

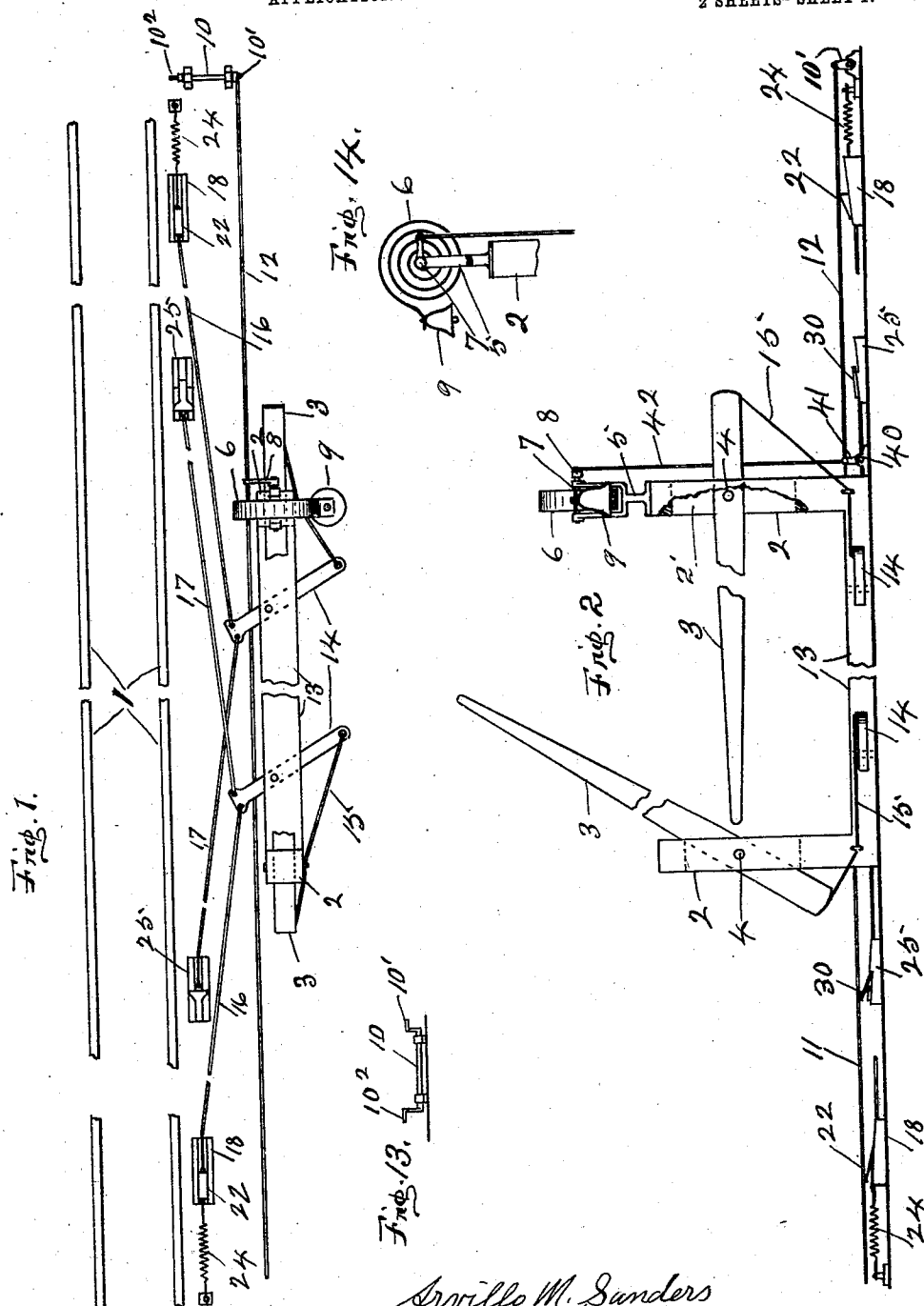
No. 842,118.

PATENTED JAN. 22, 1907.

A. M. SANDERS & S. VAN DUSEN.
AUTOMATIC RAILWAY CROSSING GATE.

APPLICATION FILED APR. 9, 1906.

2 SHEETS—SHEET 1.



WITNESSES:

M. Mettler.
J. G. Burns

Arvillo M. Sanders
and
Stephen Van Dusen INVENTORS

BY Chapin Denny
THEIR ATTORNEYS

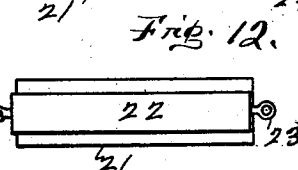
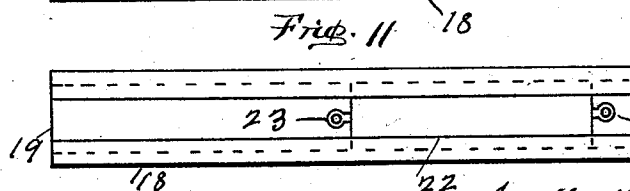
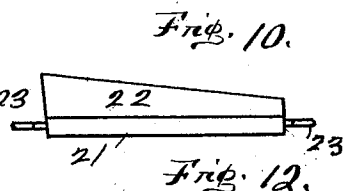
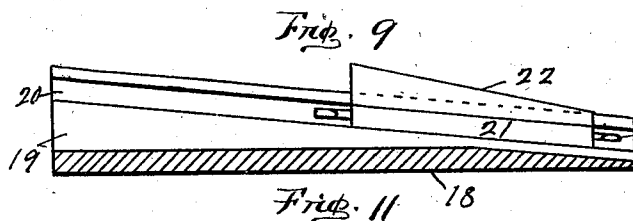
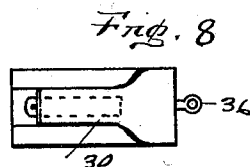
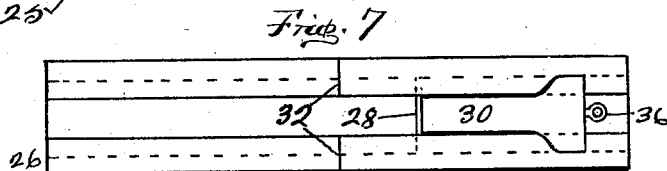
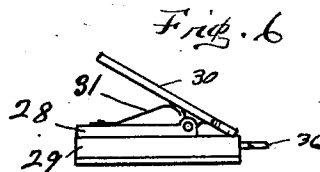
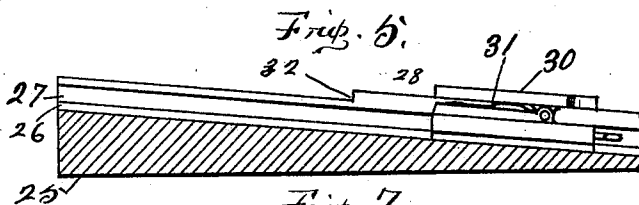
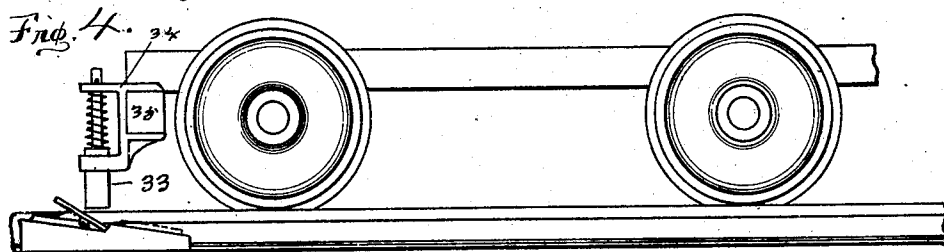
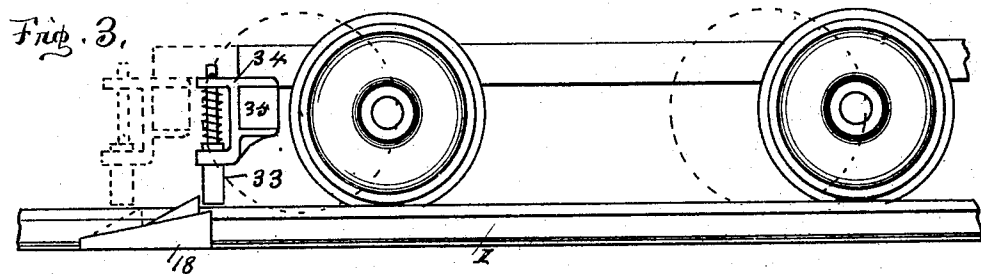
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2, SHEETS—SHEET 2.



WITNESSES:

H. G. Burns
M. Matthe.

Arville M. Sanders
and
Stephen Van Dusen

INVENTORS.

By Chapin & Denny

THEIR ATTORNEYS

UNITED STATES PATENT OFFICE.

ARVILLO M. SANDERS AND STEPHEN VAN DUSEN, OF BUTLER, INDIANA,
ASSIGNORS OF ONE-HALF TO JOHN B. HAWKINS AND ROBERT A.
HAVERSTOCK.

AUTOMATIC RAILWAY-CROSSING GATE.

No. 842,118.

Specification of Letters Patent.

Patented Jan. 22, 1907.

Application filed April 9, 1906. Serial No. 310,593.

To all whom it may concern:

Be it known that we, ARVILLO M. SANDERS and STEPHEN VAN DUSEN, citizens of the United States, residing at Butler, in the county of Dekalb, in the State of Indiana, have invented certain new and useful Improvements in Automatic Railway-Crossing Gates; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

Our invention relates to improvements in automatic railway-crossing gates, and has for its object the provision of a comparatively cheap, simple, efficient, and reliable means for automatically raising and lowering railway-gates at street and road crossings by means of a passing train from either direction.

The principal novel feature of our invention resides in the controlling mechanism by which one of the said gates is automatically lowered upon the approach of a train from either direction and automatically assumes its normal elevated position when the train has passed.

The object of our invention is accomplished by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a plan of the same partly broken away to condense the gate-operating mechanism to show the relation of the parts to each other and to the railway when one of the gates is down. Fig. 2 is a side elevation of the same, showing the same relative position of the parts and which they assume when acted upon by an approaching train from the right, but not yet acted upon by the means for elevating or opening the closed gate. Fig. 3 is a side elevation of the pilot-truck of a locomotive of common construction, having fixed upon one end of its pilot-beam a spring-pressed means for operating the gate-actuating mechanism and showing in dotted outline how it clears the gate-closing block after it has set the same. Fig. 4 is a similar view of the pilot-truck and spring-pressed attachment, showing how it acts upon the trip mechanism to permit the closed gate to assume its normal position.

Fig. 5 is a longitudinal central section of the slotted guideway for the trigger mechanism with the trigger-block in position thereon. Fig. 6 is a detail of the trigger-block removed from its supporting-ways and shown in its set or holding position. Figs. 7 and 8 are plan views of Figs. 5 and 6, respectively. Fig. 9 is a longitudinal central section of the slotted supporting-ways for the blocks which actuate the gates and set the trigger-blocks. Fig. 10 is a side view of one of these blocks removed from its supporting-ways. Figs. 11 and 12 are plan views of Figs. 9 and 10, respectively. Fig. 13 is a detail of one of the duplicate warning-bell-actuating devices. Fig. 14 is a detail side view of the warning-bell and the means for actuating the same.

At a suitable point in close proximity to the railway-track 1 and in substantially parallel relation therewith are erected the upright gate-supporting posts 2, each preferably provided with a longitudinal slot 2', in which the respective vertically-swinging gates 3 are pivotally mounted on the pivots 4, Fig. 2. On the top of one of these posts 2 is rigidly fixed a bifurcated bell-supporting bracket 5, in the upper and bifurcated end of which is rotatably mounted a short shaft 7, on one extended end of which is fixed an operating-crank 8. To the central portion of this shaft 7 is fixed the inner end of the coiled or helical spring 6, on whose outer end is fixed a pendent warning-bell 9, adapted to signal the approach of a train from either direction at any desired distance—for example, at a distance of forty rods—in the manner hereinafter described. The outer end of this crank-arm 8 is connected to two duplicate actuating devices 10, properly located in opposite directions and equally distant from the gates, by means of the two horizontal rods 11 and 12. This device 10 may be any suitable mechanism adapted to impart to the said wires a longitudinal movement, though, preferably, it consists of a short shaft 10, rotatably mounted in suitable bearings, having upon its outer end a crank-arm 10', to which the outer ends of one of the said rods 11 and 12 are respectively connected. The other extended end of the shaft 10 has a short arm 10², adapted to be actuated in the manner hereinafter described.

The means for connecting the crank-arm

8 with the operating-rods is a short shaft 40, rotatably mounted in suitable bearings and in right-angular relation to the rods 11 and 12 and has its inner end provided with a crank-arm 41, to which the inner ends of these rods 11 and 12 are connected. The crank-arm 41 is operatively connected with the crank-arm 8 by means of the vertical wire or cable 42, whereby both the crank-arms 8 and 41 will be actuated by means of the crank-arm 10'.

In a suitable base or mounting 13 are pivotally mounted the horizontal duplicate levers 14, each having one end connected to the rear end of the corresponding adjacent gate 3 by means of the wire, cord, or cable 15 and having their outer ends adjacent to the railway-track connected to oppositely-arranged actuating mechanism by means of the wires 16 and 17. The mechanism for actuating the gates 3 through the medium of the levers 14 is described as follows: A metallic guideway-block 18, Figs. 3, 9, and 11, has a longitudinal central slot 19 and lateral longitudinal inclined coincident recesses or guideways 20, adapted to snugly but loosely receive the opposite lateral longitudinal lugs 21 of the block 22, whose upper face is properly inclined, as shown, and whose opposite ends are provided with the fixed eyes 23, to one of which one end of the wire 16 is secured, and to the other eye is fixed one end of a retractile spring 24 of proper strength and tension adapted to return the block 22 to its normal position under the conditions about to be described. These blocks 22 are located about twenty rods distant from the gates 3. At a proper point between the blocks 22 and the gates are fixed the metallic guideway-blocks 25, having inclined longitudinal slots 26 and the lateral coincident recesses or guideways 27, adapted to loosely receive the opposite lateral longitudinal lugs 29 of the blocks 28. Each block 28 has the rear portion of its upper face cut away, as shown in Fig. 6, and has a plate 30 pivoted at a proper point between its ends. On the upper face, near the forward end of the block 28, is fixed a spring 31, adapted to normally hold the pivoted plate 30 in an inclined position, as shown in Fig. 6, the said cut-away rear portion of the block 28 permitting such an inclined position. The upper faces of the blocks 25 have at or near the middle of their length a transverse notch 32, adapted to form a holding engagement with the rear end of the spring-pressed plate 30 when the corresponding gate is down or closed, as shown in Figs. 1 and 2.

The means for actuating the blocks 22 and 28 consists of a pendent spring-pressed plunger 33 or other suitable actuating means loosely mounted in a bifurcated plate 34, which is rigidly fixed upon the extended end of the pilot-beam 35, or other proper loca-

tion and adapted to engage these blocks for the closing and opening of the gates, as follows: In Fig. 2 the position of the operative mechanism is that which it assumes when acted upon by an approaching train from the right after the pendent plunger 33 has engaged the block 22 and pushed it downward on its guideways against the tension of the retractile spring 24, thereby correspondingly pushing forward the short end of the adjacent lever 14, Fig. 1, by means of the wire rod 16. This lever in turn correspondingly pushes upward upon its ways the block 28 by means of the wire rod 17, whose opposite end is secured to the eye 36 thereof. This trigger mechanism is so regulated that when the block 22 is pushed forward by its actuating-plunger 33 to its forward limit the plunger will escape its engagement therewith and the block 28 will be forced to the limit of its forward movement, at which the plate 30 will holdingly engage the notch 32 of its supporting guideway-block 25, Fig. 2. This movement of the long end of the lever 14 toward its adjacent gate 3 permits this gate to descend by gravity into a horizontal position, as shown in Fig. 2, while the other companion gate remains undisturbed in its normal elevated position. After the train has passed the gate moving from the right, as described, the plunger 33 will come into contact with the elevated end of the said pivoted plate 30 and by forcing it down will disengage it from the notch 32, thereby permitting the corresponding lever 14 and the blocks 28 and 22 to resume their normal position upon their respective ways under the tension of the corresponding retractile spring 24, thereby elevating the lowered gate 3 to its normal elevated position. When the train approaches the road-crossing from the other direction, the operation above described is repeated, excepting that the block 22 and gate 3 on the left and the block 28 on the right are operated instead of the ones described above. Of course the warning-bell 9 is rung before the train reaches the block 22 and a sufficient time before the gates are lowered to enable one crossing the railway with a vehicle to securely escape the descending gates.

The manner of actuating the warning-bell 9 is obviously as follows: At the proper and desired time the plunger 33 strikes the normally upright crank-arm 10, and thereby correspondingly actuates the crank-arms 8 and 14, thus sounding the bell 9 on the free end of the spring 6.

It is thus seen that our invention has a direct, positive, and reliable operation, with but small liability to get out of repairs, and is comparatively of cheap and simple construction.

We do not desire to be understood as limiting ourselves to any precise detail of con-

struction or arrangement of any of the operating parts, as they may obviously be indefinitely varied without departing from the spirit and scope of our invention.

5 Having thus described our invention and the manner of employing the same, what we desire to secure by Letters Patent is—

1. An automatic railway-crossing gate, consisting of a pair of oppositely-pivoted gate-bars; a pair of horizontal levers fulcrumed near their inner ends; means for operatively connecting the outer ends of the said levers to the outer ends of the respective gate-bars; duplicate trip mechanism; and trigger mechanism on opposite sides of the gate, the duplicate trip mechanism normally holding up the gate-bars through the medium of said levers, but adapted when actuated by an approaching train, to permit the proximate gate to close by gravity, and at the same time to set the remote trigger mechanism, the latter being adapted when actuated in its turn to release said levers, and permit the trip mechanism to open the gate.

25 2. Mechanism for automatically raising and lowering railway-crossing gates consisting of a pair of horizontal levers pivotally fulcrumed near their inner ends; means for operatively connecting the outer ends of these levers to the outer ends of the said gates; duplicate trip mechanism; and trigger mechanism on opposite sides of the gate, the duplicate trip mechanism normally holding up the gate-bars through the medium of said levers, but adapted when actuated by an

approaching train, to permit the proximate gate to close by gravity, and at the same time to set the remote trigger mechanism, the latter being adapted when actuated in its turn to release said levers, and permit the trip mechanism to open the gate.

3. Means for automatically lowering a railway-crossing gate upon the approach of a train, and for elevating it by the receding train, consisting of a pair of horizontal levers pivotally fulcrumed near their inner end, and adapted to be actuated by a passing train one at a time; means for operatively connecting the outer ends of these levers with the respective gates; duplicate trip mechanism located in the path of an approaching train; and trigger mechanism on opposite sides of the gate, the duplicate trip mechanism normally holding up the gate-bars through the medium of said levers, but adapted when actuated by an approaching train, to permit the proximate gate to close by gravity, and at the same time to set the remote trigger mechanism, the latter being adapted when actuated in its turn to release said levers, and permit the trip mechanism to open the gate.

Signed by us at Butler, Dekalb county, State of Indiana, this 5th day of April, A. D. 1906.

ARVILLO M. SANDERS.
STEPHEN VAN DUSEN.

Witnesses:

LORIN R. COLE,
THOMAS L. BAKER.