

J. KISS AND J. R. MCGEE.
 AUTOMATIC RAILWAY GATE.
 APPLICATION FILED JULY 12, 1920.

1,356,924.

Patented Oct. 26, 1920.

2 SHEETS—SHEET 1.

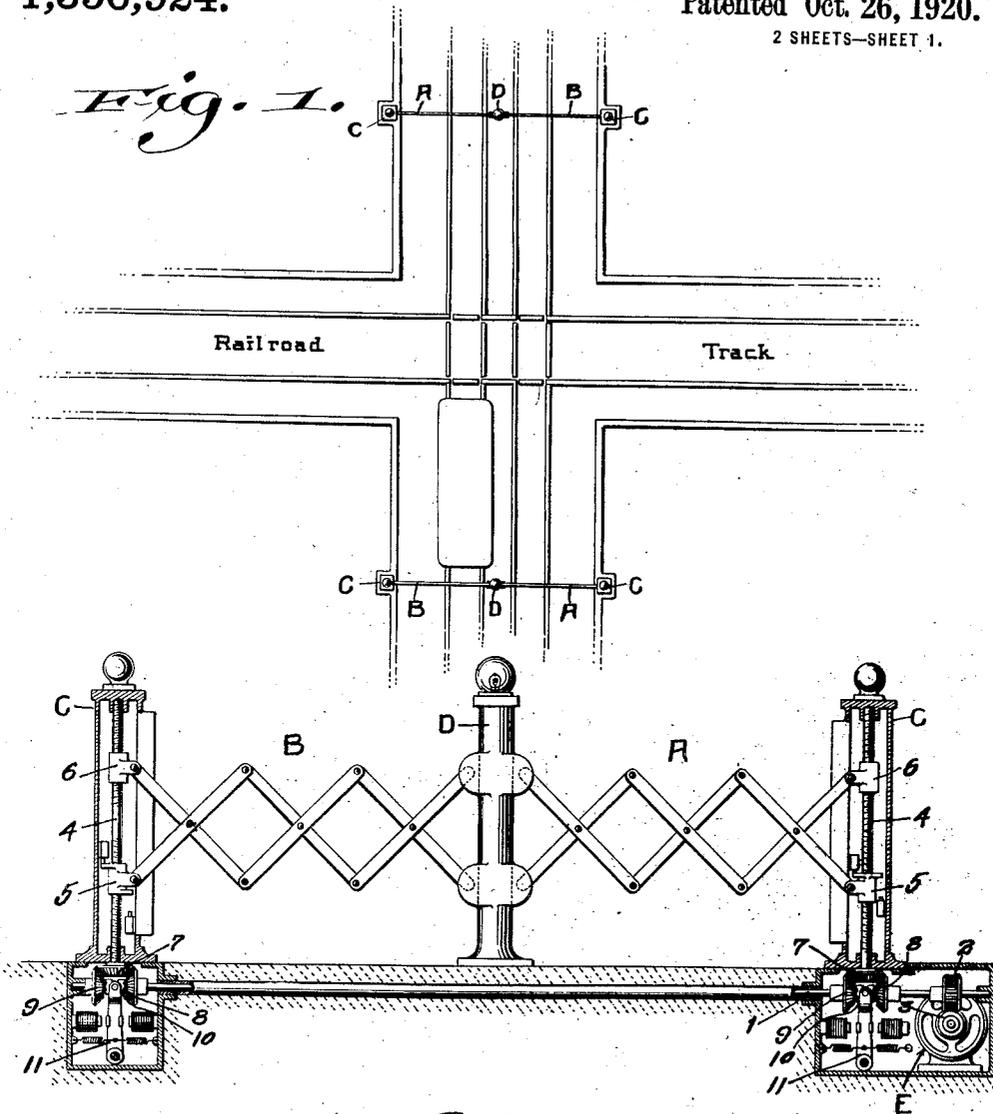


Fig. 2.

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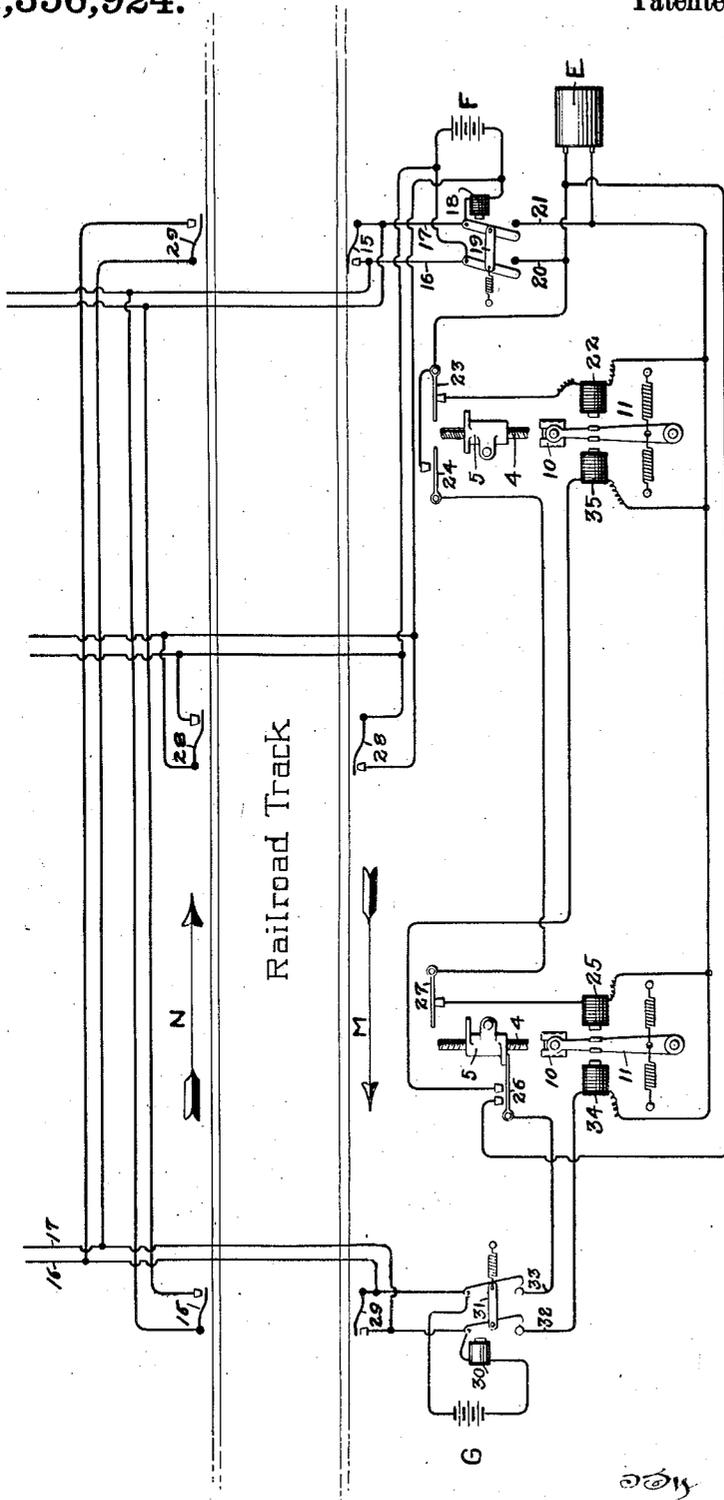


Fig. 3.

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AUTOMATIC RAILWAY-GATE.

1,356,924.

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To all whom it may concern:

Be it known that we, JOSEPH KISS and JAMES R. MCGEE, both citizens of the United States, and residents of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Automatic Railway-Gates; and we do hereby declare that the following is a full, clear, and exact description thereof.

Our invention relates to railway gates for use at highway crossings and the like, and particularly to that type of gates which are electrically operated to close and open upon the approach and departure of a train from the crossing.

In cities and towns, the buildings and other objects upon the streets and roads which cross a car line, often make it difficult for drivers of vehicles and pedestrians to see an approaching car until they are nearly upon it. Then it is frequently impossible to stop in time, and an accident is the result.

Therefore, the object of our invention is to provide a gate of the character set forth that will close prior to the passing of a car or train over a crossing and remain closed until the car or train has passed the crossing.

A further object of our invention is to provide a gate for this purpose, so arranged and constructed that one portion of the gate will close in advance of the other, thus giving warning and allowing an exit for the vehicles or pedestrians caught between the two gates.

It is also the purpose of our invention to provide a gate of the class described which will be entirely automatic in operation and wherein the parts will be so arranged and correlated as to reduce the possibility of derangement to a very small degree and enable ready access to the mechanism for the purposes of cleaning and repairing.

In the accompanying drawings:

Figure 1 is a top plan view of a crossing showing our invention installed,

Fig. 2 is a side elevation of the gate showing in section its operating means,

Fig. 3 is a diagrammatic view of a crossing over a track and the electrical connections from said track to the crossing gate.

Referring to the drawings in detail and to Fig. 2 particularly, it will be seen that each gate is composed of two sections A and B,

the same being constructed in a lazy tong fashion, the arms at one end of each section being secured to movable means within the posts *c* arranged on each side of the street or road. The free or adjacent ends of the gate sections will be supported and held by suitable guides carried by the posts D placed in the center of the street.

If desired, the posts D may have arranged in their upper ends suitable electric signals, for instance, a red light, the circuit of which is completed when one or both sections of the gate are closed.

The posts *c* are cylindrical and hollow in form and made of any convenient material, preferably metal. They are provided with vertical extending slots through which the arms of the gate section pass and if desired, there may be outwardly projecting flanges around the slots serving as protective means for the gate sections when closed.

Arranged within the posts *c* are circuit closing elements which are operated by the fingers of movable means therein for a purpose to be described hereinafter.

These posts are placed or secured upon boxes or like receptacles arranged beneath the surface of the street or ground in which the operating elements for the gate sections are placed. These boxes are arranged in pairs and those comprising a pair are connected by a drive shaft 1, which passes through a protective tubing arranged between the boxes and transversely of the street or road.

The shaft 1 has keyed thereto the worm gear 2, which meshes with a worm 3 carried by the driving shaft of an electric motor E placed in one of the boxes.

The post *c* has rotatably mounted therein the vertically extending shaft 4 provided with right and left handed thread portions which receive threaded sleeves 5 and 6 to which the arms of the gate sections are secured. The shaft 4 extends through the bottom of the post *c* and has secured to its end portion the bevel gear 7 which meshes with similar gears 8 and 9 loosely mounted on the drive shaft.

Keyed to the shaft 1 and slidably mounted thereon is a clutch member 10 having an operating lever 11 pivotally mounted to the box and held in a neutral position by springs connected thereto. The clutch lever 11 is controlled by electro-magnets within the

boxes which are energized by circuit closing elements which will be more fully described hereinafter.

From the foregoing description, it will be apparent that when the motor E is started the shaft 1 will rotate and through the medium of the clutches and the gears 7, 8 and 9, the shafts 4 will be caused to rotate which will close or open the gates, according to the position of the clutches.

Referring now to Fig. 3 in which we have shown a diagrammatic view of the electrical connections from the track to the gates, and assuming that a car or train is passing in the direction indicated by the arrow M, the trip actuating means carried by the car or train will first engage the switch 15 which is placed a sufficient distance from the crossing to insure the closing of the gates before the train reaches same.

When this switch is closed, the circuit formed by the wires 16 and 17, including the battery F, is completed, thus, energizing the electro-magnet 18 and throwing the switch 19 connecting the wires 20 and 21 with the battery circuit. When this has happened the motor E is energized and the shaft 1 starts to rotate. At the same time, the electro-magnet 22 is energized, due to the fact that the switch 23 is closed, which throws the clutch 10 into engagement with the gear 8, thus causing the rotation of the shaft 4, which closes the gate section A.

After the gate section A has closed and the sleeve 5 has reached a certain height the switch 23 is opened and the switch 24 closed, thereby breaking the circuit of the electro-magnet 22 and completing the circuit including the electro-magnet 25, causing the clutch 10 of the section B to be moved into engagement with the gear 8 and the said section to be closed.

When the section B closes and as the sleeve 5 moves upwardly the switch 26 is closed and the switch 27 is opened, thereby breaking the circuit and deenergizing the electro-magnets 22 and 25 allowing the clutches to return to their neutral positions.

It will be understood that the operating means carried by the car or train is of such character that the switch 15, and the like, arranged adjacent the track will be held closed for a certain period until the gate sections have closed or opened.

When the gate section A has closed and the train reaches the switch 28 the circuit controlled thereby will be completed, thus short-circuiting the battery F and insuring a positive cessation of operation.

As the car or train passes beyond the crossing the operating means carried thereby causes the switch 29 to close, which controls the circuit, including the battery G.

As this circuit is closed the electro-magnet 30 is energized, causing the switch 31 to be

thrown and connecting the battery circuit with the wires 32 and 33. The electro-magnets 34 and 35 are then energized, attracting the clutch members of the sections A and B to be thrown into engagement with the gears 9 which causes the shafts 4 to rotate in their reversed directions and opening the gate sections A and B. As the sleeve 5 moves downwardly the switch 27 is closed and remains so until the approach of another train when it is opened at the time and in the manner set forth in the above description. As the sleeve 5 moves downward the fingers carried thereby opens the switch 26, thus bringing at rest and in an opened position the gate sections A and B.

From the foregoing description, it will be apparent that we have only described the operation of one gate, composed of its two sections, and by referring to the drawings, it will be seen that we have shown wires leading from the several switches, operated by the train, to the position of the second gate on the other side of the track. The operation of the second gate is identical and simultaneous with the section which we have already described.

Also, the operation of the gates caused by the passing of a car or train in the direction indicated by the arrow N is the same as that for a train passing in the direction of the arrow M, and for convenience, we have numbered these switches the same as the others.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is:—

1. The combination of a railway gate of the character described composed of two sections and means for closing one section in advance of the other and opening both sections simultaneously.

2. The combination of a railway gate of the character described composed of two sections and means for closing one section prior to the initial closing movement of the other section and opening both sections simultaneously.

3. The combination of a railway gate of the character described composed of two sections and automatic means for closing one section prior to the initial closing movement of the other section.

4. A railway gate of the character described composed of two sections and having electrically operated means for closing one section prior to the other and opening both sections simultaneously.

5. A railway gate of the character described composed of two sections and having electrically operated means common to both for closing one section in advance of the other and opening both sections simultaneously.

6. A railway gate of the character de-

scribed composed of two sections and having electrically operated means controlled by a passing train for closing one section in advance of the other and opening both sections
5 simultaneously.

7. A railway gate of the character described composed of two sections and having automatic electrically controlled means for closing one section prior to the other, and
10 means controlled by the first said section for controlling the closing movement of the other section.

8. A railway gate of the character described composed of two sections and having

means for closing both, said means consisting of an electric motor, a shaft driven by said motor and connecting both sections, automatic electrically controlled means between said shaft and gate for closing one section prior to the other and opening both
15 sections simultaneously.
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In testimony that we claim the foregoing we have hereunto set our hands at Milwaukee, in the county of Milwaukee and State of Wisconsin.

JOSEPH KISS.
JAMES R. MCGEE.