

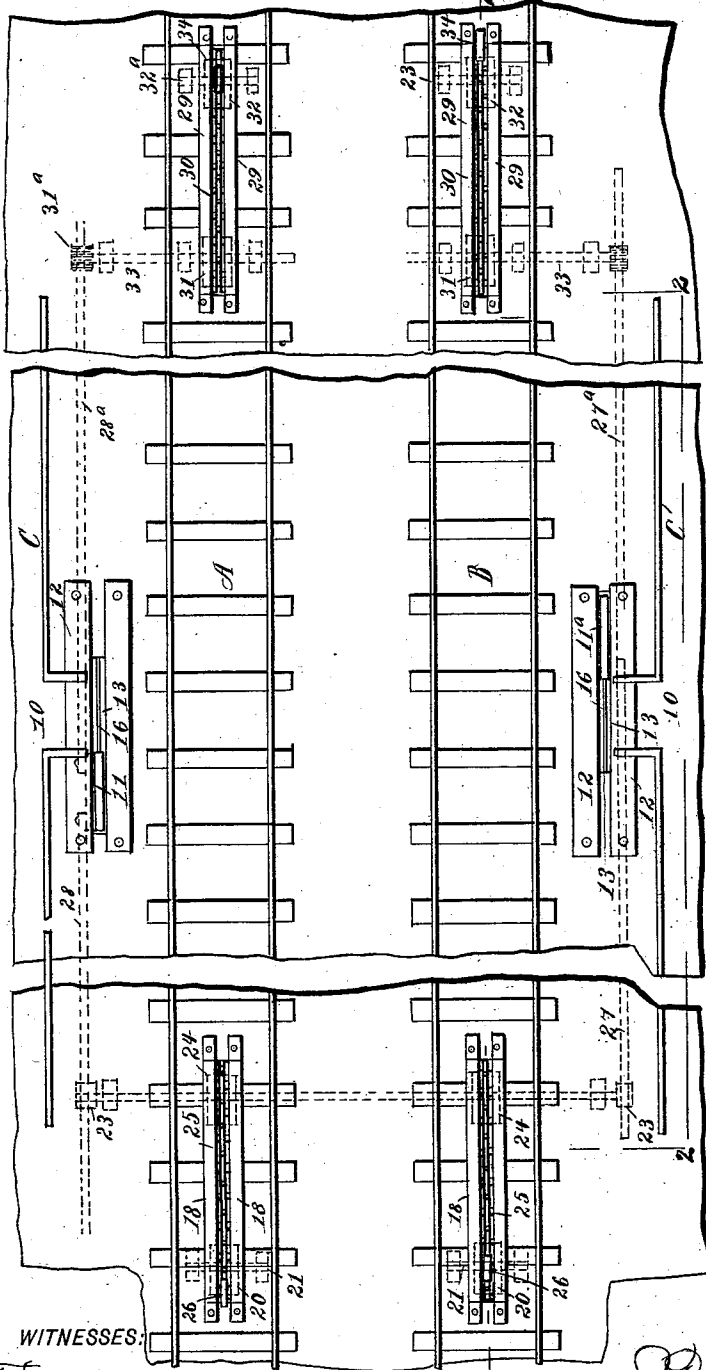
(No Model.)

4 Sheets—Sheet 1.

J. RUTHERFORD.
RAILWAY CROSSING GATE.

No. 531,066.

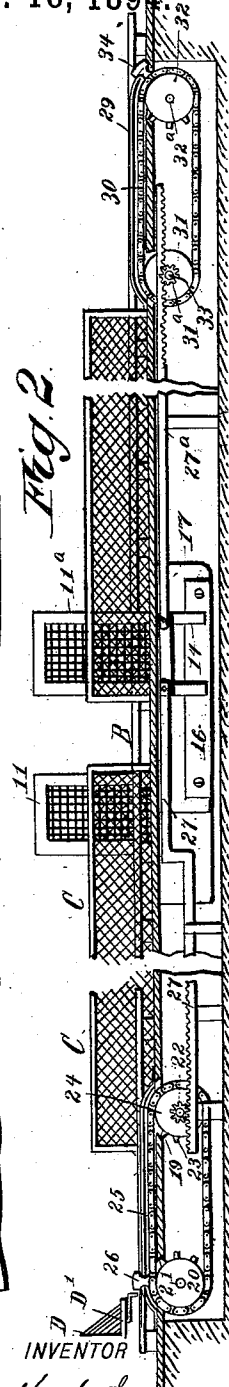
Patented Dec. 18, 1894



WITNESSES:

J. M. Adams.
J. P. Ackers.

Fig. 2.



INVENTOR

INVENTOR
Rutherford
 BY *Munn & Co*
 ATTORNEYS

(No Model.)

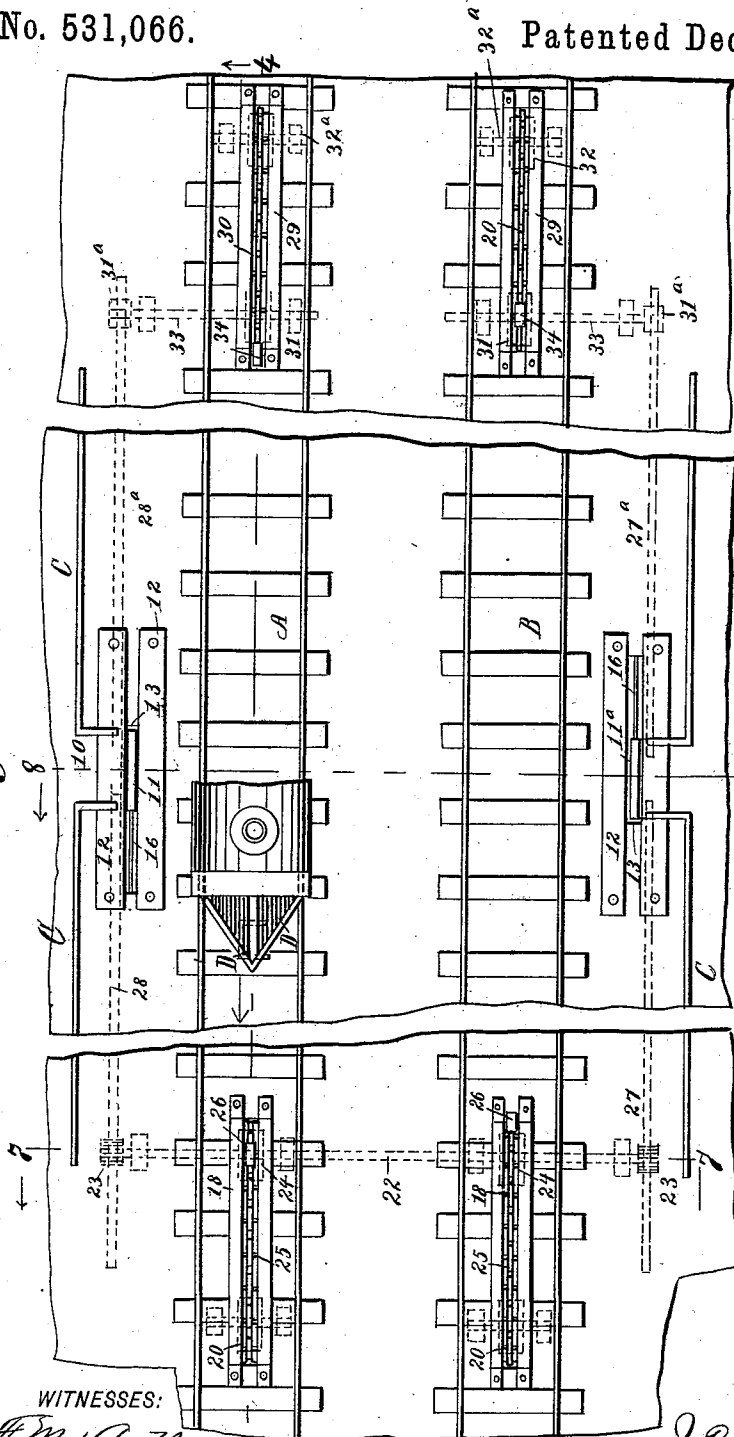
4 Sheets—Sheet 2.

J. RUTHERFORD.
RAILWAY CROSSING GATE.

No. 531,066.

Patented Dec. 18, 1894.

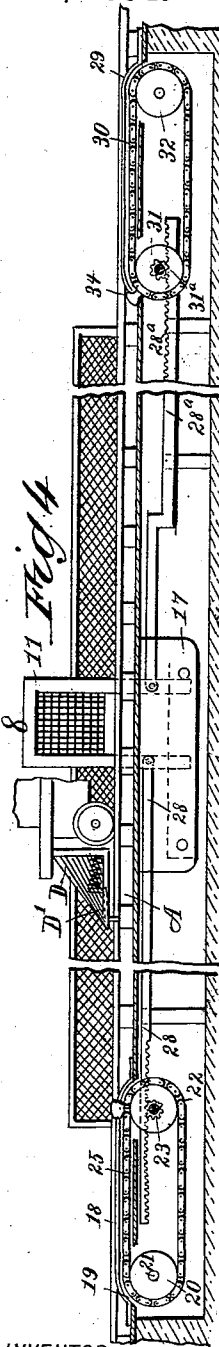
Fig. 3



WITNESSES:

Wm. McAnale
J. B. Acker

Fig. 4



INVENTOR

J. Rutherford
BY *Munn & Co*
ATTORNEYS.

(No Model.)

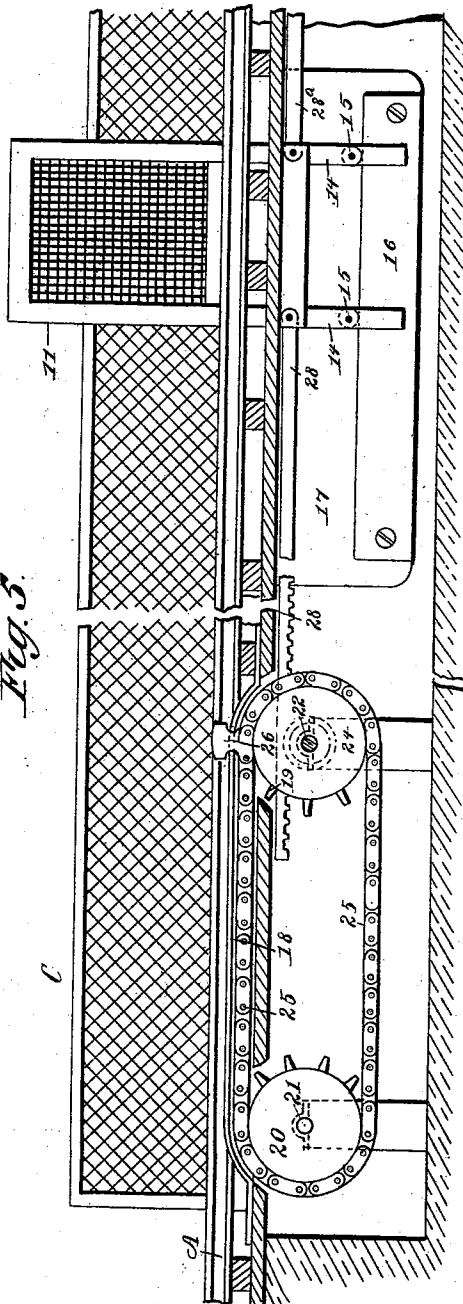
J. RUTHERFORD.
RAILWAY CROSSING GATE.

4 Sheets—Sheet 3.

No. 531,066.

Patented Dec. 18, 1894.

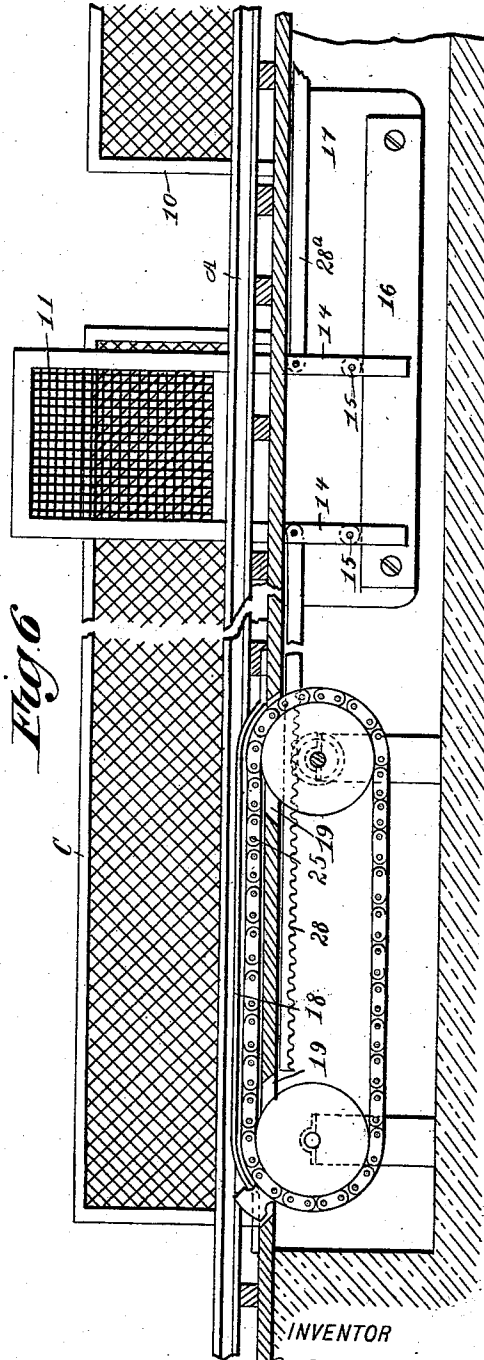
Fig. 5.



WITNESSES:

J. McAuley
John Acker

Fig. 6.



INVENTOR

J. Rutherford
BY *Munn & Co.*
ATTORNEYS.

(No Model.)

4 Sheets—Sheet 4.

J. RUTHERFORD.
RAILWAY CROSSING GATE.

No. 531,066.

Patented Dec 18, 1894.

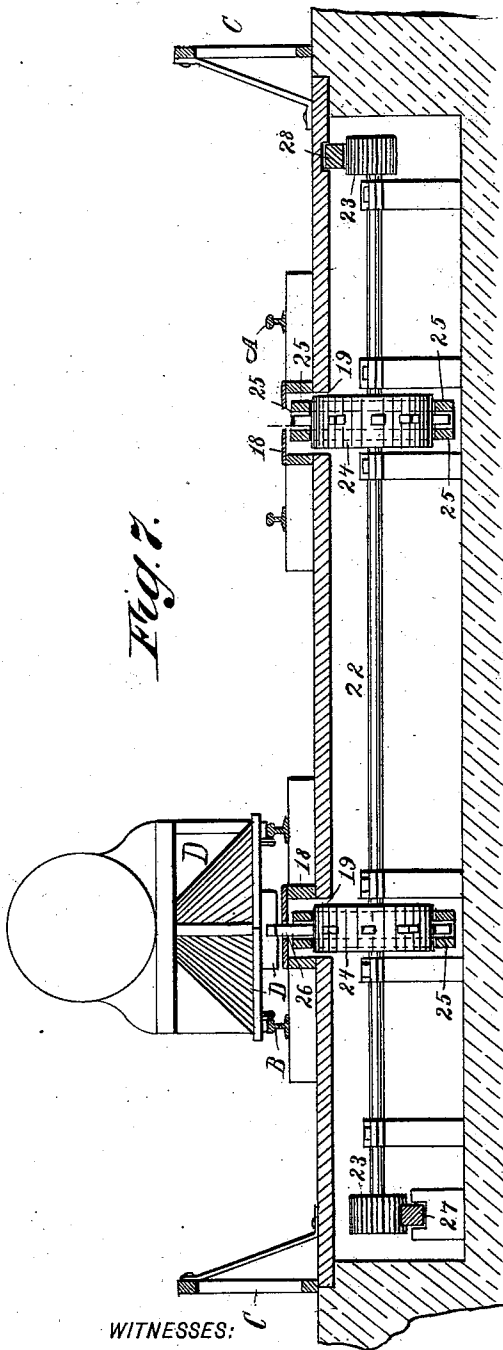


Fig. 7.

WITNESSES:

J. M. Apple.
J. H. Ker.

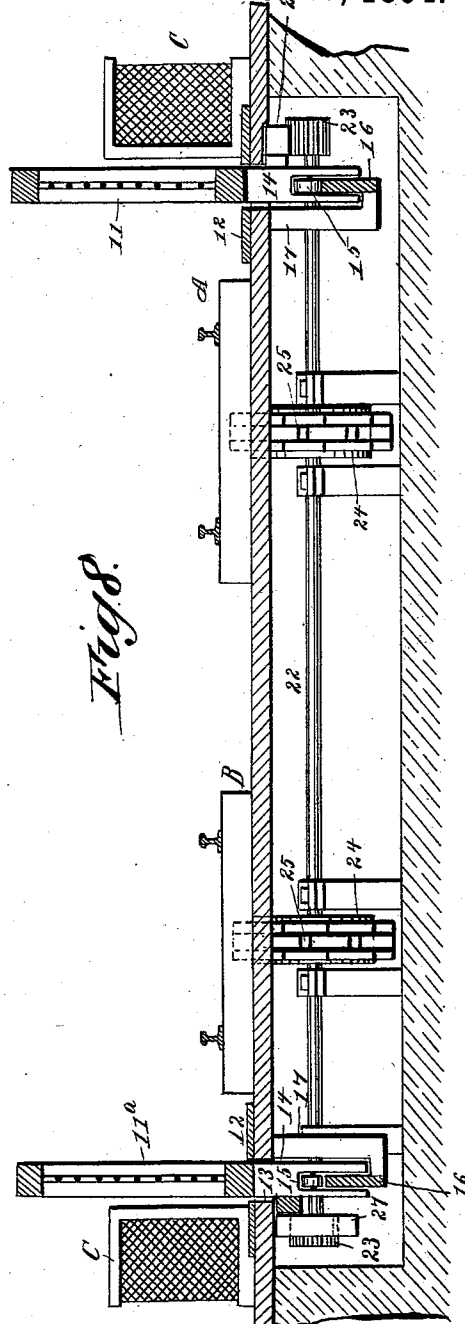


Fig. 8.

INVENTOR

J. Rutherford
BY *Munn & Co.*

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JAMES RUTHERFORD, OF BROOKLYN, NEW YORK.

RAILWAY-CROSSING GATE.

SPECIFICATION forming part of Letters Patent No. 531,066, dated December 18, 1894.

Application filed July 28, 1894. Serial No. 518,825. (No model.)

To all whom it may concern:

Be it known that I, JAMES RUTHERFORD, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Railway-Crossing Gates, of which the following is a full, clear, and exact description.

My invention relates to an improvement in railway crossing gates, and it has for its object to provide a means whereby in a simple, expeditious and effective manner the gates may be automatically closed by a train approaching the crossing, the closure being effected when the train reaches a point a predetermined distance from the crossing, and whereby likewise, after the train has passed the crossing it will automatically open the gate.

Another object of the invention is so to construct the devices employed, that a train approaching a crossing upon one track will close the gates at each side of the line of tracks in a two-track road.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of a railroad crossing, illustrating the application of the improvement, and also illustrating the gates open. Fig. 2 is a longitudinal section through one of the tracks, taken substantially on the line 2—2 of Fig. 1. Fig. 3 is a view similar to Fig. 1, illustrating, however, the crossing gates in a closed position, and Fig. 4 is a longitudinal section through one of the tracks, taken practically on the line 4—4 of Fig. 3. Figs. 5 and 6 are longitudinal enlarged sections, taken through a portion of one of the tracks, Fig. 5 illustrating the position of the actuating mechanism when a gate is closed, and Fig. 6 illustrating the position of the said mechanism when the gate is open. Fig. 7 is a transverse section taken through the two tracks, practically on the line 7—7 of Fig. 3; and Fig. 8 is a similar section taken substantially on the line 8—8 of Fig. 3.

In carrying out the invention I have illustrated a crossing wherein two tracks are laid, A and B, A being for example the down-track and B the up-track. The crossing is defined at each side of the line of tracks by a fence C, or the equivalent thereof, containing openings 10, adapted to be closed by suitable gates, the gate for the down-track being designated as 11 and the gate for the up-track as 11^a. These gates are shown as sliding in reverse directions and between guides 12, suitable openings 13 being produced between the guides in the surface upon which the tracks are laid, or in the adjacent surface, and the said openings 13 are made to communicate with suitable pits formed beneath the surface.

The gates, as shown in Figs. 5 and 6, are provided with extensions 14 of the side members of their frames, forming virtually legs, and these legs are bifurcated or forked at their lower extremities, and receive between their members friction rollers 15, the friction rollers of a gate being made to travel upon a rail 16, located below the gate, and supported therein by brackets 17, hangers, or their equivalents.

A predetermined distance from the gates in one direction, parallel fenders 18 are laid between the rails of each track, and these fenders are usually curved downward at their ends, and are in pairs, the two pairs being preferably opposite each other as illustrated in Figs. 1 and 3. Suitable pits are located beneath these fenders, and communicate with the pits beneath the gates.

Openings 19, are made in the surface upon which the fenders lie, one near each end of said fenders and between them, as shown in Figs. 3 and 4. A sprocket wheel 20, is located beneath the openings 19 near the far ends of fenders, being mounted upon suitable shafts 21, and a portion of the sprocket wheels extends upward within the said openings. A single shaft 22, is made to extend transversely under both of the tracks, and below the openings 19 nearest the gates, as shown in dotted lines in Figs. 1 and 3. This shaft carries at or near each extremity a pinion 23, and likewise two sprocket wheels 24, one below each opening 19 nearest the gates and revolving in said openings in like manner as the opposed wheels 20. A chain belt 25, is carried

by each set of sprocket wheels 20 and 24, the upper stretches of the belts being above the surface upon which the fenders are laid and located between said fenders, while the lower stretches are within the pits. Each of these endless belts 25 is provided with a lug 26, projecting at an angle, usually at a right angle, from a link in the upper stretch of the belt, the lug being adapted to travel substantially the length of the fenders, and when a lug is at one end of the fenders between which it is placed, it will be made to enter an opening in the surface to such an extent that it will be considerably below the plane of the tread of the rails, as shown in Fig. 6, and consequently out of the path of the pilot D of an engine, or a buffer D' carried by the said pilot and adapted to strike the said lug; but when the lug is at the opposite end of the fenders between which it is stationed, it will extend upward, as shown in Fig. 5, and be in a position to be engaged by the buffer of a passing engine, or the pilot itself, if desired.

The gate 11^a near the up-track B, has attached to one of its legs 14 the inner end of a bar 27, having formed upon the upper face of its opposite end a rack, as shown in Fig. 2, engaging with the lower periphery of the pinion 23 on the shaft 22 and adjacent to the said up-track, as illustrated in the same figure, while the opposite leg 14 of the gate is attached to the inner end of a similar bar 27^a provided with a rack upon its under face, engaging with the upper periphery of a pinion 31^a located on a short shaft 33, facing the gates yet removed therefrom a predetermined distance in an opposite direction from the continuous shaft 22 heretofore described.

The shaft 33 is duplicated beneath the down-track A, and corresponds to the shaft 22, since at this point in each track fenders 29 are employed, being the equivalent of the fenders 18, and an endless chain belt 30, is made to travel between the fenders, the lower stretches of the belts being beneath the surface of the ground, and the said belts pass over sprocket wheels 31, located on the shafts 33, and corresponding with wheels 32, located on shafts 32^a parallel with the shafts 33. These sprocket wheels rotate in openings produced between the fenders, and the endless chain belts are each provided with a lug 34, corresponding in position to, and operating in the same manner as the lugs 26 belonging to the chain belts 25 at the opposite side of the gates. Thus it will be observed that the rack bars attached to each gate engage, one with the under surface of a pinion and the other with the upper surface, so that one pinion will move the gate in a direction to close it, while the other pinion will act to open the gate.

The racks operating one gate are placed in reverse position to the racks operating the opposing gate, the rack bars of the gate 11 being designated as 28 and 28^a. This is clearly shown in Figs. 7 and 8, in which it

will be observed that the rack on the operating bar 27, near the up-track B, engages with the lower peripheral surface of the pinion 23 of the shaft 22, while the corresponding operating bar 28 near the down-track A, engages with the pinion 23 at that end of the shaft 22 at its upper peripheral surface. Thus, as the gates slide in opposite directions, when the mechanism of the track A is operated to close the gate 11, the shaft 22 will be revolved and will operate in a reverse direction the operating bar 27 connected with the gate near the track B, and will close the said gate also.

In the operation of the device, the gates being open, as shown in Fig. 1, the lug 26 of the endless chain 25 of the up-track B, as shown in Fig. 2, will be in position for engagement by an engine coming up the track, while the lug of the corresponding chain 30, at the opposite side of the gate on said track will be out of position to be engaged by the engine. The engine by striking the lug 26 will carry the said lug in direction of the gates until it reaches the opposite end of the fenders, whereupon it will drop below the level of the tread of the rails and escape from contact with the engine, and the said chain will have revolved the shaft 22 sufficiently to cause its pinions to act, one upon the rack bar 27 and the other upon the rack bar 28 in a manner to close the gates, the bar 27 being moved in a reverse direction to the bar 28. The gates will now remain closed until the engine strikes the lug 34 of the endless chain belt 30, which lug, by the movement of the gate 11^a, will have been carried from the end of its fenders at which it was concealed, to the opposite end of the fenders, at which point it will be exposed. This lug, upon being struck by the engine, will again be carried to its concealed position, and both the gates 11 and 11^a will have been opened, and the lug 26 on the endless chain belt 25 will have again been carried to a position to be struck by the next train coming up the track. The operation of the device from the track A is practically the same as that from the track B.

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

1. The combination with a railway gate, of an endless chain carried on vertically disposed sprocket wheels mounted beneath the track; the upper run of the chain being provided with a projection working longitudinally between the rails, and an operating mechanism connecting the shaft of one of the sprocket wheels with the gate; one such endless chain and the mechanism operated thereby being located at each side of the crossing whereby the gate will be opened and closed, substantially as shown and described.

2. The combination, with a sliding railway gate and sliding trips located one at each side of the gate and adapted to be operated by a moving train, of pinions actuated by the said

trips, and shifting bars connected with opposite sides of the gate, the bars being provided with rack surfaces engaging with the pinions, the rack surfaces of the bars engaging with opposite sides of the pinions, whereby the action of one is the reverse of that of the other, as and for the purpose set forth.

3. The combination, with a sliding railway gate, and chain trips located at opposite sides of the gate, each trip being provided with an offset upon its upper stretch, adapted to be acted upon by a moving train, the offsets being so located that one will be in position to be engaged by while the other will be removed from contact with the train, of pinions actuated by the said chain trips, shifting bars attached to opposite sides of the gate and provided with rack surfaces, the rack of one bar engaging with the under portion of the periphery of its pinion, and the rack of the opposite bar being in engagement with the upper peripheral portion of its pinion, as and for the purpose specified.

4. The combination, with railway gates at

opposite sides of a line of tracks, the gates being held to slide in opposite directions, chain trips located in each track at opposite sides of the gates, said chain trips being provided with projections to be acted upon by a passing train, and pinions actuated by the said chain trips, the pinions of two transversely opposing trips being on the same shaft, of shifting bars connected with opposite sides of the gates, the said shifting bars being provided with racked surfaces engaging with the pinions actuated by the trips, the shifting bars of one track engaging oppositely with their pinions, the corresponding shifting bars of the adjoining track being reversely engaged with their pinions, whereby, if one trip is actuated both gates will be opened or closed, sliding in opposite directions, and means, substantially as described, for guarding the trips, as and for the purpose specified.

JAMES RUTHERFORD.

Witnesses:

C. SEDGWICK,
F. W. HANAFORD.