

(No Model.)

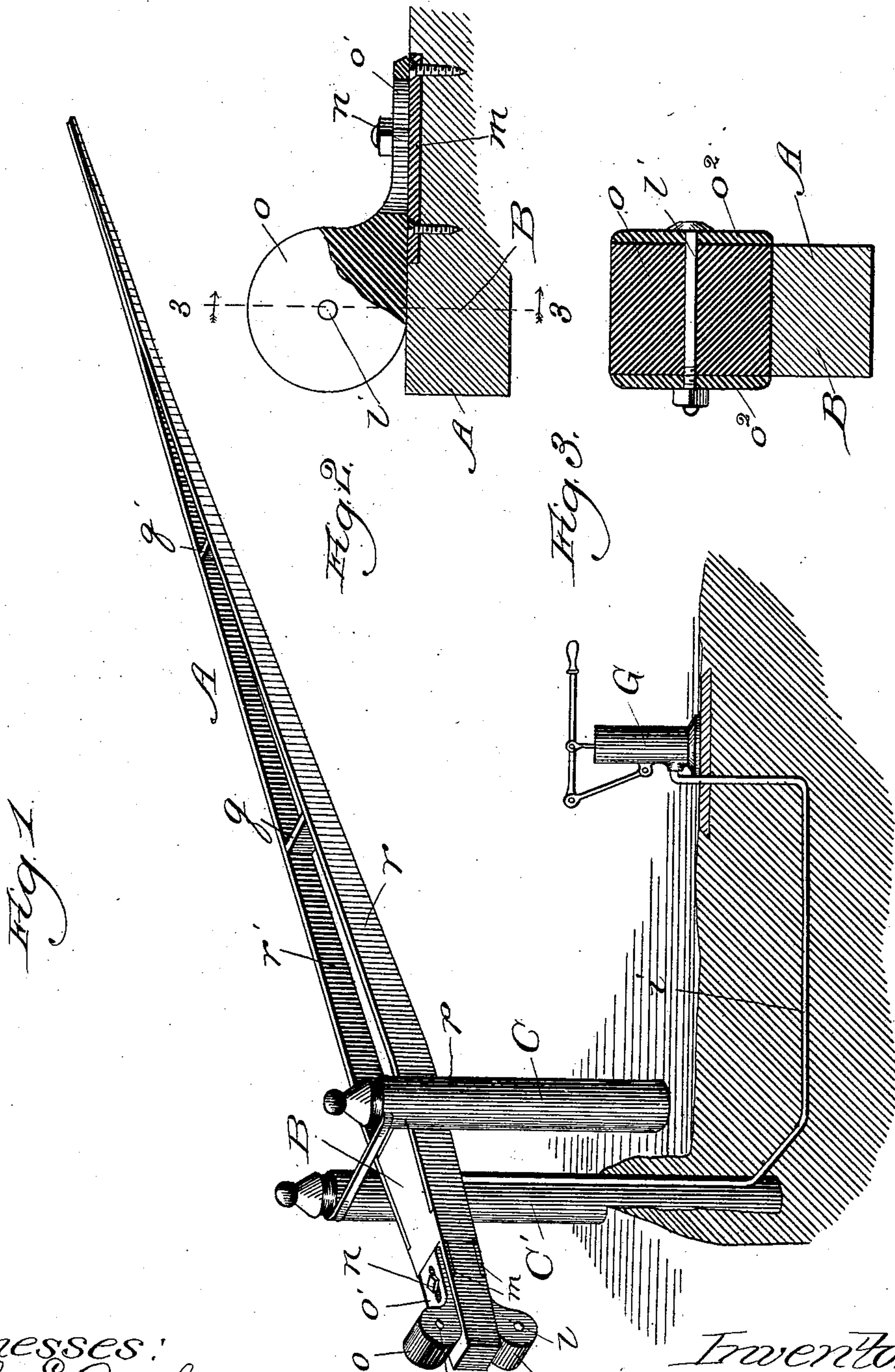
2 Sheets—Sheet 1.

M. B. MILLS.

SAFETY GATE FOR RAILWAY CROSSINGS.

No. 356,325.

Patented Jan. 18, 1887.



Witnesses:
 Jas. E. Gaylord
 J. W. Dyrenforth.

Inventor:
Mortimer B. Mills.
By Dymally and Dymally.

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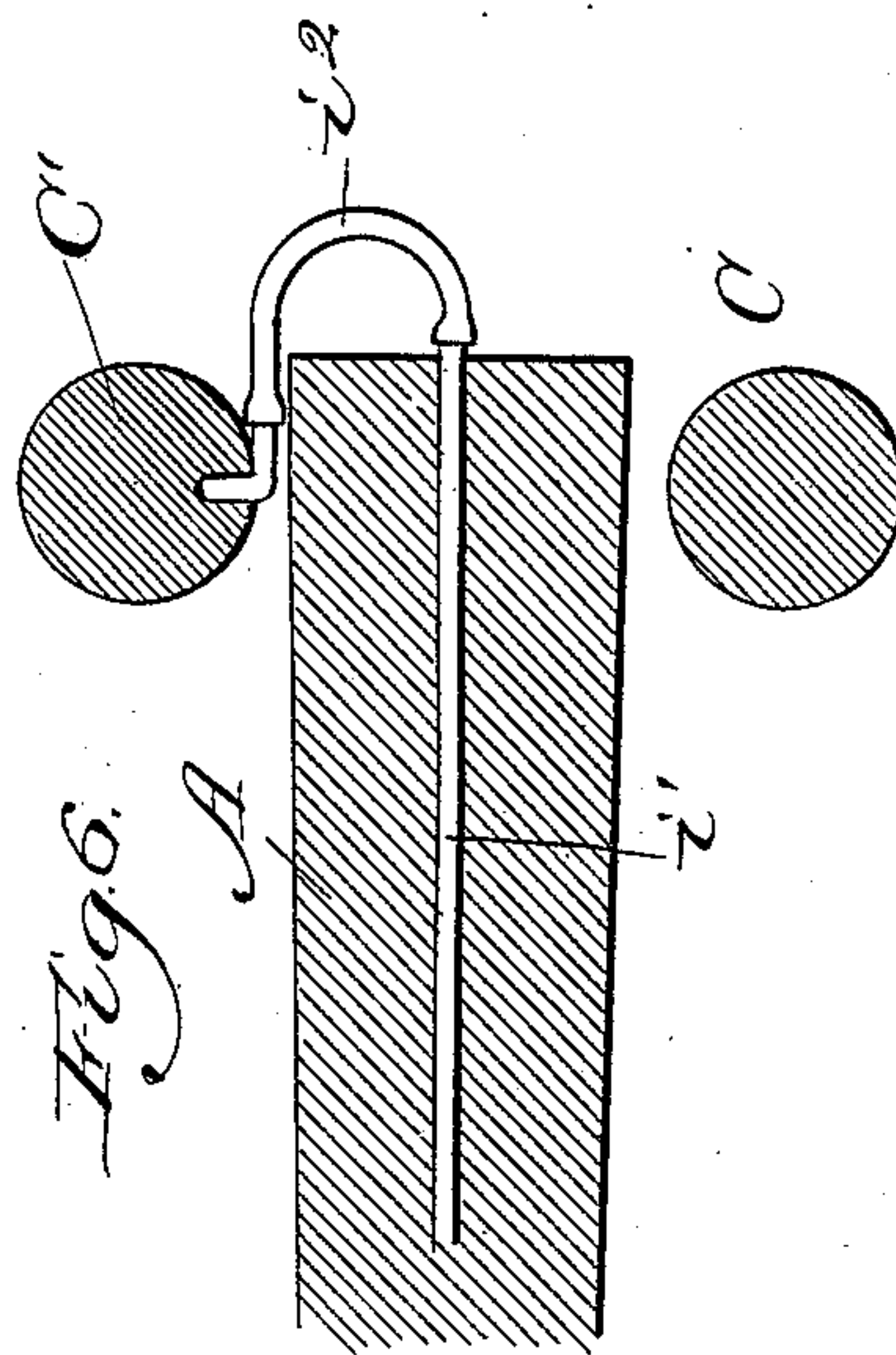
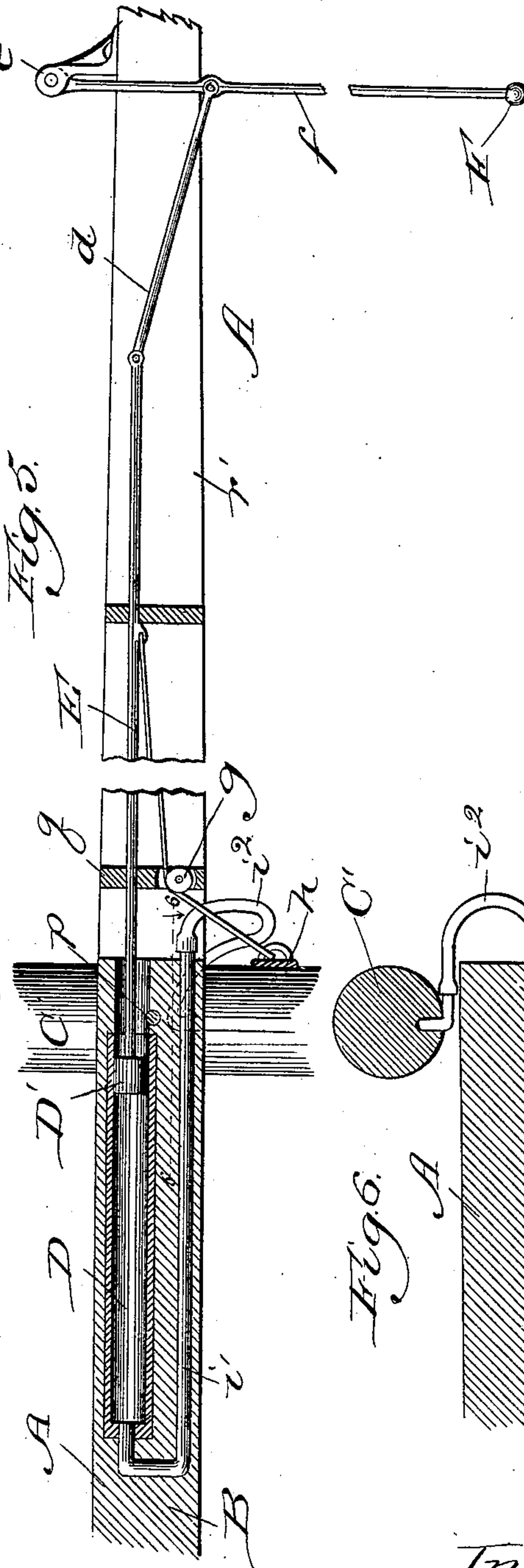
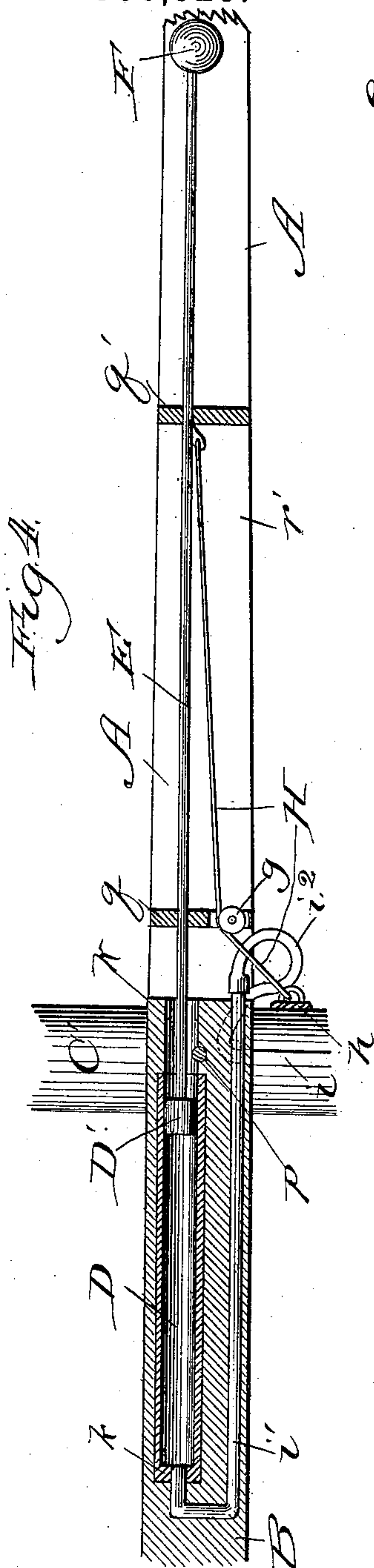
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UNITED STATES PATENT OFFICE.

MORTIMER B. MILLS, OF CHICAGO, ILLINOIS.

SAFETY-GATE FOR RAILWAY-CROSSINGS.

SPECIFICATION forming part of Letters Patent No. 356,325, dated January 18, 1887.

Application filed May 3, 1886. Serial No. 200,935. (No model.)

To all whom it may concern:

Be it known that I, MORTIMER B. MILLS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Safety-Gates for Railroad-Crossings; and I hereby declare the following to be a full, clear, and exact description of the same.

10 The objects to be attained to fulfill the requirements of the users of gates of the nature of my present improvement are, principally, simplicity and inexpensiveness of construction, without sacrificing in securing the same
15 the all-important feature of durability and accuracy and reliability, as well as ease of operation.

It is my object to provide a gate answering these requirements in a high degree as compared with other existing devices for the same
20 general purpose; and to this end my invention consists in the general construction of my improved device, and also in certain details of construction and combinations of parts, all as
25 hereinafter more fully set forth.

In the drawings, Figure 1 represents my improved gate in perspective, showing the underground communication between it and the air-pump, which affords a means for actuating the
30 gate-bar, air being the preferred medium for the purpose. Fig. 2 is an enlarged sectional view of a detail taken on the line 2 2 of Fig. 1; Fig. 3, a sectional view taken on the line 3 3 of Fig. 2; Fig. 4, a central longitudinal sectional view through the device as represented
35 in Fig. 1, but with parts of the gate-bar broken away toward opposite ends; Fig. 5, a similar view to that shown in Fig. 4, illustrating a modification; and Fig. 6 a sectional view, showing details of construction, taken on the line
40 6 6 of Fig. 5.

The following description and the drawings are confined to a single pivotally-supported gate-bar, this being sufficient to illustrate the
45 invention, which of course will not be changed by adding another swinging bar supported to work with it, two end bars swinging in opposite directions being the number commonly employed on opposite sides of a crossing, parallel with the track, or several, all of which

may be operated from the same point by providing the proper connections.

A is the gate-bar. This is formed of light side pieces, r r' , converging toward their forward extremities, where they are secured together to lend a tapering form to the bar, and secured toward their opposite ends upon opposite sides of a solid block, B, preferably tapering, as shown, toward its rear extremity, strengthening-pieces q and q' being fastened
55 between the side pieces, r r' , serving also to assist in maintaining the latter apart, and another purpose, hereinafter described.

C and C' are vertical posts, between which the bar A is pivotally supported upon journals p , extending into the posts, or through them, as shown, from opposite sides of the gate-bar toward its base. It is preferred to have the bar heaviest on the rear side of its pivotal bearing, whereby it will tend to assume of its own accord a vertical position; and this may be accomplished by employing a block, B, for the base heavier than the part of the bar forward of the pivotal support, or it may be done, as shown, by providing weights
65 o toward the rear end of the base B. When this latter means is adopted, it is preferred to render the weights o adjustable by having upon them slotted extensions o' , through which extends a set-screw, n , (metal plates m being provided in proper position, as shown, on the base B and having screw-threaded openings to receive the set-screw,) whereby the weights
70 may be adjusted toward or from the rear end of the gate-bar; and transverse openings l are formed in the weights o to receive a bolt, l' , serving to secure added weight o^2 upon the weights o .
75

One of the difficulties encountered in the operation of railroad-gates of the class to which
80 my improvement relates consists in an inability to overcome the opposing force of the wind. This is the case with gates the bars of which are pivotally supported each on a single post and in which the base embraces the supporting-post, being either covered on its upper
85 side or not. With such devices the effect of the wind is, when blowing in the direction of the descent of the bar, to tend to lower it and impede the raising operation, and when blowing
90 100

in the opposite direction to strain it while raised and assist the operation of raising with a force which prevents the exercise of proper control by the operator and exerts injurious strain upon the device. By supporting the gate-bar between two posts, as shown, I overcome this difficulty, since the force of the wind is exerted upon it equally, or substantially so, upon both sides of the pivotal bearing, and the effect of the force exerted on one side is counteracted by that exerted on the opposite side.

The base or block B is provided centrally and longitudinally with an opening, *k*, to hold a cylinder, D, containing a piston-head, D', upon one end of a rod, E, which extends toward the forward end of the gate-bar, being supported in the cross-pieces *g g'*, through which holes are formed to permit its passage, and carries on its forward extremity a weight, F, sufficiently heavy to establish, when shifted to its extreme forward limit, an equilibrium on both sides of the pivotal bearing of the bar A, whereby when the latter is lowered it will remain in such position until the weight F is moved backward.

The shifting of the weight I prefer to produce by means of air pressure and exhaust, a suitable air-pump, G, being provided and located at a proper point, from whence it communicates with the cylinder D, behind the piston-head D', by means of piping *i*, partly under ground, if desired, as shown, and extending along the side of a post, C', which may be grooved longitudinally to receive it, and a tube, *i'*, extending from the cylinder D, with which it communicates behind the piston, through the base B below the cylinder, a rubber-hose connection, *i''*, being provided between the pipes *i* and *i'* to afford an extensible yielding communication between the two, and thus permit the movements of the gate-bar. By forcing air into the cylinder D it forces out the piston, thereby shifting the weight F on the rod E toward the forward end of the bar A. This obviously would not, however, serve to lower the bar from its raised vertical position, though, as already described, it will, when shifted to its farthest forward extremity, maintain the bar down when lowered; but to produce the lowering effect a cable, H, is fastened at one end centrally to a cross-bar, *h*, extending from the post C to the post C', passes over a pulley, *g*, supported in the cross-piece *g*, and is fastened at its opposite end to the piston-rod, as shown, whereby as the rod E moves outward it pulls the cable after it. The play of the piston-rod is exactly equal to the difference between the distance from the pulley *g* to the point of attachment of the cable H on the cross-bar *h*, with the bar A down, and that between the same points with the gate-bar raised to its vertical position; hence the cable is always taut, and there is no lost motion of the piston-rod, whereby the gate-bar will begin to lower as soon as the piston-rod is started.

To raise the gate-bar from its lowered condition, the pump G is actuated to exhaust the air from behind the piston, whereby it will be caused to move inward, and thus shift the weight F backward, thereby overcoming the equilibrium produced by it when extended to its forward limit, and causing the heavier end of the gate-bar to raise the lighter gradually and with an even motion.

The modification shown in Fig. 5 illustrates another way of arranging the weight F to operate for the purpose hereinafter described. It is provided upon the end of a rod, *f*, pivoted at its opposite end upon a bearing, *e*, supported on the upper or rear side of the gate-bar, toward its forward or upper extremity, and connected with the piston-rod E by means of a link, *d*, pivoted to the rod *f*, toward the center of the latter at one end, and to the extremity of the piston-rod at its other end. The outward motion of the piston-rod forces the rod *f* to the position shown in Fig. 5, thereby sending the weight F to the desired position to maintain the gate-bar down when lowered, and making of the rod *f* a leg to prop the gate-bar by the contact of the weight F with the ground, and the inward motion of the piston-rod operates to raise the rod *f* to a horizontal position, thereby bringing the weight F backward toward the pivotal support of the gate-bar and overcoming the equilibrium on opposite sides thereof, whereby the gate-bar is caused to rise by the excess of weight at its rear end.

The exact position shown of the shifting weight F is not essential, (although preferred,) inasmuch as it could be farther back, and could even be afforded by the reciprocating piston-head itself.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a gate-bar pivotally supported to swing in a vertical plane, of a shifting weight upon the said gate-bar, a cable flexibly connecting the shifting weight with the gate-bar support, and an intermediate bearing on the gate-bar for the connecting medium between the opposite ends of the latter, substantially as and for the purpose set forth.

2. The combination of a gate-bar pivotally supported to swing in a vertical plane, a cylinder upon the gate-bar communicating with an air-pump, a piston-head within the cylinder, a piston-rod, E, connected at one end with the piston-head and supported on the gate-bar, a weight, F, upon the opposite end of the piston-rod, and a cable, H, connecting the piston-rod with the support for the gate-bar and passing over an intermediate bearing, *g*, on the gate-bar, substantially as and for the purpose set forth.

3. The combination of posts C and C', a gate-bar, A, pivoted to swing in a vertical plane between the posts forward of its center of gravity, a cylinder, D, upon the gate-bar, toward its rear end, and containing a piston-

head, D', an air-pump, G, communicating
with the cylinder behind the piston, a piston-
rod, E, connected at one end with the piston-
head and supported on the gate-bar, a weight,
5 F, upon the opposite end of the piston-rod,
and a cable, H, connecting the piston-rod with
the posts C C' and passing over an intermedi-

ate bearing, *g*, on the gate-bar, substantially
as and for the purpose set forth.

MORTIMER B. MILLS.

In presence of—

HENRY HUDSON,
J. W. DYRENFORTH.