A. E. CLEMENTS.

AUTOMATIC RAILWAY GATE.

APPLICATION FILED OCT. 29, 1912.

1,131,330.

Patented Mar. 9, 1915.

3 SHEETS—SHEET 1.

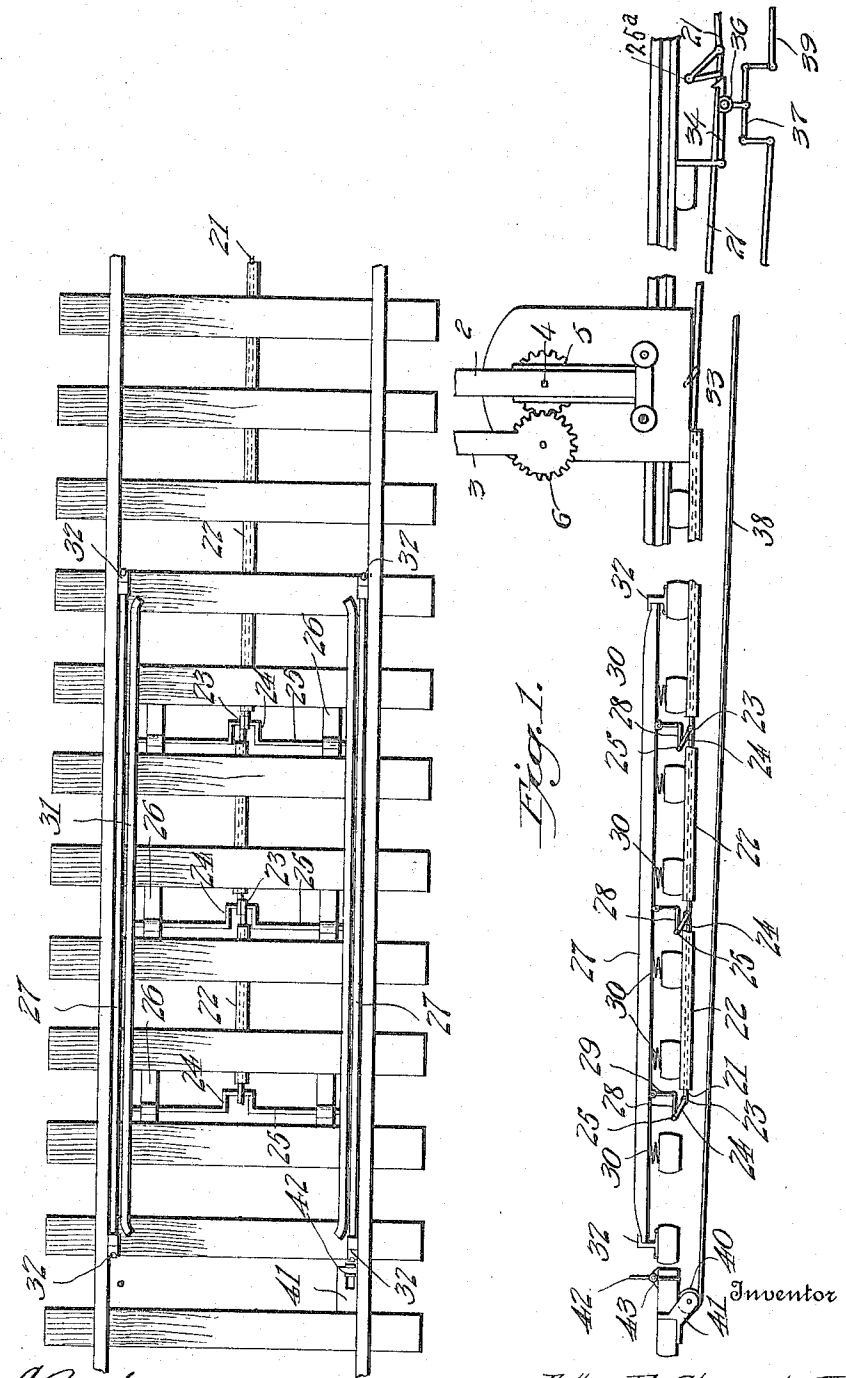


Fig. 2.

Fig. 1.

Witnesses

Charles C. Roach

T. L. Mockabee

By

Inventor

Arthur E. Clements

W. N. Roach

Attorney

A. E. CLEMENTS.

AUTOMATIC RAILWAY GATE.

APPLICATION FILED OCT. 29, 1912.

1,131,330.

Patented Mar. 9, 1915.

3 SHEETS—SHEET 2.

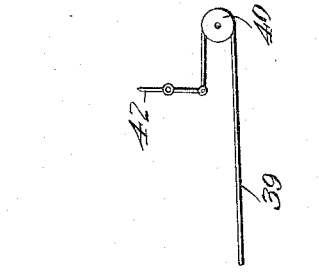
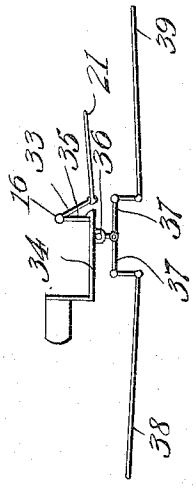
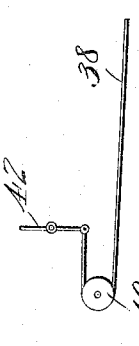


Fig. 3.





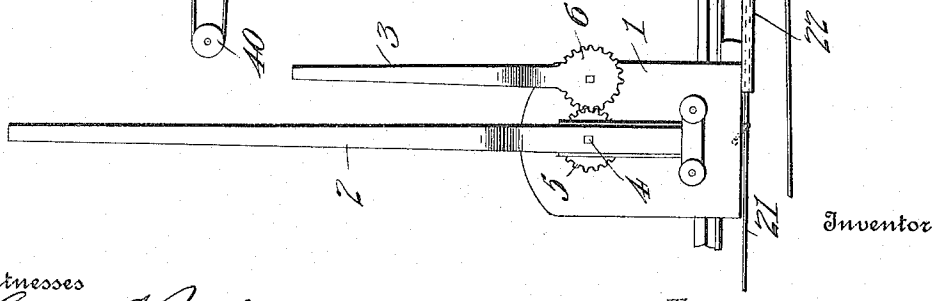
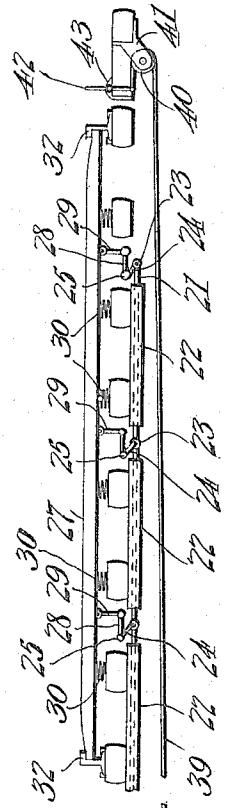


Fig. 1a.



Witnesses

Charles E. Roach

T. L. Macfarlane

Inventor

Arthur E. Clements,

By W. N. Roach Jr.

Attorney

A. E. CLEMENTS.

AUTOMATIC RAILWAY GATE.

APPLICATION FILED OCT. 29, 1912.

1,131,330.

Patented Mar. 9, 1915.

3 SHEETS—SHEET 3.

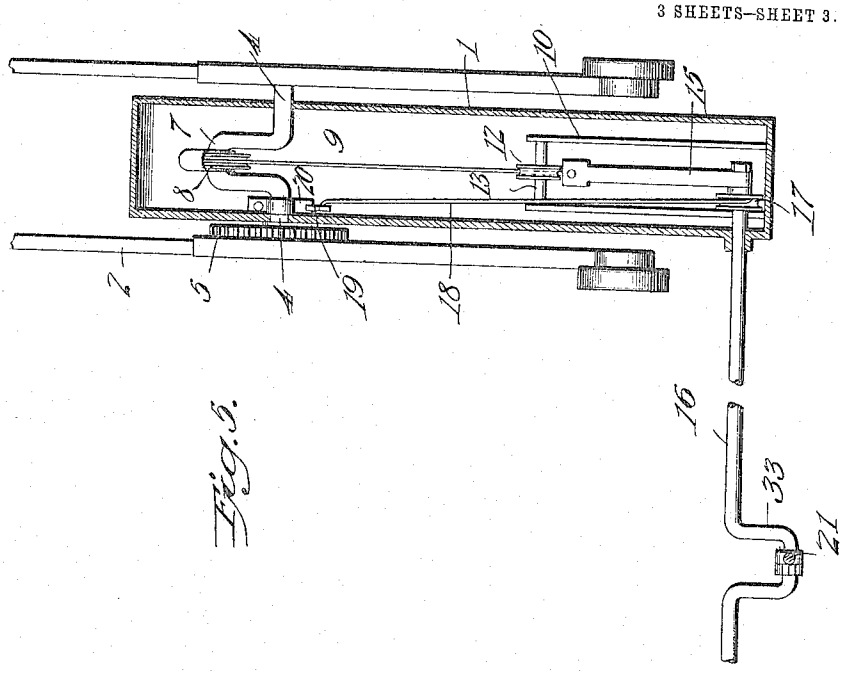


Fig. 3.

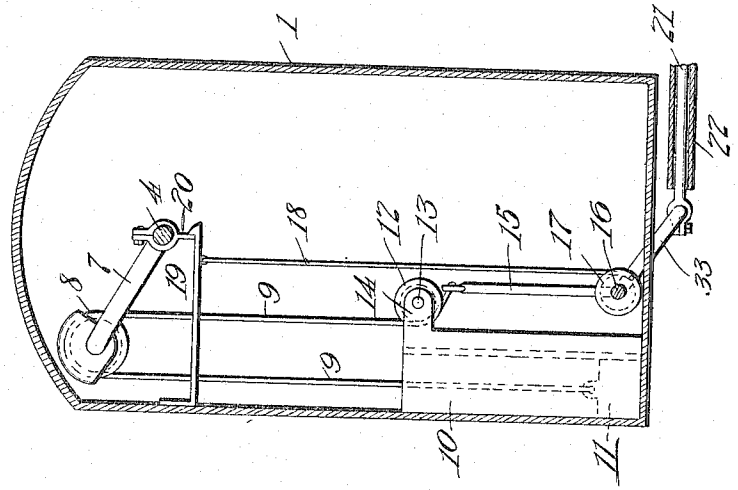


Fig. 4.

Witnesses

Charles L. Roach

T. L. Mackaye

Inventor

Arthur E. Clements

By W. M. Roach, Jr.

Attorney

UNITED STATES PATENT OFFICE.

ARTHUR E. CLEMENTS, OF TAMPA, FLORIDA.

AUTOMATIC RAILWAY-GATE.

1,131,330. Specification of Letters Patent. Patented Mar. 9, 1915.

Application filed October 29, 1912. Serial No. 728,391.

To all whom it may concern:

Be it known that I, ARTHUR E. CLEMENTS, a citizen of the United States of America, residing at Tampa, in the county of Hillsboro and State of Florida, have invented certain new and useful Improvements in Automatic Railway-Gates, of which the following is a specification.

This invention relates to the subject of railway gates that prevent passage over tracks while a train is approaching, or passing, a crossing and the primary aim of the invention is to provide simple mechanism by means of which an approaching train will lower the gates to a safety position; retain them in such position while passing the crossing; and, after having passed the crossing, will cause the mechanism to raise the gates, the operation of the mechanism being entirely automatic so that there is no necessity for employing an operator for the gates.

In producing the mechanism for automatically operating railway gates capable of performing the functions generally stated above, it will be understood that the same is susceptible to changes in details and structural arrangements, one simple and practical embodiment of which is shown in the accompanying drawings, wherein:—

Figure 1 is a side elevation, showing the gates in raised position. Fig. 1ª is a similar view at the opposite side of the crossing. Fig. 2 is a top plan view of a portion of a railway equipped with the improved automatic gate operating mechanism. Fig. 3 is a detail view showing a modified form of the mechanism for retaining the gates lowered, the latch being shown caught, as when the gates are lowered, and the operating rod being shown on only one side of the crank to avoid confusion of parts. Fig. 4 is a vertical sectional view of one of the gate standards showing the manner of raising and lowering the gates and also the means for retaining them in raised position. Fig. 5 is a vertical sectional view taken at right angles to Fig. 4.

Referring to the accompanying drawings by numerals, and particularly to Figs. 1, 1ª, 4 and 5 thereof, 1 designates the support or standard for the gates which may be of the usual or any preferred casing type, but one standard being shown and it being equipped with the roadway gate 2 and the foot path or sidewalk gate 3. Of the two gates, the roadway gate 2 is positively operated and the external portion of its shaft 4 carries a gear 5 that meshes with a gear 6 of the sidewalk gate 3, whereby both gates will rise and lower simultaneously. As thus described the standard and gates are of a well known type and obviously may be varied in construction, if desired. The shaft 4 extends through the standard 1 and at its central portion, within the standard, is provided with a crank 7, which may be formed by bending the said shaft at its center to a substantially U-shape. A pulley 8 is mounted on the crank 7, the pulley being preferably of the grooved periphery type. A cable 9 passes over the pulley 8 and one end extends into a guideway 10 in which a weight 11 is slidable, the cable being suitably fastened to the weight. The other end of cable 9 passes over an idler pulley 12, that is mounted on a shaft 13 carried by ears 14 projecting from the side walls of the guideway 10, and is suitably fastened to a crank 15 projecting from the end of a shaft 16 that enters the base of standard 1. Adjacent crank 15, shaft 16 carries a collar 17 to which the lower end of a cord or chain 18 is connected. The upper end of the cord or chain 18 is connected to a spring latch 19 projecting laterally from one of the inner walls of the standard 1 and being in position to engage a lug 20 projecting from the gate shaft 4 so that rotary movement of said shaft in a direction to lower the gates is normally prevented.

As thus described, it will be seen that with the gates raised, as in Figs. 4 and 5, rotary movement of shaft 16 causes collar 17 and chain 18 to release latch 19 from the lug 20 of shaft 4, thereby freeing said shaft, and simultaneously crank 15 pulls downward on crank 7, through cable 9, thereby rotating shaft 4 and, consequently, lowering the gates. The gates, being counterweighted as usual and aided by the weight 11 of cable 9, automatically return to their normal, raised position when the train actuated releasing device is operated, as will be now described.

As aforesaid, the entire mechanism is automatic in its operation, said mechanism being operated to lower the gates as a train approaches a crossing and operated to restore the gates, held to such lowered posi-

tion while the train is passing over the crossing, to their normal raised position when the train leaves the crossing. These important functions of the mechanism are performed through the medium of an elongated operating bar 21 that extends centrally and longitudinally of the railway beneath the ties thereof and is slidable in a pipe or casing 22 carried by said ties. The casing 22 is composed of a plurality of sections the ends of which are arranged in spaced relation and, between the adjacent ends of the sections, the bar 21 is connected by suitable collars 23 to cranks 24 carried by shafts 25 that extend transversely of the road bed and are supported in journals 26 suitably fastened to the ties, as is clearly shown in Fig. 2. The ends of shafts 25 are connected to tripping bars 27 in any suitable manner but, preferably, through arms 28 carried by said shafts 25 and pivotally connected, at their free ends, to the lower ends of links 29, which said links, have their upper ends pivotally connected to the aforesaid tripping bars 27. Said bars 27 rest on springs, or other yieldable supports, 30 carried by the ties and are positioned parallel with the inner surface of the rails in such a way as to be depressed by the flanges of the car wheels. Guard rails 31 are disposed adjacent the bars 27 and serve to protect said bars and retain the same in position. Stops 32 carried by some of the ties are disposed in such positions that, by engaging the ends of the bars 27, they limit the upward movement of the said bars, the bars having their ends tapered so that they practically merge with the said stops, to prevent any abrupt rise that would tend to jar the car wheels. The bar 21 is pivotally connected to a crank 33 carried by the shaft 16, as shown in Figs. 1, 4 and 5, said shaft 16 obviously extending transversely of the roadbed.

The tripping bars 27, as described, are in position to be depressed by the flanges of the car wheels and are obviously disposed in advance of the crossing where the gates are located, and, when depressed, their crank connection with bar 21 imparts a longitudinal movement to said bar and, through the crank 33, a rotary movement is imparted to shaft 16 and such movement of shaft 16 lowers the gates, as aforesaid. But one set of gates and mechanism for operating them has been described but, obviously, the mechanism is capable of operating two or more sets of gates such as are required on double-tracked railroads and from such description it will be understood that an approaching train automatically lowers the gates. The invention also contemplates means whereby the gates are held in lowered positions while the train is passing the crossing, as well as released when the train has passed the crossing, so that the counter weights of the gates and the weights 11 will automatically raise the gates. Such restraining means will now be described.

Referring more particularly to Fig. 3, it will be seen that one of the ties is equipped with a longitudinally projecting spring latch 34 which is disposed in such position that it will engage catch 35 projecting, preferably, from a crank shaft 25^a, situated at the center of the crossing, when said shaft is rotated by the longitudinal movement of the bar 21. Shaft 25^a is a crank shaft similar to, and journaled in the same manner as the shafts 25, and is operated by them through the rod 21. The latch 34 is provided with pendent ears 36 to which bell-crank levers 37 are pivotally linked at one of the ends of said levers the other ends of the said levers being suitably fastened to the ends of a pair of cables 38 and 39. The cables 38 and 39 pass over pulleys 40 carried by brackets 41 suitably fastened to the ties, and have their ends made fast to the lower ends of tripping rods 42 that are centrally pivoted in supporting brackets 43. The rods 42 are disposed so that a projection, such as a car wheel flange, will rock the same and cause cable 38 or 39 to exert a downward pull on latch 34 and release said latch from catch 35, thereby freeing shaft 25^a. With this locking mechanism, it will be clear that, the latches and catches automatically engage when the train depresses bars 27 and are automatically disengaged when the train engages tripping rods 42.

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

1. A gate operating device for railroad crossings comprising a hollow standard, a shaft extending therethrough and carrying gates, said shaft having a crank and a lug within the standard, a pulley mounted on the crank, a guideway within the standard, a weight slidable in the guideway, a cable passing over the pulley and having one end attached to the weight, a shaft extending into the base of the standard and having a crank connection with the cable, a latch on the standard for engaging the lug to normally retain the gate shaft in position to hold the gates raised, a cable connection between the base shaft and the latch for releasing the latch, and train actuated mechanism for rotating the base shaft to first release the latch and then rotate the gate shaft to lower the gates.

2. A gate operating device for railroad crossings comprising a hollow standard, a shaft extending therethrough and carrying gates, said shaft having a crank, a guideway within the standard, a weight slidable in the guideway, a pulley, a cable passing over the pulley and having one end attached to the weight, a shaft extending into the

base of the standard and having a crank connection with the cable, a lug on the gate shaft, a latch on the standard for engaging the lug to normally retain the gate shaft in position to hold the gates raised, a cable connection between the base shaft and the latch for releasing the latch, train actuated mechanism for rotating the base shaft to first release the latch and then rotate the gate shaft to lower the gates, detent means located in the road-bed for retaining said gates lowered, and train actuated means for releasing said detent.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

ARTHUR E. CLEMENTS.

Witnesses:
A. A. McCRANIE,
D. M. PARTRICK.