

Nov. 17, 1925.

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J. V. WHITEHURST

AUTOMATIC CROSSING GATE

Filed June 5, 1925

3 Sheets—Sheet 1

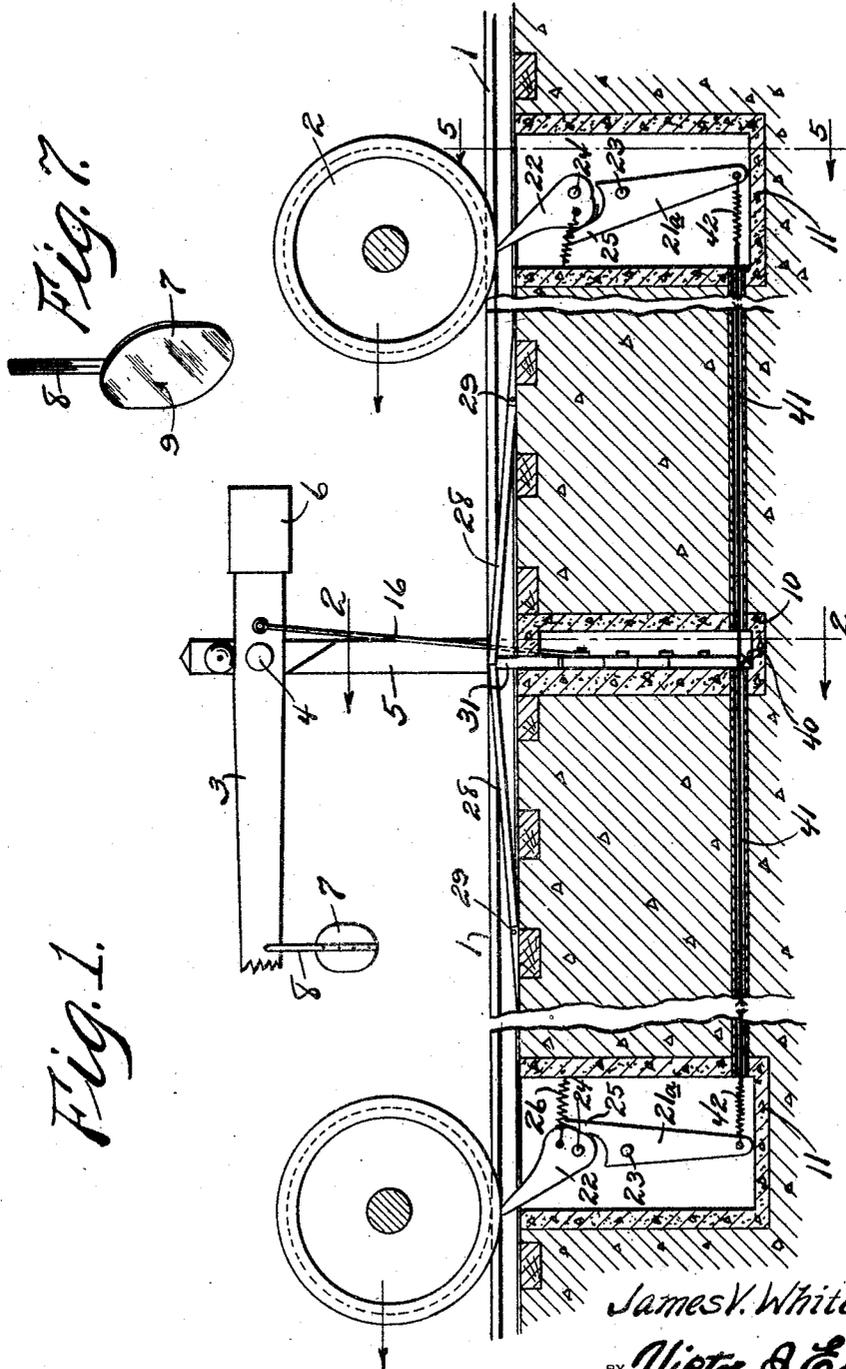


Fig. 7.

Fig. 1.

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WITNESS: *John Moran*

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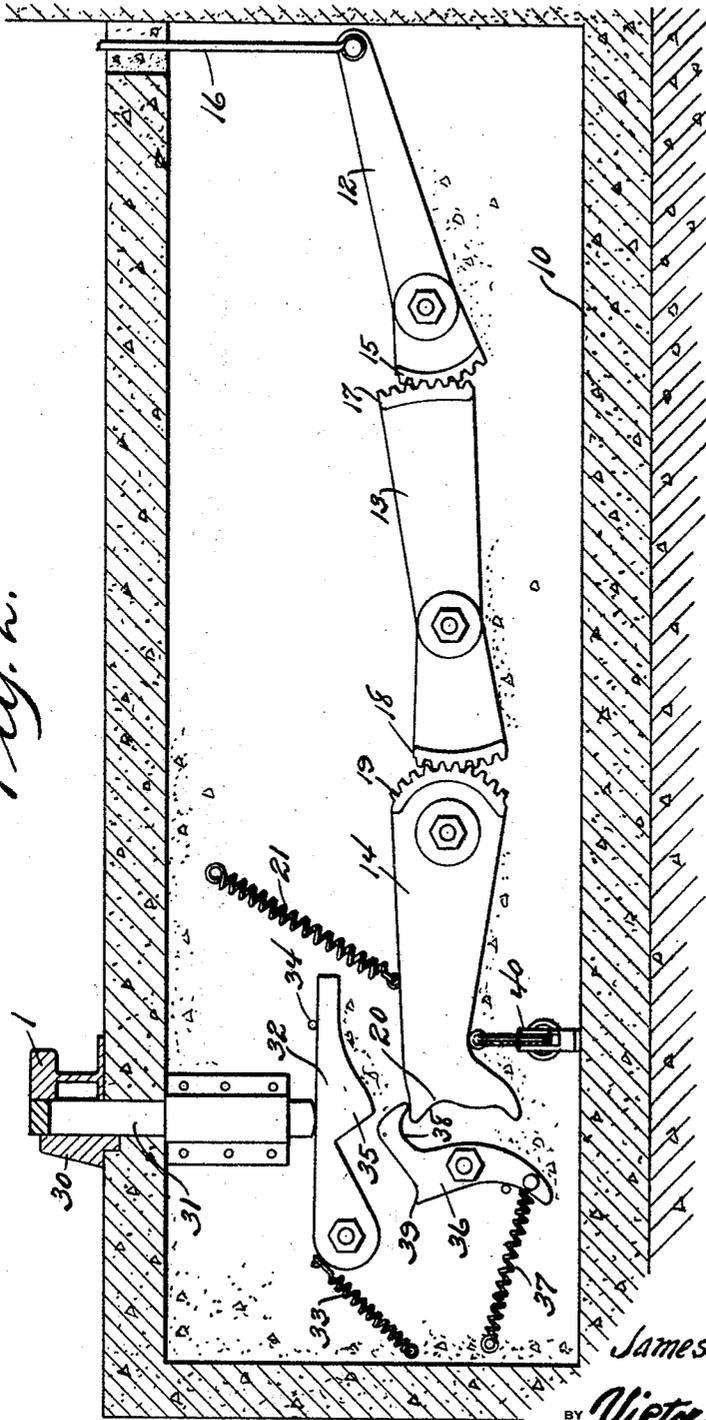
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Fig. 2.



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3 Sheets-Sheet 3

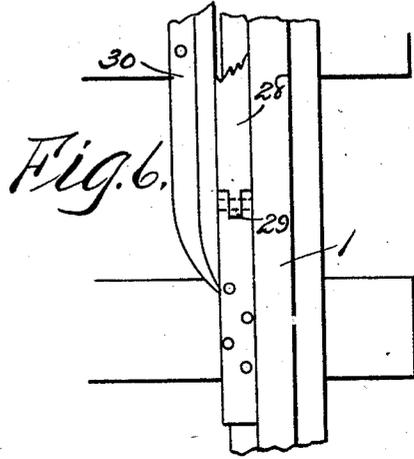
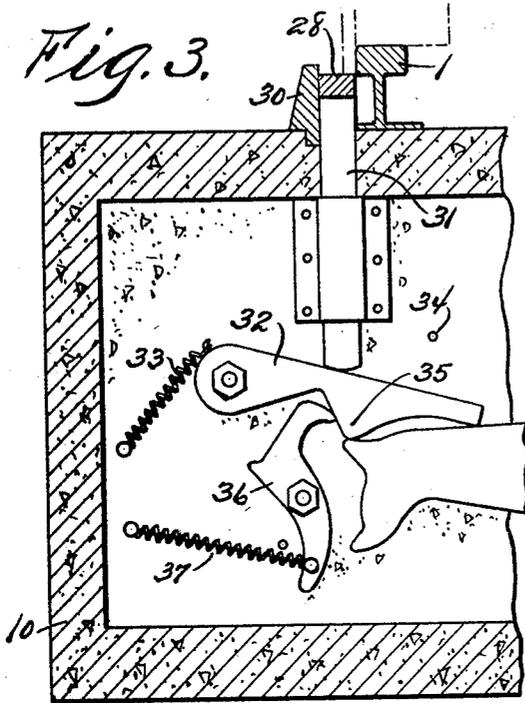
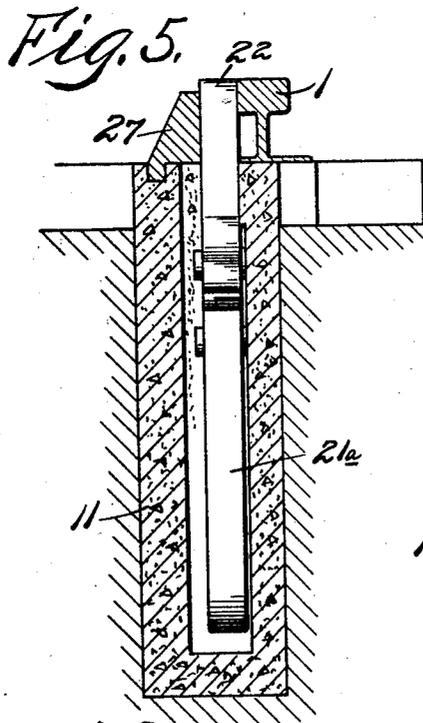
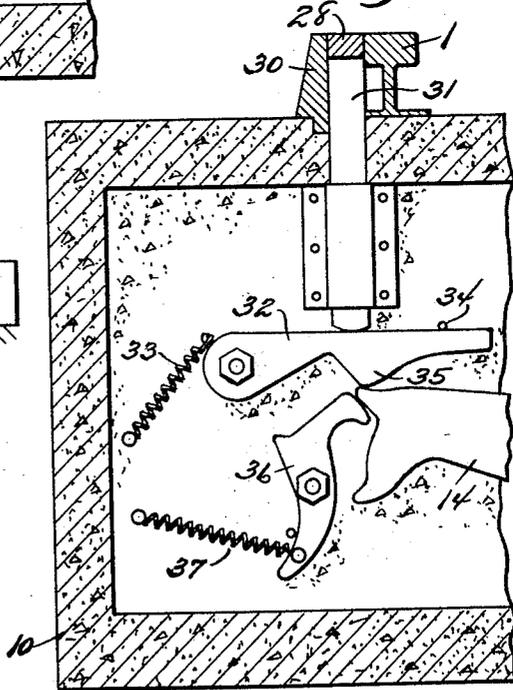


Fig. 4.



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UNITED STATES PATENT OFFICE.

JAMES V. WHITEHURST, OF ELIZABETH CITY, NORTH CAROLINA.

AUTOMATIC CROSSING GATE.

Application filed June 5, 1925. Serial No. 35,130.

To all whom it may concern:

Be it known that I, JAMES V. WHITEHURST, a citizen of the United States, residing at Elizabeth City, in the county of Pasquotank and State of North Carolina, have invented new and useful Improvements in Automatic Crossing Gates, of which the following is a specification.

The object of my present invention is the provision of a reliably operating, efficient and durable gate for barring a crossing incident to the passage of a railway train; the gate being put into use by a train approaching the crossing and being maintained in active position during the passage of the train, and being then restored to idle state.

To the attainment of the foregoing, the invention consists in the improvement as hereinafter described and definitely claimed.

In the accompanying drawings, forming part of this specification:—

Figure 1 is a longitudinal vertical section illustrating the preferred embodiment of my invention with the gate in position to bar a crossing.

Figure 2 is a detail vertical section on an enlarged scale taken in the plane indicated by the line 2—2 of Figure 1, looking in the direction indicated by arrows.

Figure 3 is a fragmentary section in the same plane as Figure 2, but showing the parts positioned as when the plunger is depressed by a passing car wheel.

Figure 4 is a view like Figure 3 but showing the plunger and the parts associated therewith in normal position.

Figure 5 is a detail section taken in the plane indicated by the line 5—5 of Figure 1.

Figure 6 is a detail plan view showing a portion of the guard rail and a portion of one depressible lever adjacent thereto.

Figure 7 is a detail perspective of the reflecting signal disk which is preferably, though not necessarily, employed on the gate.

Similar numerals of reference designate corresponding parts in all of the views of the drawings.

In Figures 1 to 6, I show a railway rail 1, and in Figure 1, I show train wheels 2. I also show in Figure 1 a gate 3, fulcrumed or pivoted at 4 on a fixed upright 5, the said gate 3 having a weight 6 on one arm and being equipped adjacent to its other arm, by preference with a reflecting signal disk

7, hung at 8 from the gate arm. The said signal disk 7 is preferably painted red or some other distinctive color so as to attract attention, and is provided with a mirror surface 9, Figure 7, so that it will be possessed of reflecting capacity, this being particularly desirable in the nighttime when the said mirror surface will reflect the light from automobile headlights and in that way certainly attract the eye of an approaching motorist.

While I prefer for the reason stated to employ the signal disk 7, I do not desire to be understood as confining myself to the said signal disk or any other signal means on the gate inasmuch as said signal disk or any other signal means may be altogether omitted from the gate without affecting my invention.

In furtherance of my invention a pit 10 is employed below the surface and in about the longitudinal center of the crossing, and pits 11 are located at opposite sides of the crossing and at any suitable distance from said sides. The pit 10 is best illustrated in Figures 1 and 2, and by reference to said figures it will be understood that levers 12, 13 and 14 are mounted in the pit, the lever 12 having a gear sector 15 on one arm and having its other arm connected by a rod 16 with the weighted arm of the gate 3, and the lever 13 being provided at one end with a gear sector 17 in mesh with the gear sector 15 of the lever 12. At its opposite end the lever 13 is provided with a gear sector 18 in mesh with a gear sector 19 on one end of the lever 14, the opposite end of the lever 14 being preferably shaped as designated by 20 in Figure 2. A strong retractile spring 21 is arranged in the pit and connected at one end to one wall of the pit and at its opposite end to the outer arm of the lever 14. By virtue of this arrangement it will be appreciated that depression of the end 20 of the lever 14 will be attended by expansion of the spring 21 and by movement of the gate 3 to the active position shown in Figure 1, while when the said end 20 of the lever 14 is released, the spring 21 will operate to raise the said end 20 of the lever 14 and by rocking said lever 14 will return the gate to its upright idle position.

Located in the pits 11 are reversely arranged levers 21^a and reversely arranged cam members 22, the levers 21^a being fulcrumed at 23, and the cam members 22 being

fulcrumed at 24. At their upper ends the levers 21^a are provided with reduced portions 25, and the cam members 22 are connected to retractile springs 26. It will also be noticed by comparison of Figures 1 and 5 that each of the cam members 22 is arranged alongside the rail 1 and between the rail 1 and a fixed guard rail 27.

Arranged alongside the rail 1 are vertically movable levers 28, the inner ends of which are opposed as shown, and the outer ends of which are pivoted or fulcrumed as designated by 29 in Figures 1 and 6. It will also be noticed that the levers 28 are disposed between the rail 1 and a guard rail 30, and that the opposed or adjacent ends of the levers 28 are arranged above an appropriately guided plunger 31, Figures 2, 3 and 4. The said plunger 31 is arranged above and adapted to cooperate with a vertically movable lever 32, which is yieldingly held by retractile spring 33 against a stop 34. The said lever 32 is provided at 35 with a pendent cam protuberance, Figures 2, 3 and 4.

Adjacent to the end 20 of the lever 14 and below the lever 32 is a keeper 36, connected to a retractile spring 37 and having a hook-shaped head 38 and also having a projection 39.

Passed around a vertical shaft 40 on the bottom of the pit 10, Figure 2, are cables 41 which are interposed between and connected to the outer arm of the lever 14 and the lower arms of the levers 21^a, the connections at the levers 21^a being preferably effected by retractile springs 42, designed to take up shock and jar.

In the practical operation of my improvement it will be manifest that a foremost wheel of a train traveling toward the left in Figure 1 will by acting against the cam member 22 at the right of Figure 1, operate to move the gate 3 from its upright idle position to its horizontal active position. It will also be noted that when a train is moving on the track toward the right in Figure 1, a foremost wheel of the train by cooperating with the cam member 22 will likewise bring about movement of the gate 3 to the active position shown in Figure 1. In either case, the keeper 36 by cooperating with the end 20 of the lever 14 as shown in Figure 2 will serve to retain the gate 3 in the active position shown in Figure 1. Then as the wheels of the train pass over the levers 28, the plunger 31 will be maintained in depressed state as shown in Figure 3 with the result that the keeper 36 which is first disengaged from the end 20 of the lever 14 will by the lever 35 be held out of engagement with said end of the lever 14 and at the same time the said lever 35 will hold the lever 14 against upward movement under the influence of the spring 21. The parts

just referred to will be maintained in the relative positions indicated so long as the levers 28 are depressed by train wheels passing over the same. When, however, the last wheel of a train passes over and beyond the levers 28, the lever 32, the plunger 31 and the levers 28 will be raised to normal positions by the spring 33, and the keeper 36 will by its spring 37 be engaged with the end 20 of the lever 14, at which time the gate will be in its upright idle position.

It will be apparent from the foregoing that normally the gate 3 will be maintained in idle upright position. When, however, a train approaches the crossing the gate will be moved in the manner described to the horizontal active position, and the gate will be maintained in the latter position until one of the last wheels of the train passes over and beyond the levers 28, at which time the gate will be restored to its idle upright position.

I have elected to show but one gate and would have it understood that when deemed expedient only one gate need be employed. It is obvious, however, that two gates may be employed in connection with two sets of mechanism such as described, or that two gates may be employed in conjunction with a single set of mechanism, the gates in the latter case being appropriately connected together so as to move in concert to and from the active position shown in Figure 1.

I have entered into a detailed description of the construction constituting the preferred embodiment of my invention in order to impart a full, clear and exact understanding of said embodiment. I do not desire, however, to be understood as confining myself to the embodiment disclosed, my invention being defined by my appended claims within the scope of which structural changes may be made without involving departure from my invention. For instance when deemed expedient the gate 3 may be provided with a gong, as 43, so that incident to lowering of the gate, the said gong actuated in conventional or any other approved manner, will warn the occupants of approaching automobiles. Also; the gate control devices may be located at various distances from the gate.

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

1. In an automatic crossing gate, the combination of a movable gate, a lever located at one side of the crossing, a train operated cam member arranged on movement thereof to move the lever, a train of geared levers, a connection between one of said train of geared levers and the gate for moving said gate to and from active position, a connection between the first-named lever and another of said train of geared levers,

and a spring connected to one of said train of geared levers for assisting in the movement of the gate to idle position.

2. In an automatic crossing gate, the combination of a movable gate, a lever located at one side of the crossing, a train operated cam member arranged on movement thereof to move the lever, a train of geared levers, a connection between one of said train of geared levers and the gate for moving said gate to and from active position, a connection between the first-named lever and another of said train of geared levers, and a spring connected to one of said train of geared levers for assisting in the movement of the gate to idle position, with a spring operated keeper for cooperation with the second-mentioned lever of the train of geared levers, a spring operated protuberance bearing lever disposed above said keeper, a plunger disposed above said lever, and train operated levers arranged above said plunger.

3. In an automatic crossing gate, the

combination of a movable gate, a lever located at one side of the crossing, a train operated cam member arranged on movement thereof to move the lever, a train of geared levers, a connection between one of said train of geared levers and the gate for moving said gate to and from active position, a connection between the first-named lever and another of said train of geared levers, and a spring connected to one of said train of geared levers for assisting in the movement of the gate to idle position, with a spring operated keeper for cooperation with the second-mentioned lever of the train of geared levers, a spring operated protuberance bearing lever disposed above said keeper, a plunger disposed above said lever, and train operated levers arranged above said plunger; the said second mentioned lever of the train of geared levers having a toe for cooperation with the keeper, and the said keeper having a hook-shaped head.

In testimony whereof I affix my signature.
JAMES V. WHITEHURST.