(No Model.)

O. H. CLARK.

RAILROAD CROSSING GATE.

No. 307,094. Patented Oct. 28, 1884.

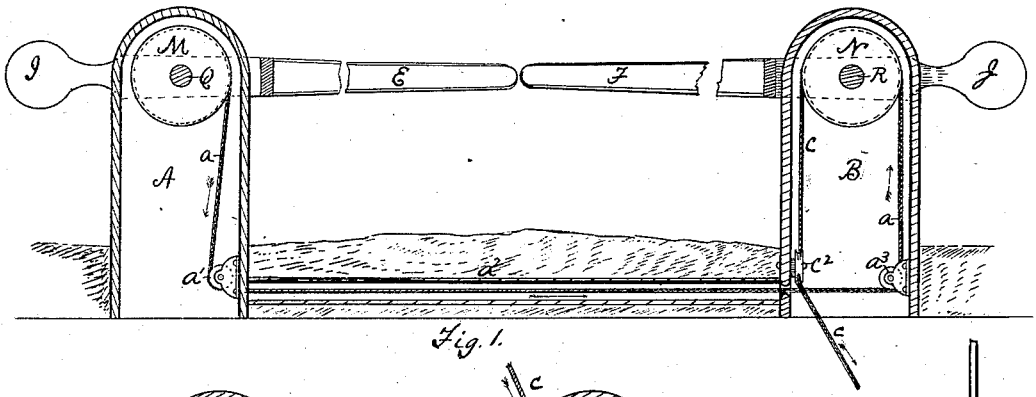

Fig. 1.

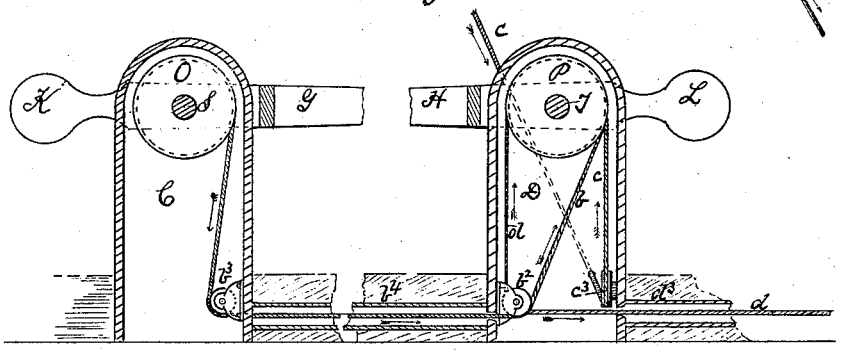

Fig. 2.

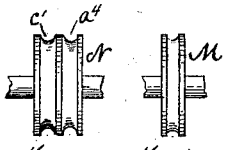

Fig. 5.

Fig. 6.

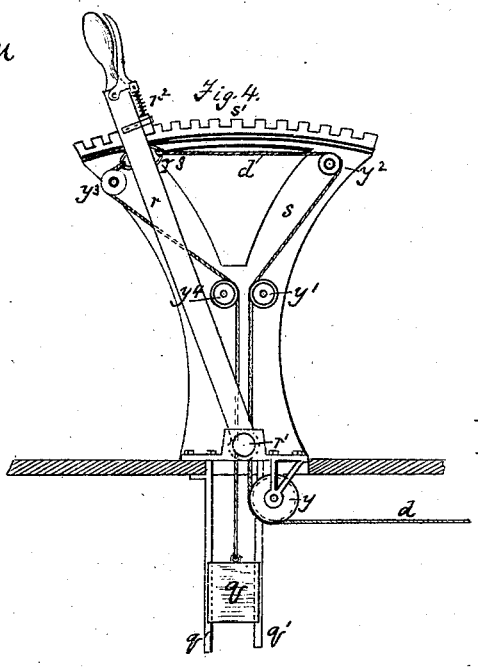

Fig. 4.

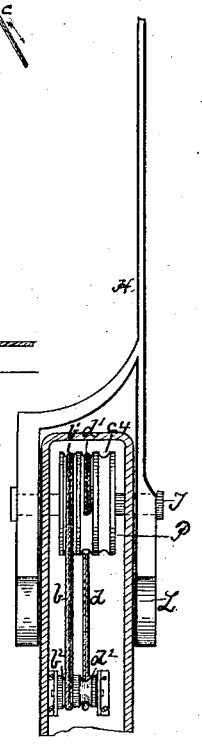

Fig. 3.

Witnesses-
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UNITED STATES PATENT OFFICE.

OLIVER H. CLARK, OF PITTSBURG, PENNSYLVANIA.

RAILROAD-CROSSING GATE.

SPECIFICATION forming part of Letters Patent No. 307,094, dated October 28, 1884.

Application filed September 11, 1883. (No model.)

To all whom it may concern:

Be it known that I, OLIVER H. CLARK, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Railroad-Crossing Gates; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a vertical section of two of the standards and barriers of a double gate for a railway street-crossing. Fig. 2 is a like view of the opposite gates. Fig. 3 is a vertical section of the main standard D. Fig. 4 is a view of the operating apparatus. Figs. 5 and 6 are views of the sheaves.

Like letters of reference indicate like parts in each.

The principle upon which this gate is constructed is that the barriers and their respective counter-weights are at no time in the state of equilibrium; in other words, the center of gravity common to a barrier and its counter-weights will never, except when the barrier is resting vertically, pass through the shaft upon which they are supported. From this it is evident that where no outside force is applied the normal position of a barrier will depend upon whether the excess of weight be in the barrier or counter-weight—that is to say, that if the center of gravity is made to lie on the side of the barrier it will be horizontal, and if the center of gravity is on the side of the counter-weight it will be vertical. To bring the gate to either of these positions a force must act against that which, preponderating, throws the barriers into the other of the positions named.

In the drawings, the counter-weights I J K L exceed in weight the barriers E F G H, and their normal position is therefore vertical. In the standards A, B, C, and D are the large grooved wheels M, N, O, and P, which are mounted on the shafts Q R S T, which also sustain the barriers E F G H and their counter-weights I J K L. The barriers and the counter-weights revolve in a plane which is parallel to that of the grooved wheels or to the faces of the standards. A rope, *a*, is fastened to the wheel M, and descends on its side next the barrier E, passes around the sheave a', and under the ground in a pipe or box, a^2, to the standard B, then around the sheave a^3 to the wheel N on its side next the counter-weight J; then around in one of the grooves, a^4, in the wheel N to the opposite side or underneath, where it is fastened. In the second groove, c', of the wheel N lies the rope or chain *c*, which descends on the side next to the barrier F, passes around the sheave c^2, and then extends through a box or case underground to the standard D of the opposite gate, where it passes under the sheave c^3, and then up to and around the wheel P on the side next to the counter-weight in the groove c^4, where it is fastened.

The rope or chain *b* is fastened in the groove b' of the wheel P, and descends on the side next to the counter-weight L, where it is conducted round the sheaves b^2 b^3 through the pipe b^4 to the wheel O in the standard C, passing over the side of the wheel next to the barrier G, and is fastened in the single groove thereof. The rope or chain *d* is fastened in the groove d' of the wheel P, from which it descends on the side next to the barrier H, passes around the sheave d^2, and out of the standard through the pipe or tube d^3 to any point at which it may be desired to control the movements of the gate. At this terminus of the rope or chain *d* is fastened the primary counter-weight *q*, whose weight will be sufficient to equalize the weight between the barriers and their counter-weights, and thus form an equilibrium between them. There will then be two equal tensions acting in opposite directions along the rope or chain *d*, and to move it in either direction (or to open and close the gate) will require only a force equal to the friction exerted by the moving parts. For the purpose of directing this force along the line of the rope or chain *d*, any suitable crank or lever may be used. The method of operating with the lever is preferable, and is represented in the drawings. A lever, *r*, is pivoted at r' to the frame *s*, which is provided with a segmental rack, s', in which the spring-pawl or catch r^2 is engaged. The lever is secured in the line of the rope or chain *d*, as at r^3, so that when moved along the rack it draws either upon the gates or upon the weight *q*, and thus

either causes the opening or permits the closing of the gates. The rope *d* passes around the sheave *y* up to the frame *s*, and on it around the sheaves y' y^2 y^3 y^4 down to the weight *q*, which is placed between guides *q'*, and rises and falls therein. The throw of the lever *r* will be measured by the distance through which the counter-weight *q* must move to effect the opening or closing of the gates, which distance will in turn be measured by one-fourth the circumference of the wheel P in standard D, which corresponds with the arc of ninety degrees, in which the barriers act.

The described construction is applicable for use with two standards only—as, for instance, A and B—in which case the rope or chain *c* would go directly to the weight *q* and be provided with the lever *r*.

If desired, a windlass or drum operated by a crank may be used instead of the lever *r*, said windlass or drum being the mechanical equivalent of the lever and accomplishing the same result in substantially the same way. The windlass or drum may, if desired, be placed in the standard D, instead of outside of it, or in another standard made especially for it.

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

1. In a gate for railroad-crossings, the combination, with two counterweighted oscillating barriers each having a pulley fast on its shaft, said pulleys connected by a cord or chain secured to the peripheries of the pulleys, so that the barriers shall move in unison, of the rope or chain *d*, secured to the periphery of one of said pulleys, the primary counter-weight *q*, and pivoted lever *r*, substantially as and for the purposes specified.

2. In a gate for railroad-crossings, the combination of two sets of oscillating counterweighted barriers, E F and G H, each barrier being provided with a pulley fast upon its shaft, and the barriers of each set connected by a rope or chain, *a b*, said two sets being likewise connected by a rope, *c*, which extends from the periphery of a pulley of one set to the periphery of a pulley of the other set, an operating rope or chain, *d*, provided with a primary counter-weight, *q*, and a lever, *r*, substantially as and for the purposes specified.

In testimony whereof I have hereunto set my hand this 9th day of July, A. D. 1883.

OLIVER H. CLARK.

Witnesses:
W. B. CORWIN,
T. W. BAKEWELL.