

(No Model.)

3 Sheets—Sheet 1.

A. FARRAR & M. B. MILLS.

GATE FOR RAILWAY CROSSINGS.

No. 342,689.

Patented May 25, 1886.

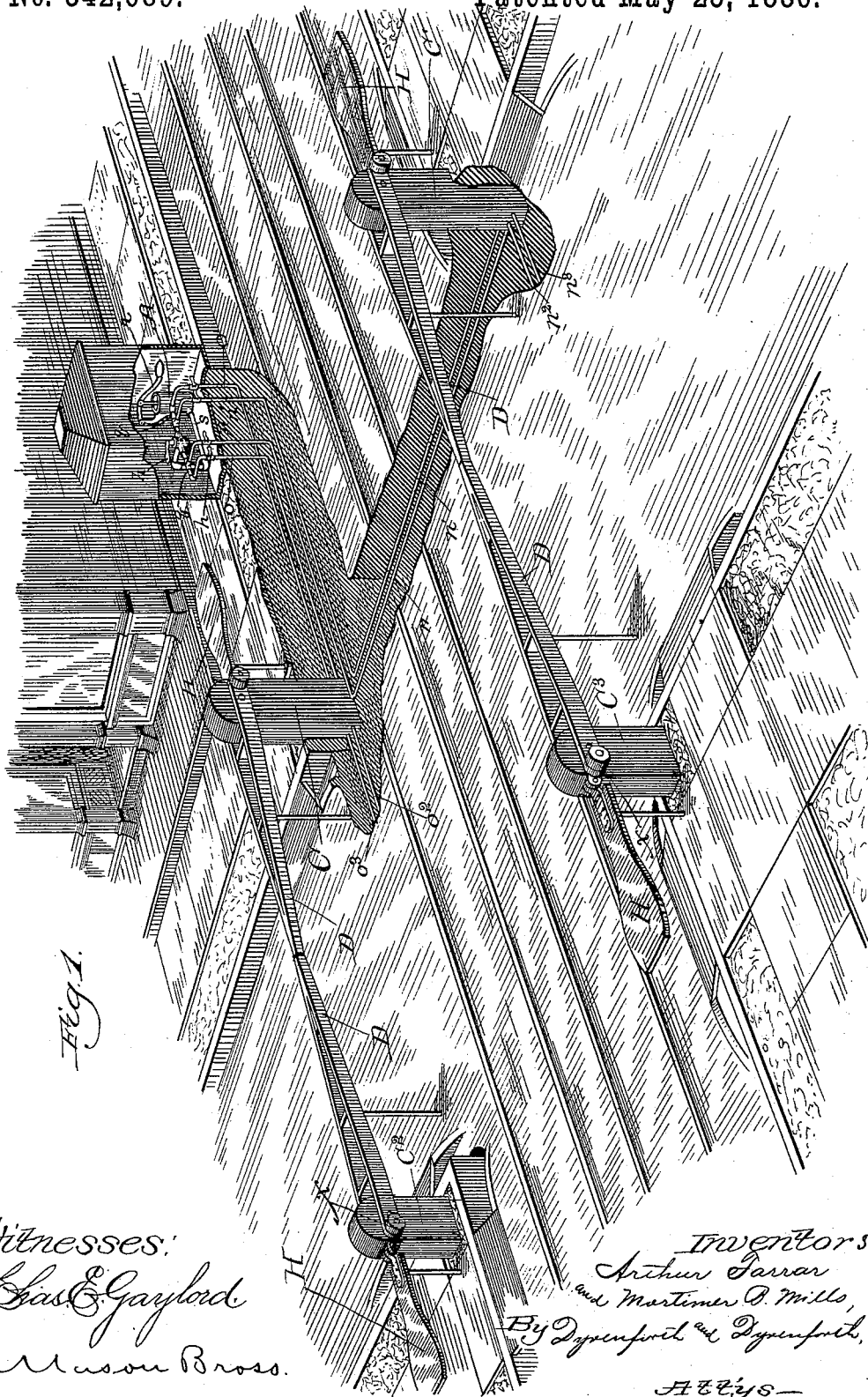


Fig. 1.

Witnesses:  
Chas. E. Gaylord  
Mason Bros.

Inventors:  
Arthur Farrar  
and Mortimer B. Mills,  
By Dyrenforth and Dyrenforth,  
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(No Model.)

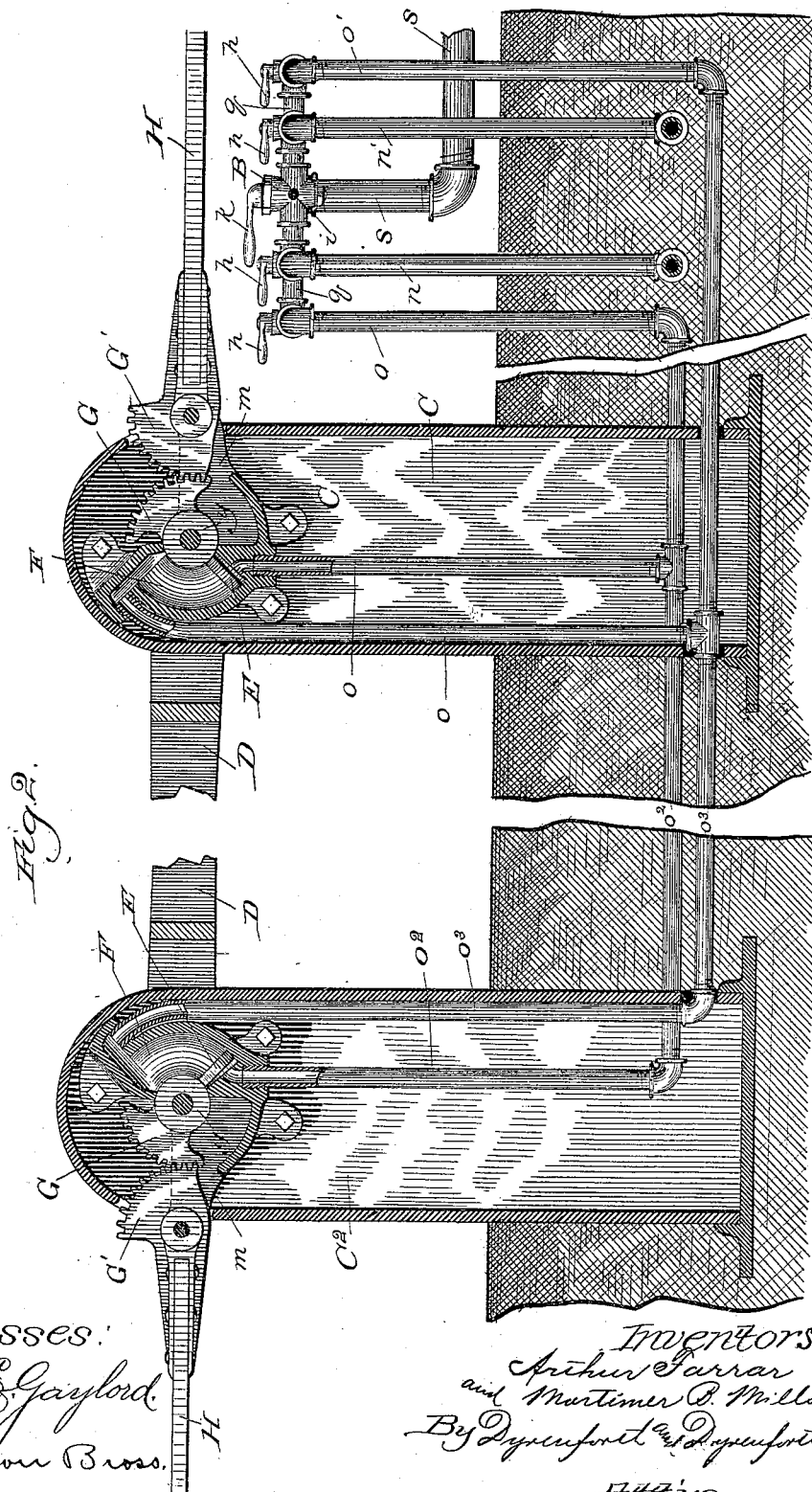
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Inventors:  
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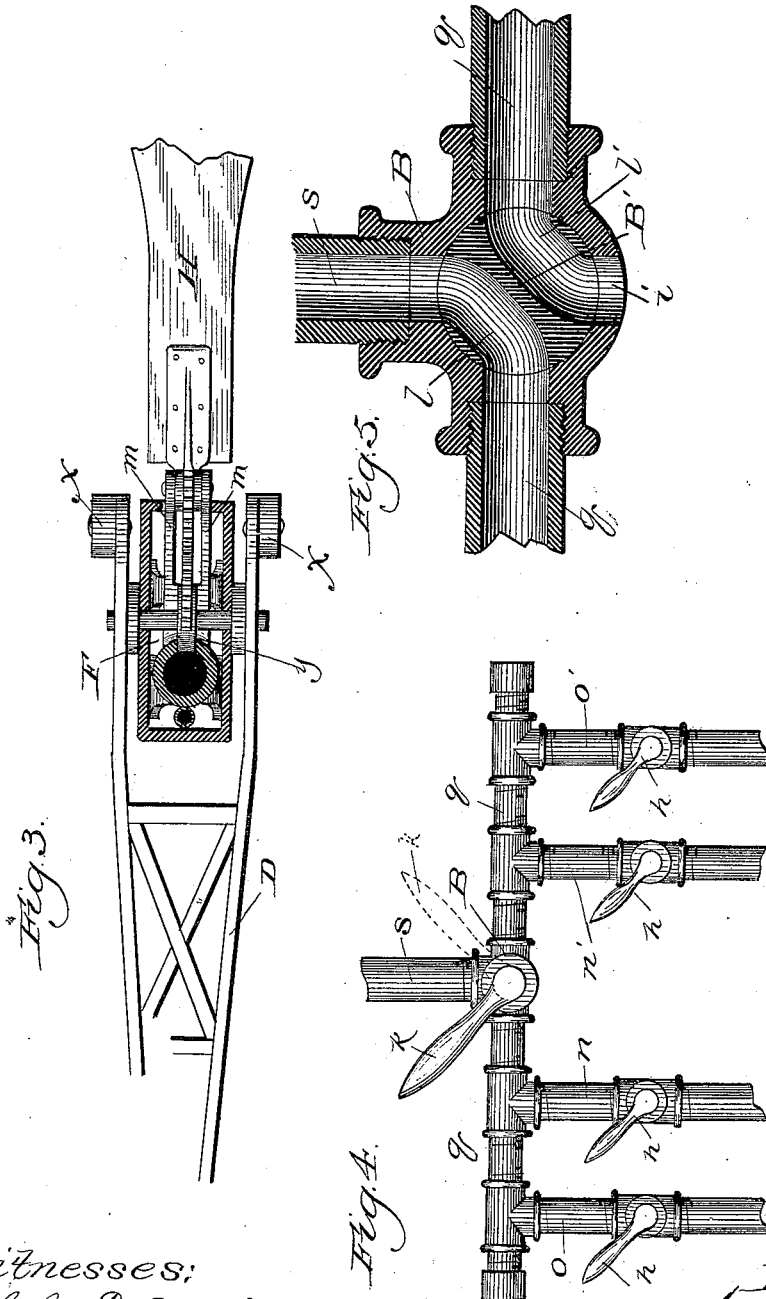
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Inventors:  
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# UNITED STATES PATENT OFFICE.

ARTHUR FARRAR AND MORTIMER B. MILLS, OF CHICAGO, ILLINOIS, ASSIGNORS OF ONE-THIRD TO GEORGE W. CASS AND W. P. ELLIOTT, BOTH OF SAME PLACE.

## GATE FOR RAILWAY-CROSSINGS.

SPECIFICATION forming part of Letters Patent No. 342,689, dated May 25, 1886.

Application filed April 16, 1885. Serial No. 163,391. (No model.)

*To all whom it may concern:*

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

Our invention relates to the class of gates formed with bars constructed to be swung in vertical planes upon posts properly located at opposite sides of a railroad-track by the application of pneumatic force operating to open and close them, the swinging of the bars suitably connected being effected from a single point.

The satisfactory operation of gates of the foregoing description is seriously impeded in windy weather by the action of the force of the wind against them, whereby, when it blows in the direction of the falling motion of the swinging bars on posts upon opposite sides of the track, it tends to hasten their lowering movement and impede that of the bars on posts in line with them, and to act conversely in raising the bars, whereby the operator loses control of the latter, and they are caused to assume their horizontal or vertical positions, as the case may be, with such violence or are impeded to such a degree that they and the mechanism through the medium of which they are actuated are subjected to injurious strain.

It is our object to overcome this difficulty, and to provide effective means of novel and simple construction for actuating the movable parts of the gates.

To this end our invention consists in providing vertically-swinging wind-brakes for the swinging bars, to rise and fall with the latter in opposite directions to the motion of the same, whereby the effect upon the latter of the wind shall be counteracted; and it further consists in the details of construction and combinations of parts of the mechanism for actuating the movable parts of the gates, all as hereinafter set forth.

Referring to the drawings, Figure 1 is a perspective view representing a railroad-track

provided with our improved form of gate; Fig. 2, a vertical section through two gate-posts in line with each other on the same side of the track, and having parts of details broken away to permit proper representation, and showing the preferred form of mechanism for operating the bars; Fig. 3, a plan view of one bar upon a post, having a horizontal section removed to display the mechanism within it; Fig. 4, a detail plan view of the valve mechanism shown in Fig. 1 and located in the passage between the air-pump and gates, and Fig. 5 a sectional view of the main or four-way valve.

A, Fig. 1, is an air-pressure pump of common construction, operated by the handle *t*. The pump communicates from a point toward its lower end through a pipe, *s*, with the shell B of a four-way valve, B', of peculiar construction. The shell B is provided with lateral tubular arms to permit the coupling to each of a horizontal tube, *q*, from which the pipes *o* and *o'* lead to the post C on one side of the track, and are provided with extensions *o''* and *o'''* leading to the post C<sup>2</sup> in line with the post C on the same side of the track with it, and also the pipes *n* and *n'* lead to the post C' on the opposite side of the track, from which they communicate by means of extensions *n''* and *n'''* with the post C<sup>2</sup> on the same side of the track and in line with the post C'. Each of the posts is provided with a bar, D, suitably weighted, if desired, toward its rear end, as shown at *x*, Figs. 1 and 3, and pivoted to swing vertically upon its bearings. The pivot of each post D carries to move with it a rotary piston, E, operating within a stationary shell, F, provided with an opening at each side of the piston to admit air from the pump A through the pipes communicating with the pump, and leading into the shell by way of the openings formed therein, and the pivoted portion *y* of the piston E, which extends partly into the shell F, suitably packed around the part *y* of the piston to afford an air-tight chamber within it, carries a fan-shaped tooth-gear, G, which meshes with a similar device, G', projecting into each post from the rear end of a wind-brake, H, to which it is rigidly secured,

and is pivoted between brackets *m*, Fig. 3, extending from the shell *F* of the piston device. The wind-brakes *H* comprise bars having, preferably, the form of oar-blades, and, owing to the meshing gear *G* and *G'* they are caused to rise or fall with the raising or lowering of the bars *D*.

The four-way cock hereinbefore referred to comprises a valve portion, *B'*, within a shell, *B*, and has openings *l* and *l'* formed through it upon opposite sides of its center and curved in contrary directions, whereby, when the opening *l* is caused to coincide at its opposite ends by turning the handle *k* with the pipes *s* and *q*, and through the latter with the pipes *o* and *n* and their extensions *o'* and *n'*, the opening *l'* will coincide at its opposite ends with the pipe *q*, and through the latter with pipes *o'* and *n'* and their extensions *o''* and *n''*, and with an escape-opening, *i*, provided in the shell *B*, and when the handle *k* is turned to the position indicated by the dotted lines in Fig. 4 the opening *l* will be caused to coincide at its opposite extremities with the pipes *s* and *q*, and through the latter with the pipes *o'* and *n'* and their extensions *o''* and *n''*, and the opening *l'* will afford a passage through the pipe *q* and opening *i* in the shell *B* for the air in the extensions *o''* and *n''* and pipes *o* and *n* to escape.

To operate the gates to raise the bars by means of the mechanism hereinbefore described, the valve *B'* is turned to the position shown in Fig. 5 of the drawings, allowing air on working the pump *A* to be forced through the pipes *o* and *n* and their extensions *o''* and *n''* against the lower surfaces of the pistons *E*, thereby moving the latter within the shells *F*, and forcing whatever air may be within the shell on the opposite side of the piston through the pipes *o''* *o'* and *n''* *n'* by way of the pipe *q* out of the escape-opening *i* in the shell *B*. This movement of the piston operates to raise the bar on each post, and the fan-shaped gear device *G*, by meshing with the adjacent device *G'*, raises at the same time the wind-brakes *H*, the direction of motion of the latter being always contrary to that of the gate-bars. The effect of the wind-brakes is to insure in windy weather even and easy motion of the bars *D*, since, to illustrate their operation, if, while the bars are being raised from the positions shown in Fig. 1, the wind shall be blowing with any material degree of violence in a direction contrary to the motion of the bars on the posts *C* and *C'*, its tendency would be to impede their progress and hasten that of the bars on the posts *C''* and *C'''*. The brakes *H*, however, move in directions contrary to those in which the bars move; hence the force which affects a bar in opposition to the direction of its motion will in the same degree affect the brake in the direction of its motion, and thus the two effects will counterbalance each other. Obviously, with the wind in the opposite direction, the effect of the brake device will be the same, as it also

will be if the operation being performed is to lower instead of raise the bars. Either set of bars *D* on one side of the track may be actuated independently of the set on the opposite side, on closing the communication of a post, *C* or *C'*, as the case may be, with the pump, by turning the valve *h*, of common construction, in a pipe, *o* or *n*, depending upon which side is to be raised, or in a pipe, *o'* or *n'*, depending upon which side is to be lowered.

To raise the bars on the posts *C* and *C''* and allow those on the posts *C'* and *C'''* to remain down would be accomplished by working the pump with the valve *B'* in the position shown in Fig. 5 after closing the valve *h* in the pipe *n*. The valves or taps *h* are preferably placed in their respective pipes in the locations shown in Fig. 2 of the accompanying drawings, where they are represented as being in line with the valve *B'*, since they are then more conveniently accessible than in the positions they are shown to occupy in Fig. 1, where danger of overcrowding the figure prevented their being shown as represented in Fig. 2.

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

1. The combination, with a vertically-swinging bar, *D*, of a gate, of a wind-brake connected with the bar to rise with it and fall with it in a direction opposite to its motion, and constructed to overcome the effect of the wind exerted against the bar in the direction of the motion of the latter, substantially as described.

2. A gate for railway-crossings, comprising, in combination, vertically-swinging bars upon posts in line with each other on the same side of a railroad-track and provided with tooth-gear *G*, secured upon each bar to move with it, piston-heads connected with the bars toward their rear ends, and piston-chambers secured on the posts supporting the swinging bars and closed on all sides and communicating with each other from both sides of the piston-heads operated by air-pressure exerted against one surface of each piston-head to raise the bars and by air-pressure exerted against the opposite surface of each piston-head to lower the bars, and a wind-brake, *H*, for each bar, provided at its rear extremity with tooth-gear *G'* to mesh with the tooth-gear *G*, the whole being constructed and arranged to operate substantially as described.

3. A gate for railway-crossings upon each side of a railroad-track, comprising posts *C* and *C'*, each post carrying a pivoted arm, *D*, and a piston, *E*, operating within a cylinder, *F*, within the post and carrying on one extremity a tooth-gear, *G*, a wind-brake, *H*, for each post, provided at its rear extremity with a tooth-gear, *G'*, in mesh with the tooth-gear *G* of the bar, in combination with air-pressure mechanism for actuating the gate-bars, comprising an air-pump, *A*,

communicating with the cylinders F within the posts at one side of the pistons therein by means of pipes *o* and *n*, and their extensions *o*<sup>2</sup> and *n*<sup>2</sup>, and at the opposite side of the pistons by means of pipes *o*<sup>1</sup> and *n*<sup>1</sup>, and their extensions *o*<sup>3</sup> and *n*<sup>3</sup>, a four-way cock, B B', within the passage leading from the pump to the said pipes and provided with an opening, 5 *i*, in its shell, and a valve, *h*, for each pipe *o* *o*<sup>1</sup> *n* *n*<sup>1</sup>, the whole being constructed and arranged to operate substantially as described. 10

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MORTIMER B. MILLS.

In presence of—

MASON BROSS,

EDWARD THORPE.