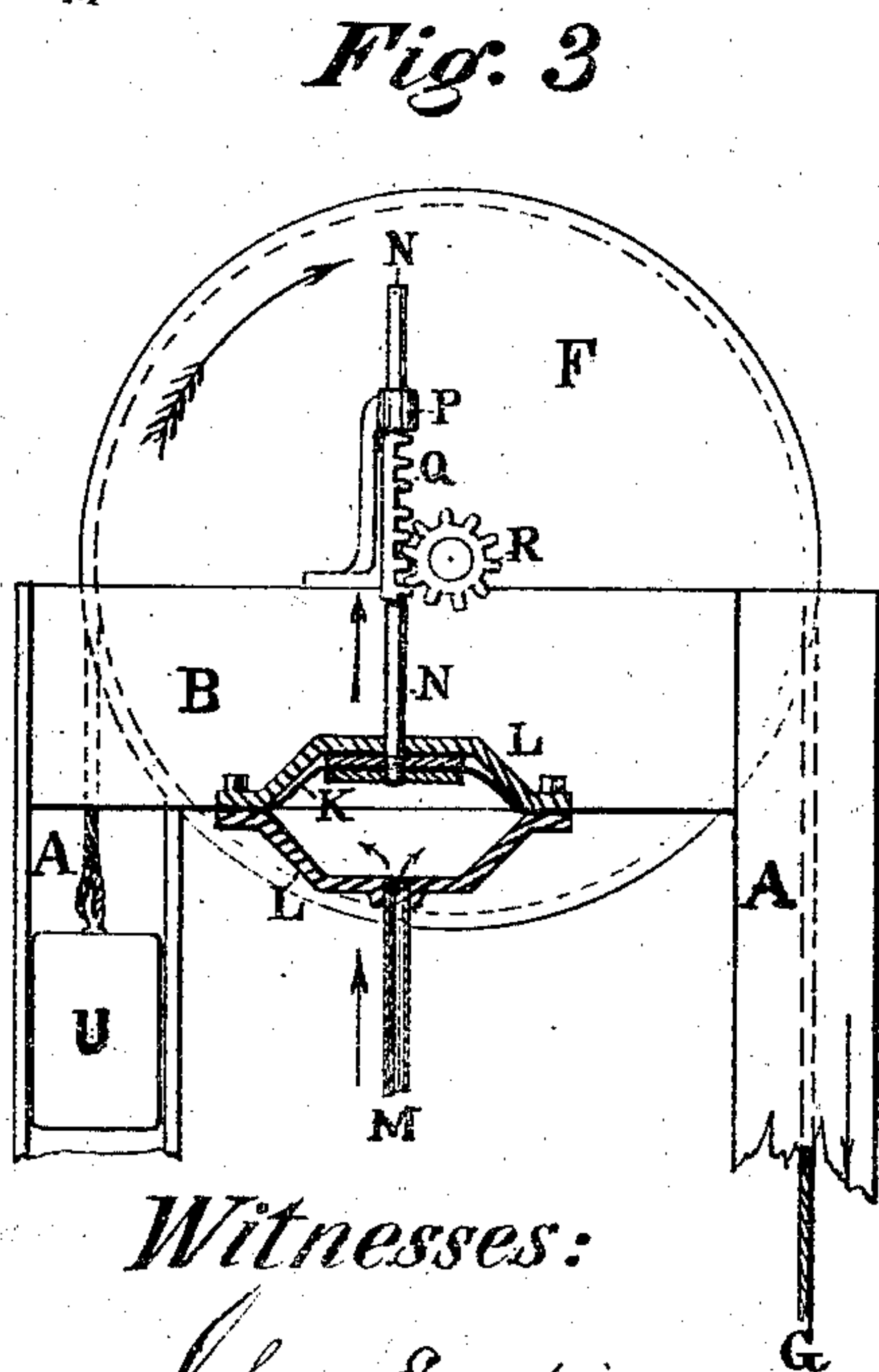
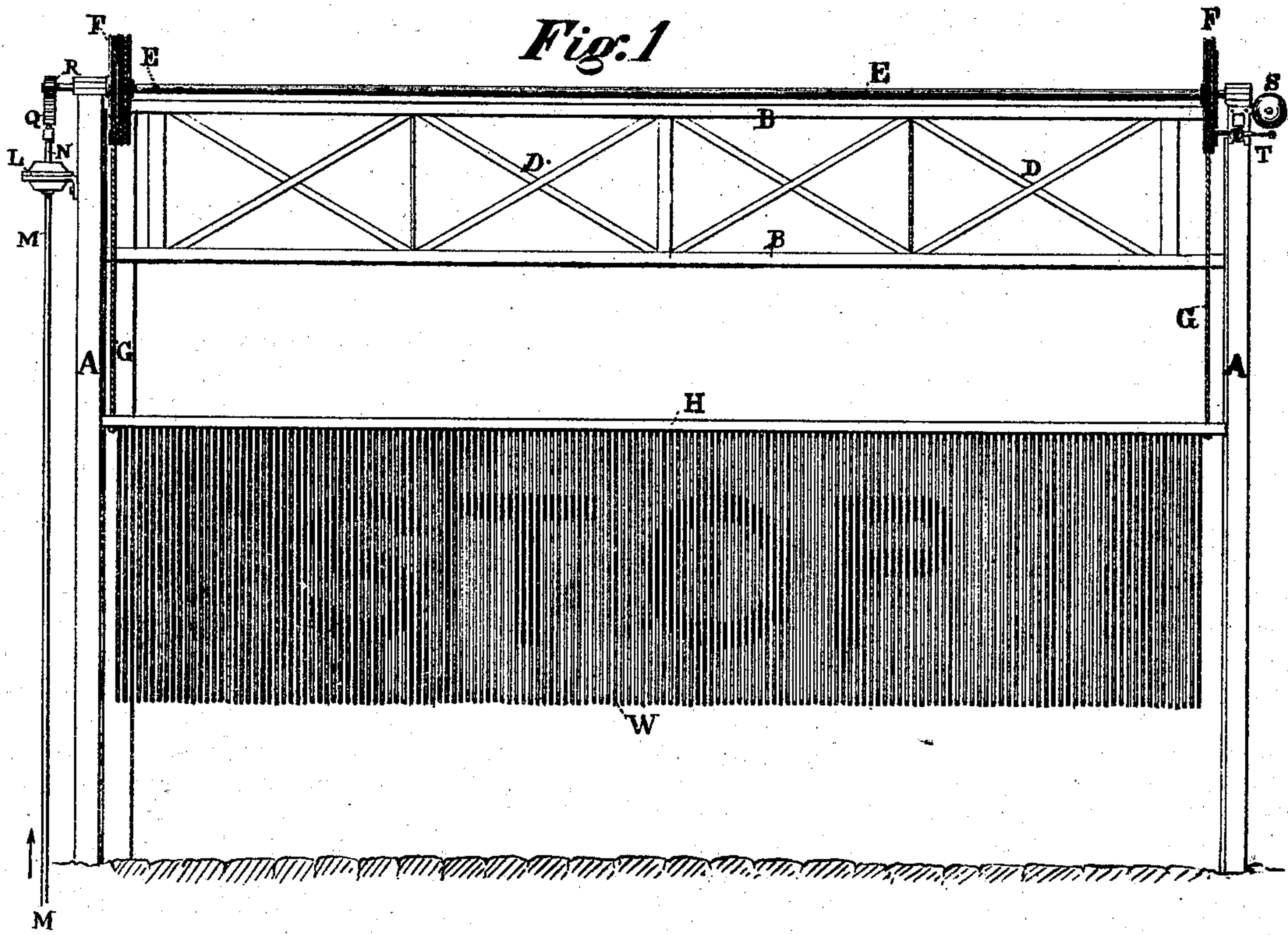


W. E. PRALL.
Railway Gates and Signals.

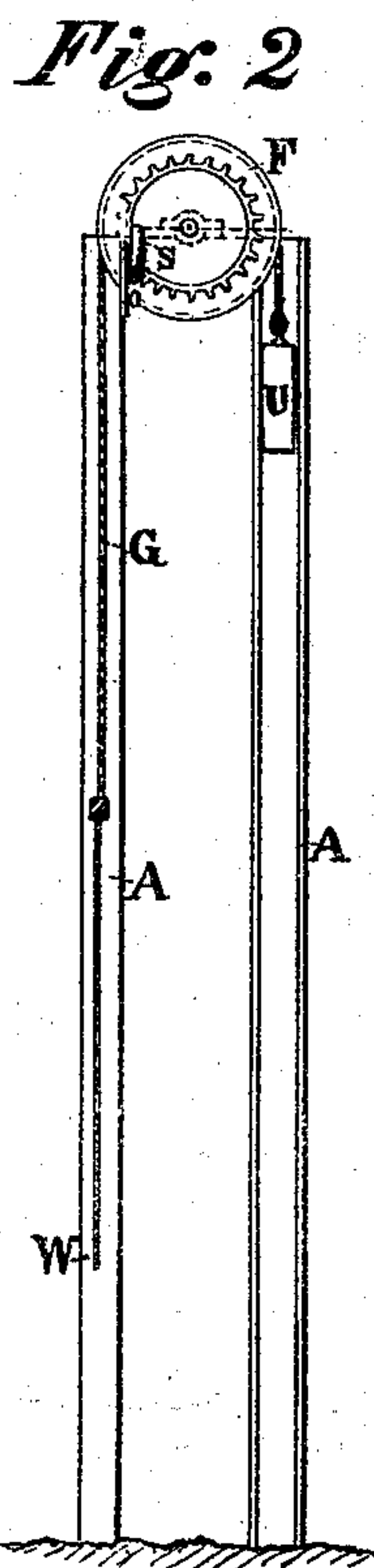
No. 152,865.

Patented July 7, 1874.



Witnesses:

John E. Gering
David A. Burr



Inventor:

W. E. Prall

UNITED STATES PATENT OFFICE.

WILLIAM E. PRALL, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN RAILWAY GATES AND SIGNALS.

Specification forming part of Letters Patent No. **152,865**, dated July 7, 1874; application filed June 12, 1874.

To all whom it may concern:

Be it known that I, WILLIAM E. PRALL, of Washington city, in the District of Columbia, have invented an Improved Automatic Gate or Guard for Railway-Crossings, of which the following is a specification:

My invention consists in the employment of a series of yielding sections, combined with each other and with a common movable support, to form a gate or guard capable of being raised and lowered, or opened and closed, as occasion may require; the object of this part of my invention being to provide for use at the crossings of railways an automatic gate which shall serve to interpose, in times of danger, an apparent barrier to the progress of persons or animals attempting to cross the track, but which, owing to its peculiarity of construction, will subject them to no injury if, perchance, it should close down upon or against them in its automatic movement.

In the accompanying drawings, Figure 1 is a view in elevation of one form of my improved automatic gate when operated by pneumatic pressure; Fig. 2, an end view of the same; Fig. 3, a sectional view, illustrating in detail the manner of operating the gate by pneumatic pressure. Fig. 4 illustrates a modification of the invention, of which Figs. 5 and 6 are detached views in detail. Fig. 7 is an elevation, and Fig. 8 a plan view, of yet another modification of the same invention.

In these drawings, A A is a frame-work, consisting of posts or standards planted on either side of a road, at its intersection with a railway, and connected at the top by transverse beams, bars, and braces, B and D, secured at an elevation sufficiently high to permit the free passage under them of vehicles carrying the tallest loads. E is a shaft, turning freely in bearings secured at or upon each end of the frame-work, on top thereof, and F F are large pulleys fixed to each end of the shaft on the inner sides of the posts. G G are cords passing over the pulleys, and secured thereto so as to wind or unwind thereon when the shaft is made to revolve. H is a transverse bar suspended from the cords G G, and steadied at either end by ways or guides arranged upon or between the uprights, so as

to permit a free vertical movement of the bar, but to prevent any oscillation or play thereof. W is a fringe of cords or pieces of rope, each piece being secured at one end to said bar H, so as to depend freely therefrom. These ropes may be tarred, or otherwise stiffened, and are of such length as that, when the bar is dropped to a height above the ground barely sufficient to allow the free passage of a carriage or laden team under the same, the ropes will depend therefrom nearly to the ground, so as to present, apparently, a close barrier across the road.

I contemplate the substitution of wooden slats hinged or pivoted loosely at one end to the bar H, so as to hang and swing freely in every direction therefrom, as a substitute for the cords or rope ends, to form the curtain or gate W; or pieces of cord or wire netting, or sections of cloth or other material, formed or arranged to divide and separate, and at the same time yield to pressure exerted against the same in either direction, may be employed for the purpose, as it is evident that any flexible or yielding material arranged thus in separating swinging sections may be used as equivalents for the rope ends. The fringe constituting the gate W may be formed independently of the supporting-bar H, and subsequently secured thereto in any suitable manner, or said bar may be combined with the fringe as a part thereof. In this latter case I prefer to make the bar of a slotted tube, and to pass a knob on the end of each piece of rope into the tube, leaving the free end to hang from the knob down through the slot. The pulleys F F are of such diameters as that one or two revolutions thereof will suffice to elevate the bar H to the top of the frame, and carry up the fringed gate W high enough to clear the top of the vehicles passing under it, thus leaving the road clear for travel. The pulley-shaft E and pulleys F F may be revolved to open and close the gate W through the agency of a crank combined and connected therewith, to be operated by hand in the usual manner; but I contemplate opening and closing the gate W automatically, in connection with my improved pneumatic signal apparatus for railways, by means of a diaphragm, K, Fig. 3, in-

closed in a suitable casing, L, so as to yield to the pressure of compressed air admitted thereto through a pipe, M, from an air main or reservoir, by the instrumentality of an approaching train, in the manner substantially as described in the Letters Patent of the United States heretofore granted to me, and more especially in my application for Letters Patent now pending in the United States Patent Office for improvements in pneumatic signals for railways.

This diaphragm is secured to the uprights at one end of the frame A B, under the end of the shaft E, and its movement may be made to produce a revolution of the pulleys F F by any of the well-known mechanical movements—as, for example, by means of a rack, Q, formed upon a rod, N, which is secured to the diaphragm K, and which, projecting through the casing L and an upper bearing, P, provided to steady it, is made to engage a pinion, R, upon the end of the shaft G, all as illustrated in Fig. 3 of the drawings. The size of this pinion R and the number of teeth on the rack Q are so proportioned to each other as that the movement of the diaphragm within its case will cause the pinion to make the number of revolutions required to elevate the gate, each revolution of the pinion producing, evidently, a corresponding revolution of the large pulleys. A piston operating in a cylinder or actuated by means of an extended bellows may be substituted for the simple diaphragm, to operate the rack and pinion by pneumatic

pressure. The return of the gate to its elevated position may be secured automatically, when the pressure of air against the diaphragm is removed, by means of a weight, U, suspended from one of the pulleys F, so as to be elevated when the gate is depressed, or by means of a spring arranged to be compressed or wound up by the depression of the gate.

S, Fig. 1, is a gong or bell placed upon the frame A, and T a hammer to strike and ring the same. This hammer T is formed upon one end of a centrally-pivoted arm, whose opposite end engages teeth or detents (see Fig. 2) upon the side or perimeter of the pulley F, so that the revolution of the pulley, as the gate descends, shall operate to trip the hammer and ring the bell, and thus give an alarm during its movement.

The sectional gate may be made to open and close by a horizontal movement from side to side, instead of by a vertical movement. The sections, for instance, may depend from a rod or cross-beam, to which they are connected by rings adapted to slide on the rod; or they may obviously be arranged in other ways for the same purpose.

I claim as my invention—

A gate or movable guard for railway crossings, constructed of a series of independent yielding sections, combined and operated substantially as and for the purpose set forth.

W. E. PRALL.

Witnesses:

WM. S. RHOADS,
DAVID A. BURR.