivalent uprights, placed in such relation to the trip-rods as to admit of the proper connections being made; G, pulleys upon the frames F; H, the trip-rods over which the wheels pass; I, springs which hold the trip-rods in upright position; J, rods or equivalent devices connecting the trip-rods with the mechanism which operates immediately on the gate and having a flexible portion, *j*, which passes over the pulleys G; K, a bar attached in the center to the mechanism below the gate and at the ends to the rods J; L, a horizontal bar pivoted at one end, by a pivot, *l*, to the projecting plate B' on the post B, or to some other form of immovably-constructed bearing, and having on the other end the hinge-pintle *a*², for the lower hinge of the gate, or a socket for said pintle to enter; M, a circular or segmental rack rigidly attached to the bearing B'; N N, pawls which engage with said rack, and are operated, as hereinafter described, by a projection, *k*, on the bar K; O a latch, and P a catch therefor.

The peculiar arrangement of the horizontal bar L, in combination with the gate and a suitable means of imparting a movement to said bar, is the most important point of my invention. This bar, being pivoted to a fixed pivot at one end and having the lower hinge of the gate pivoted at the other, operates, when pulled in either direction, to tilt the gate so it will swing in the other direction. Any means, therefore, of applying force to the bar L, provided it operates to pull toward the point of application, will cause the gate to swing from said point.

In order that the mechanism shall be secured to remain in operated position after the operating force is removed I have devised a catch mechanism, consisting of the circular rack M and the pawls N N. The rack M is rigidly attached to the bearing B', at or near the point where the bar L is pivoted thereto, and the pawls N N are pivoted to the opposite end of the said bar L, and are held in contact with the said rack M by a spring or other equivalent means. The pawls are operated by the projection *k* on the bar K, which (as said bar is allowed to move a short distance independently of the bar L by the slat *l'*, through which the bolt K' passes) presses first

against one and then the other of said pawls, as it is pulled in one or the other direction. When one pawl is pushed out of engagement with the rack M by the projection *k* the other is at once forced into engagement therewith, and so remains until the bar K is pulled in the other direction. By this means the bar L is always retained in the position into which it is forced until a subsequent operation of the other mechanism.

As will be clearly understood, the bar L, rack M, and pawls N N are superfluous, except for the purposes hereinbefore indicated, and the operation of the gate is the same when the rods J are connected directly with the bar L, as shown in Fig. 9, except that it will not stay in position when the operating force is removed.

The trip-rods H are of the single loop or bail variety, and are held in upright position by the spring I, or an equivalent weight. The flexible portions of the rods J pass over the pulleys G and are attached directly to said trip-rods. When the vehicle-wheels pass over the trip-rods in approaching the gate the bar L is forced into the position shown in Fig. 6 or Fig. 7, and causes the gate to swing open. When the vehicle-wheels pass over the trip-rods in going from the gate the bar L is forced into the position shown in Fig. 5, and causes the gate to close. The reason that the bar L is forced into different positions by passing in different directions over the same trip-rod is that the latter in being forced down under the pulley G pulls the rod J farther than when forced outwardly from said pulley. This will be readily apparent upon an inspection of the drawings.

The latch O is of a common form, is pivoted at *o*, and is provided with a handle, O', by which it may conveniently be opened by hand.

The catch P consists of two parts, loosely pivoted at *p' p'*, and a horizontal plate, *p*², upon which the points of the parts *p p* rest. Each of the parts *p* is also usually provided with a handle, *p*³, by which it may be operated by hand when desired.

In opening the gate its front end is raised high enough so that the latch O is above the top part, *p*, and therefore passes over it as the gate swings open. In closing the gate the latch strikes the part *p*, pressing it inwardly until the latch is past it, when it falls into place, and thus secures the gate in position.

The operation of this gate may be briefly re-

capitulated as follows: The wheels of an approaching vehicle or other means force one of the trip-rods H over, and, through the connecting-rods J, pulls the horizontal bar L around, as shown in Figs. 6 or 7, tilting the gate A until the latch O is raised out of the catch P and the gate swings open. Passing on, the wheel strikes the other trip-rod, and through the other connecting-rod pulling the horizontal bar L back into the position shown in Fig. 5, and the gate is thus caused to swing shut.

It will be understood, of course, that a cord or rod pulled by hand, or any other means that would give the horizontal bar L the proper movement, would be as effectual to operate the gate. I therefore do not wish to confine myself to any specific means of imparting motion to the said horizontal rod.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an automatic gate mechanism, a horizontal bar pivoted to a fixed bearing at one end and bearing a hinge-pintle for the gate upon the other, said pintle being non-moving, and said bar being the sole immediate means of imparting motion to the gates, in combination with appropriate means for operating the same, substantially as and for the purposes set forth.

2. The combination of the trip-rods H, connecting-rods J, horizontal lever L, mounted at one end by means of a fixed pivot, *l*, and attached to the gate at the other by a fixed pivot, *a*², and gate A, having heel-piece *a'*, all arranged and operating substantially in the manner and for the purposes set forth.

3. The combination of the bar K, moving on a pin, K', in the slot *l'* of the bar L, the pawls N N, attached to said bar, and the ratchet M, all substantially as and for the purpose specified.

4. The combination of the single-bail trip-rods H, spring I, pulleys G, and connecting-rods J, having flexible portions *j*, all substantially as shown and described, and for the purposes specified.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 20th day of April, A. D. 1880.

SAMUEL SMALL. [L. s.]

In presence of—

C. BRADFORD,
C. B. ROCKWOOD.