D. T. FISHER.

HIGHWAY CROSSING DEVICE FOR ELECTRIC RAILWAYS.

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947,612.

Patented Jan. 25, 1910.

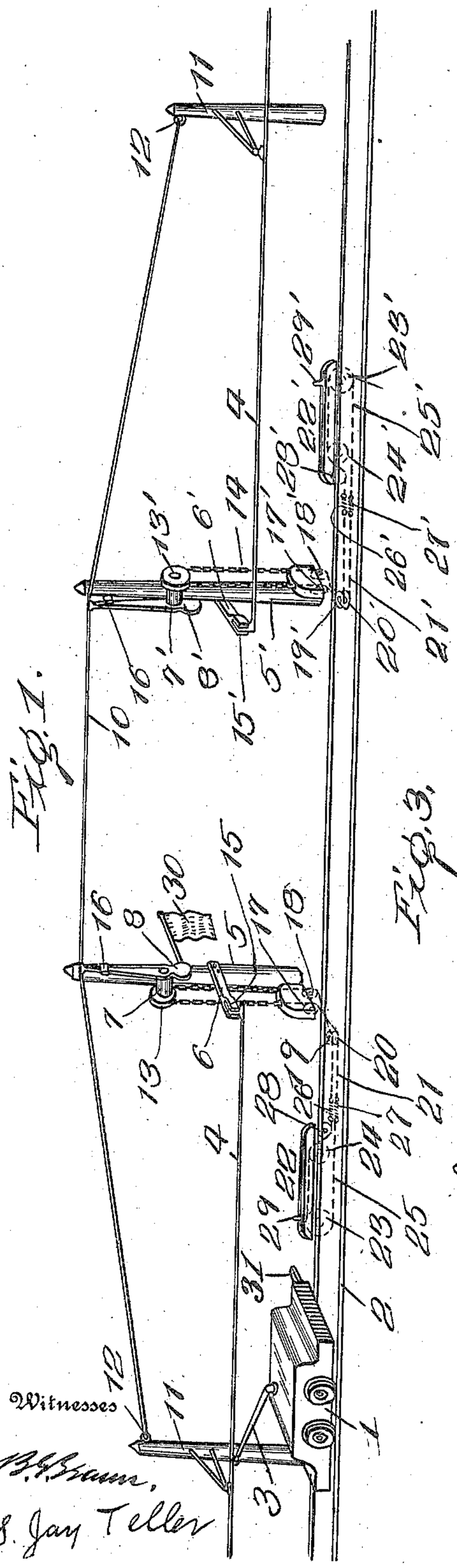

Fig. 1.

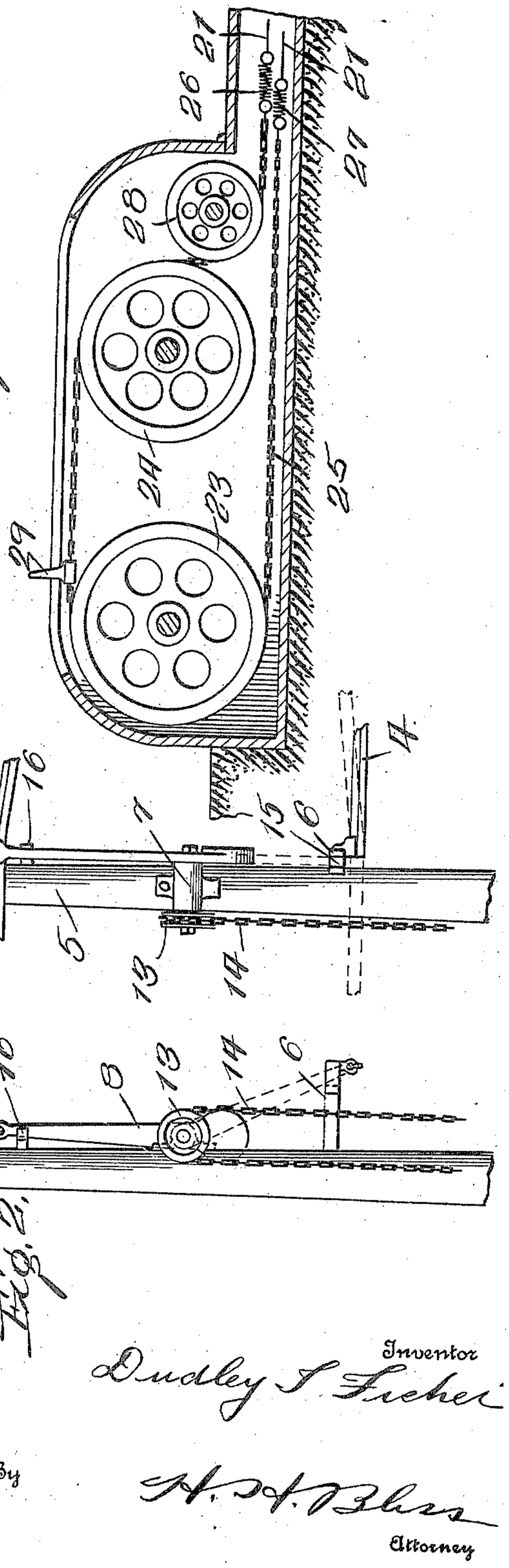

Fig. 4.

Fig. 3.

Fig. 2.

Witnesses

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HIGHWAY-CROSSING DEVICE FOR ELECTRIC RAILWAYS.

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To all whom it may concern:

Be it known that I, DUDLEY T. FISHER, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Highway-Crossing Devices for Electric Railways, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in highway crossing devices for electric railroads, having the trolley wire so low as to interfere with the passage of vehicles across the track.

The object of the invention is to provide a means whereby a section of the trolley wire is automatically raised after the passage of a locomotive to provide clearance for vehicles, and automatically lowered into operative position at the approach of a locomotive.

Figure 1 is a perspective view of a highway crossing device embodying my invention. Fig. 2 is a view of the upper part of one of the poles, looking longitudinally of the track. Fig. 3 is a side view of the pole shown in Fig. 2. Fig. 4 is a detail drawing showing the operating mechanism.

In the drawings 1 is a locomotive running along the track 2, receiving power through a trolley 3, and the trolley wire 4. The trolley wire, except at the highway crossing, is suspended from brackets attached to the poles 11, or in any usual or preferred manner.

At each side of the highway are poles 5—5′ having brackets 6—6′ to support the ends of the trolley wire 4. Journaled at 7—7′ are counter-balanced arms or semaphores 8—8′, to the ends of which is attached the trolley wire 10. The ends of this wire are secured to the next adjoining poles 11 by the eye-bolts 12. It is desirable that the eye-bolts 12 on the poles 11 exactly in line with the journals 7—7′ in order that the wire 10 may be held in uniform tension in all positions of its travel. The semaphores are provided with sheaves 13—13′ over which the chains 14 pass in such a manner that their movement tends to rotate the sheaves and with them the semaphores, causing the wire 10 to travel to a higher or lower position according to the direction of rotation. The forks 15—15′ on the brackets 6—6′ receive the semaphores 8—8′ and hold them in exact longitudinal position at the lower end of their travel while similar forks 16—16′, located at the upper part of the pole, hold them in place when at their uppermost position. Electrical connection is made through the wire 10 when in its lower or operative position through the forks 15—15′. The chains 14 pass downward and are guided over horizontally pivoted sheaves 17—17′ and 18—18′ to vertically pivoted sheaves 19—19′ and 20—20′. The ends of chains 14 are connected to wires 21—21′ which lead to operating mechanisms 22—22′ located beside the track at convenient distances from the highway crossing. These operating mechanisms consist of loosely mounted sheaves 23—23′ and 24—24′, chains 25—25′ passing over these sheaves and connected at their ends to the wires 21—21′ by the coil springs 26—26′ and 27—27′, and guide pulleys 28—28′. 29—29′ are spurs mounted upon the chains 25—25′ so that when the wire 10 is in its uppermost position, they will be immediately above the centers of the chains 23—23′.

The distance between the two sheaves of the operating mechanisms is such that the motion of the wire 10 and the semaphores 8—8′ from the uppermost to the lower or operative position will cause the spurs 29—29′ to move to positions immediately above the centers of the sheaves 24—24′.

31 is a projection conveniently located on the locomotive in such manner as to engage the spurs 29—29′ as the locomotive moves along the track.

Assuming the wire 10 to be in its uppermost position, as shown in Fig. 1, the operation of the device is as follows: As a locomotive approaches the crossing, the projection 31 engages the spur 29 and moves it forward causing the semaphore 8 to rotate and thereby bring the trolley wire 10 into alinement with the trolley wire 4, the arm being held against further rotation by the fork 15. The wire 10 carries with it in its downward motion the arm 8′ which engages the fork 15′. The spur 29′ is at the same time carried by the motion of the chain 25′ to a position over the sheave 24′. Electrical connection is made to the wire 10 by means of the forks 15—15′ thus permitting the locomotive to receive power while crossing the highway. When the locomotive has moved

the spur 29 to a position over the sheave 24, the coil spring 27 elongates and permits the spur 29 to move downwardly over the sheave 24 sufficiently to permit the projection 31 to pass. The contraction of the spring then restores the spur 29 to a position over the sheave 24.

When the locomotive has passed the crossing, the projection 31 engages the spur 29′ which is now in position over the sheave 24′ and moves it to a position over the sheave 23′, and thereby restores the arms 8—8′, the wire 10 and the spur 29 to their original positions. The elongation of the spring 26′ permits the projection 31 to pass, and its contraction restores the spur 29′ to position. The position of the whole device is now such that it is ready for operation at the approach of another locomotive from either direction. If desired, signaling devices may be connected to the semaphores to serve to passers along the highway as a warning of the approach of a locomotive. Such a signaling device is shown at 30. The wire 10 when in its upper position is preferably insulated from the main trolley wire 4, so that there will be no danger of shock to persons in vehicles passing along the highway. This insulation may be accomplished in any preferred manner as, for instance, by constructing the poles 11 and 5—5′ of wood or other non-conducting material.

What I claim is—

1. In an electric railway, the combination of a trolley wire having two sections, with a gap between, a movable member adapted to connect the ends of said sections, and serve as a part of the trolley wire, the said movable member being normally disconnected from the said sections and automatic means for bringing said movable member into or out of operative position, substantially as set forth.

2. In an electric railway, the combination of a trolley wire having two sections with a gap between, a connecting member adapted to bridge said gap and serve as a part of the trolley wire when in operative position, but normally out of operative position, and electrically insulated means for supporting said connecting member, adapted to bring it into or out of operative position, and means for automatically making electrical connection between the sections of said trolley wire and said connecting member, when the latter is in operative position, substantially as set forth.

3. In an electric railway, the combination of a trolley wire having two sections with a gap between, a connecting member adapted to bridge said gap, and means for supporting said connecting member and for lifting it in a horizontal position to give clearance, when not in operative position, substantially as set forth.

4. In an electric railway, the combination of a trolley wire having two sections with a gap between, a movable member adapted to form a connection across said gap, and pivoted arms supporting said movable member and adapted to carry it into or out of operative position, the said arms being mounted to swing in planes perpendicular to the trolley wire substantially as set forth.

5. In an electric railway, the combination of a trolley wire having two sections with a gap between, a connecting wire adapted to bridge said gap, horizontally pivoted arms supporting said connecting wire, and adapted to carry it into or out of operative position, and supporting means for the ends of said connecting wire, said supporting means being in line with the pivotal axes of the arms, substantially as set forth.

6. In an electric railway, the combination of a trolley wire having two sections with a gap between, a movable member adapted to form a connection across said gap, a supporting means for said movable member, adapted to bring it into operative position, and a stop or fork adapted to hold said movable member in alinement with the main trolley wire and secure it against longitudinal motion, substantially as set forth.

7. In an electric railway, the combination of an interrupted trolley wire forming a gap; a movable member adapted to form a connection across said gap, horizontally pivoted arms supporting said movable member, and adapted to swing it into operative position, stops for limiting the downward movement of said arms, said stops being adapted to form electrical connection between the movable member and the trolley wire, substantially as set forth.

8. In an electric railway crossing device, the combination of a trolley wire having a removable section, a locomotive, a device adapted to serve as a warning of the approach of a locomotive, and automatic means for bringing said removable section of trolley wire and said warning device into operative position at the approach of the locomotive and returning them to their inoperative positions at the departure of the locomotive, substantially as set forth.

9. In an electric railway crossing device, the combination of an interrupted trolley wire forming a gap, a movable member adapted to form a connection across said gap, horizontally pivoted arms adapted to support said movable member and to bring it into operative position, and a warning device mounted on said arms in such manner as to serve as a warning when the movable member is in operative position, substantially as set forth.

10. In an electric railway, the combination of an interrupted trolley wire forming a gap, a movable member adapted to form a connection across said gap, horizontally piv-

oted arms supporting said movable member, sheaves mounted upon said arms, and power transmitting members engaging with said sheaves and adapted to thereby rotate the arms to bring the said movable member into operative position, or to remove it therefrom, substantially as set forth.

11. In an electric railway, the combination of a trolley wire having two sections, brackets supporting the ends of said sections, poles supporting the brackets, a movable member, and supporting means for said movable member mounted upon said poles, and adapted to bring said movable member into position to form a connection between the ends of the sections of the trolley wire, or to remove it therefrom, substantially as set forth.

12. In an electrical railway, the combination of a trolley wire having two sections with a gap between, a movable member adapted to form a connection across said gap, a supporting mechanism for said movable member adapted to carry it into or out of operative position, a locomotive, an operating mechanism connected to the supporting mechanism and adapted to actuate it to bring the said movable member into or out of operative position, and means independent of the trolley mechanism by which the locomotive may engage the said operating mechanism, substantially as set forth.

13. In an electric railway, the combination of a trolley wire in two sections with a gap between, a connecting member adapted to bridge said gap, a supporting and operating mechanism for said connecting member, and a locomotive provided with means independent of the trolley mechanism adapted to engage said mechanism to bring the connecting member into operative position or remove it therefrom, substantially as set forth.

14. In an electric railway, the combination of a trolley wire, having two sections with a gap between, a movable member adapted to connect the ends of said sections, a guiding mechanism adapted to guide said movable member into or out of operative position, an operating mechanism at a distance from said guiding mechanism, a locomotive provided with means independent of the trolley mechanism adapted to engage and actuate said operating mechanism, and connecting means between said guiding mechanism and said operating mechanism, adapted to bring the movable member into operative position at the approach of the locomotive, substantially as set forth.

15. In an electric railway, the combination of a trolley wire in two sections with a gap between, a movable member adapted to connect the ends of said sections, a guiding mechanism adapted to guide said movable member into or out of operative position, a locomotive, an operating mechanism adapted to be engaged by the locomotive and to so actuate said guiding mechanism as to positively bring the movable member into operative position at the approach of the locomotive and to positively remove it therefrom at the departure of the locomotive, substantially as set forth.

16. In an electric railway, the combination of a trolley wire having two sections with a gap between, a movable member adapted to connect the ends of the said sections, a supporting and guiding mechanism adapted to bring said movable member into or out of operative position, a locomotive, an operating mechanism connected to said supporting and guiding mechanism, and adapted to engage said locomotive as it approaches and thereby so actuate the said supporting and guiding mechanism as to carry the said movable member into operative position, and a second operating mechanism connected to said supporting and guiding mechanism and adapted to engage said locomotive as it leaves and to thereby so actuate the said supporting and guiding mechanism as to carry said movable member out of operative position, substantially as set forth.

17. In an electric railway, the combination of a trolley wire having two sections with a gap between, a movable member adapted to connect the ends of the said sections, an operating mechanism adapted to bring said movable member into operative position or to remove it therefrom, a locomotive, a device attached to one part of the operating mechanism and adapted to engage the locomotive as it approaches and thereby to actuate the operating mechanism as to bring the said movable member into operative position, a second device so attached to another part of the operating mechanism that the movement of the mechanism to bring the movable member into operative position will bring the said second device into position to engage the locomotive as it departs and by each engagement so actuate the operating mechanism as to bring the movable member out of operative position and at the same time bring the first device into its original position, substantially as set forth.

18. In an electric railway, the combination of a trolley wire in two sections with a gap between, a movable member adapted to form a connection between the ends of the said sections, a supporting and operating mechanism adapted to bring said connecting member into operative position or to remove it therefrom, a locomotive having a projection adapted to engage said operating mechanism and thereby bring the movable member into operative position as the locomotive approaches and to again engage

said operating mechanism and thereby bring the movable member out of operative position as the locomotive departs, substantially as set forth.

19. In an electric railway, the combination of a trolley wire having a removable section, an operating mechanism for said removable section, a locomotive, and means whereby the locomotive may engage said operating mechanism, said engaging means having a yieldable element to allow the disengagement of the locomotive and operating mechanism when the motion of the latter shall have been completed, substantially as set forth.

20. In an electric railway, the combination of a trolley wire having two sections with a gap between, a movable member adapted to form a connection between the ends of the said sections, a horizontally pivoted arm supporting said movable member, a sheave mounted upon said arm, a flexible longitudinally extended member passing over said sheave, and adapted to rotate it, guide pulleys and loosely mounted sheaves over which the said longitudinally extended member passes, a spur mounted upon said longitudinally extended member, and a locomotive adapted to engage said spur and thereby so actuate the longitudinally extended member as to cause the motion of the horizontally pivoted arms and of the removable section of the trolley wire, substantially as set forth.

21. In an electric railway, the combination of a trolley wire having a removable section, a supporting and operating mechanism for said removable section, a flexible longitudinally extended members adapted to engage said supporting and operating mechanism to bring the said removable section into or out of operative position, a locomotive provided with means independent of the trolley mechanism adapted to engage said longitudinally extended member, and so actuate it as to bring the movable section into or out of operative position, substantially as set forth.

22. In an electric railway, the combination of a trolley wire having a removable section, a supporting and operating mechanism for the said removable section, and means whereby a locomotive approaching from either direction may engage the said supporting and operating mechanism to bring the removable section into operative position, substantially as set forth.

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

DUDLEY T. FISHER.

Witnesses:
E. P. SNIVELY,
G. B. NORRIS.