

I. WOLPER.
 AUXILIARY PILOT FOR RAILROAD TRAINS.
 APPLICATION FILED JAN. 30, 1911.

1,014,552.

Patented Jan. 9, 1912.

3 SHEETS—SHEET 1.

Fig. 1.

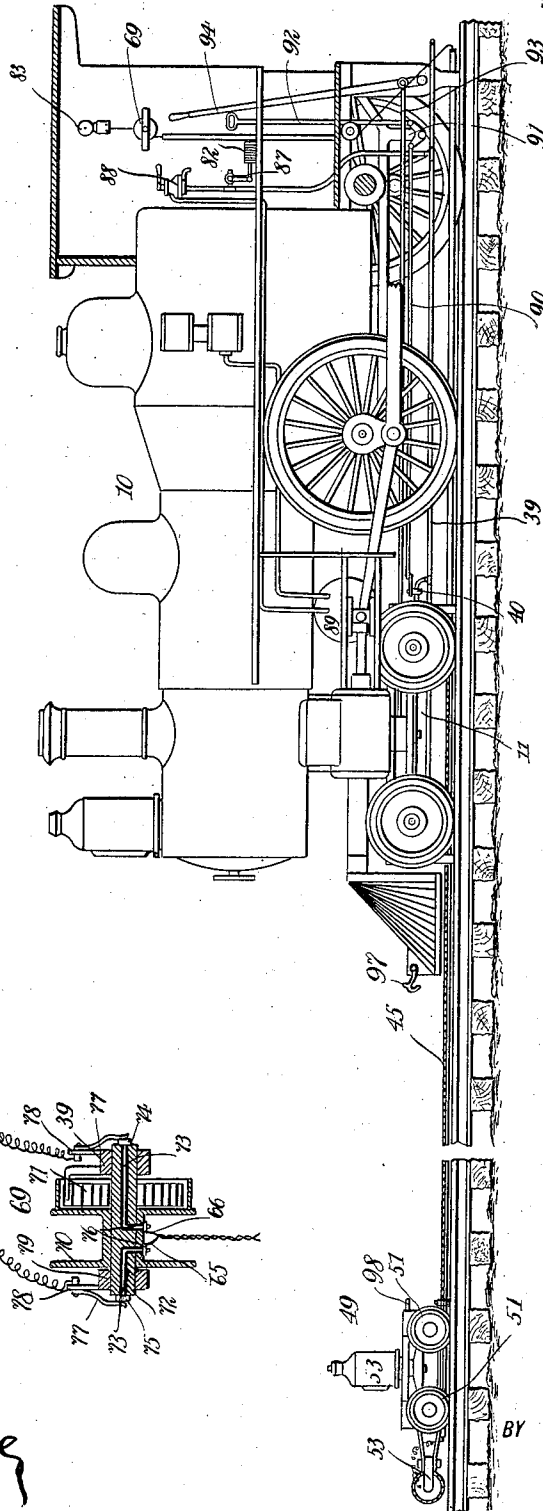
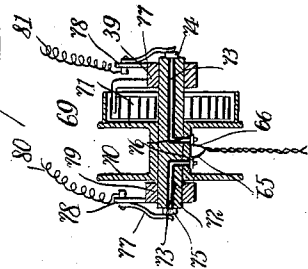


Fig. 2.

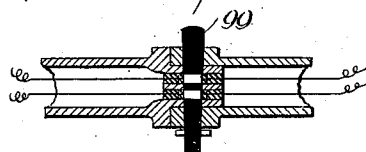
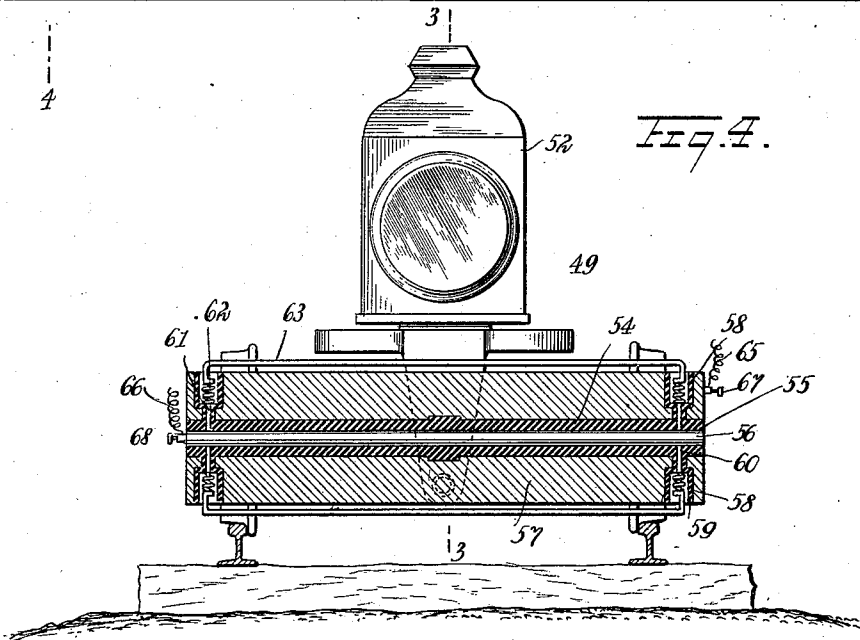
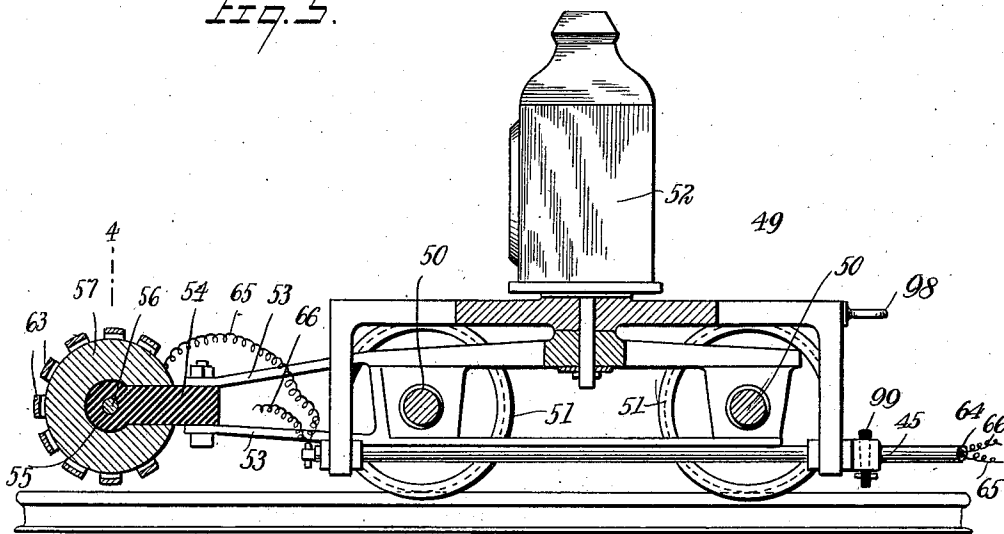


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3 SHEETS--SHEET 2.



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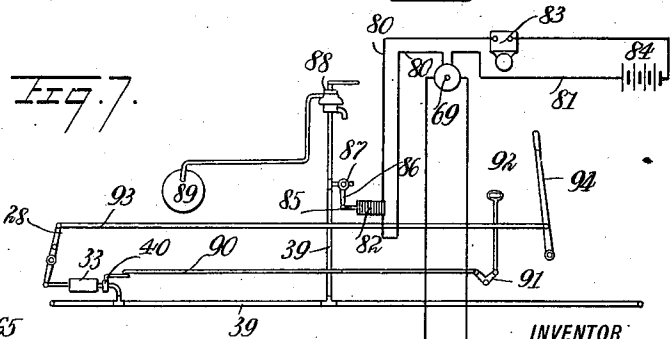
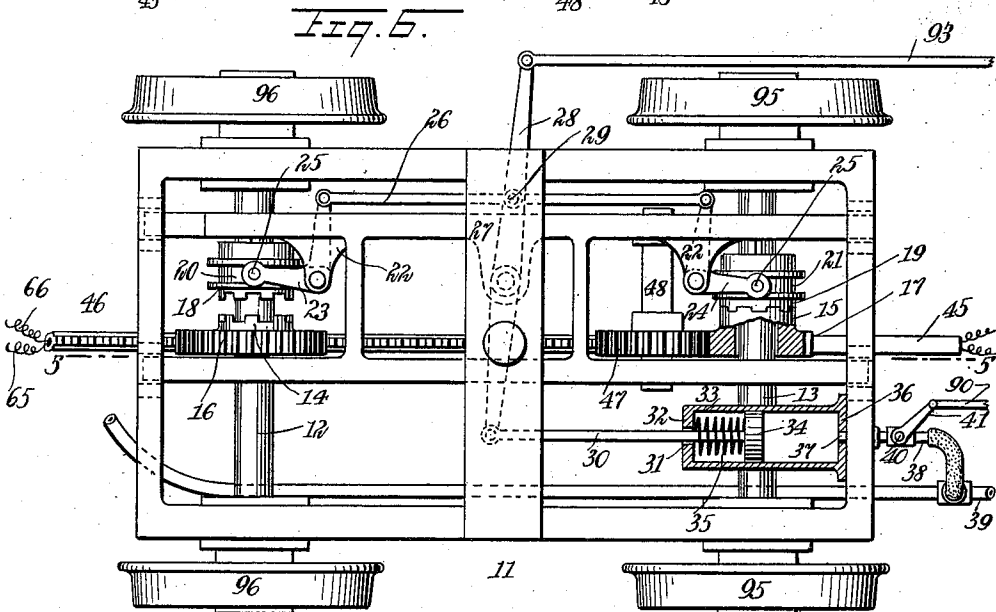
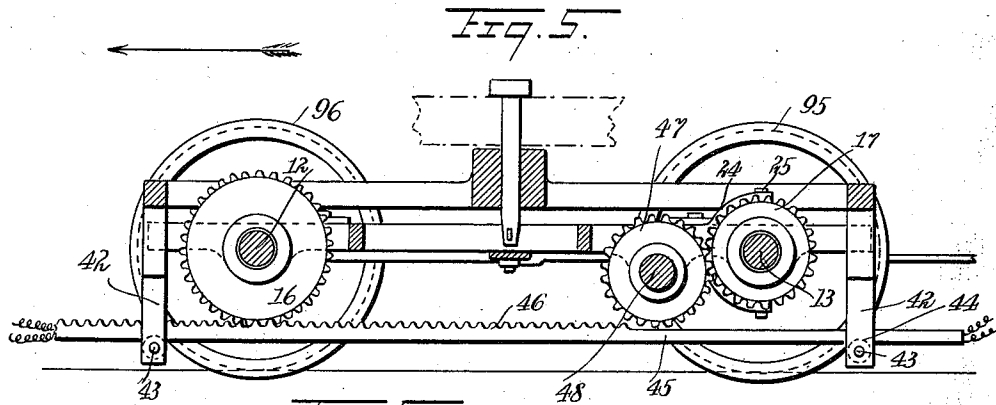
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3 SHEETS—SHEET 3.



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AUXILIARY PILOT FOR RAILROAD-TRAINS.

1,014,552.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ISAAC WOLPER, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Auxiliary Pilot for Railroad-Trains, of which the following is a full, clear, and exact description.

My invention relates to devices for sounding an alarm in the cab of a locomotive when there is an obstruction on the track, and it has for its object to provide means adapted to close an electric circuit on the contact of an auxiliary pilot truck with an obstruction on the track, the electric circuit being adapted to energize a solenoid for opening a valve in the train pipe, and also for ringing a bell in the cab of the locomotive.

Other objects of the invention are to provide means for extending the auxiliary pilot truck a distance in front of the locomotive when the pressure in the train pipe is normal, and for drawing the auxiliary pilot truck in the direction of the locomotive when the pressure in the train pipe has been reduced to operate the brakes, and to provide means for controlling by hand the said means for moving the auxiliary truck relatively to the locomotive.

Additional objects of the invention will appear in the following complete description, in which the preferred form of my invention is disclosed.

In the drawings similar characters of reference denote corresponding parts in all the views, in which—

Figure 1 is a side elevation of a locomotive provided with my device; Fig. 2 is a fragmentary sectional view showing the reel with its electrical connections, on which the wire extending from the rack member is wound; Fig. 3 is a sectional side elevation of the auxiliary pilot truck; Fig. 4 is a sectional view on the line 4—4 of Fig. 3; Fig. 5 is a sectional view on the line 5—5 of Fig. 6; Fig. 6 is a plan view of Fig. 5 with portions broken away to show the construction of the parts; Fig. 7 is a diagrammatic view showing the electrical connections and the members associated therewith; and Fig. 8 is a fragmentary sectional view showing the method of connecting the rack member with auxiliary truck.

By referring to the drawings it will be

seen that the locomotive 10 is provided with a truck 11 having two axles 12 and 13, on which are mounted clutch members 14 and 15, there being gear wheels 16 and 17 integral with the clutch members 14 and 15 respectively. The said clutch members 14 and 15 with the said gear wheels are mounted so that they may rotate relatively to the axles. Additional clutch members 18 and 19 are provided, having annular grooves 20 and 21 respectively. These clutch members 18 and 19 are keyed to the axles 12 and 13, and are adapted to slide thereon so that they may be moved into or out of engagement with the clutch members 14 and 15. Pivoted to brackets 22 secured to the frame of the truck 11 there are bell crank levers 23 and 24, to one set of arms of which are secured pins 25, which are disposed in the annular grooves 20 and 21. The other arms of the bell crank levers 23 and 24 are connected by a link 26. Fulcrumed to a bracket 27 on the frame of the truck 11 there is a lever 28, the link 26 being articulated to one arm of the lever 28 at 29. To the other arm of the lever 28 there is articulated a piston rod 30, which projects through an opening 31 in the head 32 of the cylinder 33, mounted on the truck 11. This piston rod 30 is secured to a piston 34, a spring 35 being wound around the piston rod 30 between the piston 34 and the head 32. The other head 36 of the cylinder 33 has an opening 37 which connects with the conduit 38, leading to the train pipe 39, the conduit 38 being commanded by a valve 40, having an arm 41.

Two sets of depending members 42 are secured to the truck 11, each set of the depending members 42 being connected by a stud 43, on which are mounted rollers 44. On these rollers 44 is disposed a rack member 45, having upwardly disposed teeth 46. These rack teeth 46 are adapted to be engaged by the gear wheel 16. The gear wheel 17 meshes with the gear wheel 47 mounted on a shaft 48 journaled in bearings in the truck 11. The gear wheel 47 is adapted to engage the teeth 46 of the rack member 45. The forward terminal of the rack member 45 is secured to the auxiliary pilot truck 49, which has axles 50 on which are mounted wheels 51. A headlight 52 is mounted on the auxiliary pilot truck 49. At the front of the auxiliary pilot truck 49 there are projecting brackets 53, to which are secured an insulated member 54 having a

transverse opening 55 in which is disposed a conductor member 56. Around the forward portion of the insulated member 54 there is disposed a conductor member 57 having radially disposed openings 58, which are provided with insulated linings 59. The openings 58 connect with the radially disposed openings 60 in the insulated member 54. Disposed in the openings 58 and 60 there are conductor members 61 having spring portions 62, as shown in Fig. 4 of the drawings, the openings 58 and 60 being made in close proximity to the ends of the insulated member 54 and the conductor member 57, the conductor members 61 at one side of the conductor member 57 being connected with the conductor members 61 at the opposite side by the conductor links 63. There is an orifice 64 extending longitudinally through the rack member 45, and in this orifice 64 are disposed wires 65 and 66, these wires 65 and 66 projecting through the forward end of the rack member 45, the wire 65 being connected with a binding post 67 on the conductor member 57, and the wire 66 being connected with the binding post 68 at one end of the conductor member 56. The wires 65 and 66 project from the rear of the rack member 45, and are led to the reel 69. This reel 69 has a drum 70 on which the wires 65 and 66 are adapted to be wound, the reel being provided with a spring 71 for rotating the drum 70. The hub 72 of the reel 69 has two insulated conductors 73 one communicating with the contact point 74 at one side of the reel, the other communicating with the contact point 75 at the other side. The insulated conductors 73 lead to contact plates 76 on the drum 70 of the reel, to which the wires 65 and 66 are secured. The contact points 74 and 75 are engaged by spring contact members 77 mounted on brackets 78 secured to the bearings 79 of the reel 69. The wire 80 secured to the spring contact member 77 leads to the solenoid 82 and thence to a bell 83, and from thence to the battery 84, the wire 81 secured to the spring contact member 77 leading to the said battery 84. The solenoid 82 is provided with an armature 85 to which an arm 86 is articulated, this arm 86 being connected with the valve 87 which is in communication with the train pipe 39. The engineer's brake valve is shown at 88, and the reservoir tank on the locomotive is shown at 89. To the arm 41 of the valve 40 there is articulated a link 90, this link 90 being articulated to a bell crank lever 91, which in turn is articulated to a hand bar 92, by which the valve 40 may be readily opened or closed by the engineer. To the lever 28 there is articulated a link 93, which is commanded by a lever 94 in the cab of the locomotive.

In using the invention the rack member 45 will be projected forwardly with the auxiliary pilot truck 49 when the locomotive is driven, and the clutch member 19 is drawn into engagement with the clutch member 15, for when the clutch member 19 is in this position the clutch member 15 will be rotated by the rotation of the axle 13, to which the wheels 95 are secured. As the clutch member 15 rotates it will rotate the gear wheel 17 which in turn will rotate the gear wheel 47, the teeth of the gear wheel 47 engaging the teeth 46 of the rack member 45 to project it forwardly. When the rack member 45 has been projected forwardly a predetermined distance, the continued rotation of the gear wheel 47 will merely hold it in this relative position, since the teeth 46 are not continued to the rear terminal of the rack member 45. When the auxiliary pilot truck 49 reaches an obstruction on the track the conductor links 63 by contacting therewith will be driven against the contact member 57, which will close the circuit previously described, and will ring the bell 83 in the cab of the locomotive, and also open the valve 87 by means of the solenoid 82. When the valve 87 is opened the pressure in the train pipe 39 is reduced which will apply the brakes in a well-known manner. The reduction of the pressure in the train pipe 39 will also permit the spring 35 to press the piston 34 to the right, thereby operating the lever 28, so that the clutch member 19 will be moved out of engagement with the clutch member 15, and the clutch member 18 will be moved into engagement with the clutch member 14. When the clutch member 18 engages the clutch member 14, the axle 12 which rotates with the wheels 96 will cause the gear wheel 16 to rotate, and as this gear wheel 16 engages the teeth 46 of the rack member 45, the said rack member 45 will be drawn rearwardly relatively to the locomotive.

It will be understood that the reel 69 will at all times take up any slack of the wires 65 and 66 which may be occasioned by the movement of the rack member 45 relatively to the locomotive. By means of the lever 94 and the link 93 the lever 28 may be moved as may be desired without reference to the pressure in the train pipe, and as has been described, this lever 28 will, by the link 26, the bell crank levers and the clutch members, connect the rack member 45 so that it will be projected forwardly in front of the locomotive or it will be withdrawn at the will of the engineer. The rack teeth 46 do not extend to the auxiliary pilot truck 49, and when the rack member 45 is drawn rearwardly relatively to the locomotive the gear wheel 16 will be moved out of engagement with the rack teeth 46. By means of the hand bar 92, the bell crank lever 91 and the link 90, communication

may be cut off between the cylinder 33 and the train pipe 39 at the will of the engineer.

It will be understood that when the lever 94 is in a vertical position by the means described it will hold both clutch members 18 and 19 out of engagement with the clutch members 14 and 15 and that when it is moved in one direction it will move the clutch member 18 into engagement with the clutch member 14, while when it is moved in the opposite direction it will move the clutch member 19 into engagement with the clutch member 15.

A hook 97 is secured to the locomotive and is adapted to engage an eye 98 on the auxiliary pilot truck 49 for holding the auxiliary pilot truck 49 close to the locomotive. The auxiliary pilot truck may be disengaged from the rack member 45 by removing the pin 99 which connects the auxiliary pilot truck with the rack member and completes the electrical connection.

Having thus described my invention, I claim as new and desire to secure by Letters Patent the following:

1. In an auxiliary pilot truck a frame, an insulator having an opening and a second opening at an angle thereto, extending to the first-mentioned opening, secured to the frame, a conductor disposed in the first-mentioned opening, a second conductor having an opening in which the insulator is disposed, and a second opening which communicates with the second-mentioned opening in the insulator, an insulated lining for the second-mentioned opening in the second conductor, a spring contact member having a terminal extending through the second-mentioned opening in the second-mentioned conductor, and the second-mentioned opening in the insulator, and in electrical connection with the first-mentioned conductor, the contact member being adapted to engage the second conductor.

2. In an auxiliary pilot truck a frame, an insulator having a transverse opening and radially disposed openings extending thereto, a conductor disposed in the first-mentioned opening, a second conductor having an opening in which the insulator is disposed and radially disposed openings which communicate with the radially disposed openings in the insulator, an insulated lining for the radially disposed opening in the second conductor, a spring contact member having two terminals extending through the radially disposed openings in the second-mentioned conductor, and the radially disposed openings in the insulator, and in electrical communication with the first-mentioned conductor, the spring contact member being adapted to engage the second-mentioned conductor.

3. A truck, two insulated contact members normally spaced apart mounted on the

front of the truck and projecting forwardly therefrom in position to be engaged by an obstruction, one of the contact members being adapted to engage the other contact member, means for propelling the truck, means commanding the first-mentioned means, an armature for controlling the second-mentioned means, and a solenoid commanding the armature having electrical connection with the contact member.

4. In an auxiliary pilot truck a frame, an insulator having an opening and a second opening at an angle thereto, extending to the first-mentioned opening, secured to the frame, a conductor disposed in the first-mentioned opening, a second conductor having an opening in which the insulator is disposed, and a second opening in which communicates with the second-mentioned opening in the insulator, an insulated lining for the second-mentioned opening in the second conductor, a spring contact member having a terminal extending through the second-mentioned opening in the second-mentioned conductor, and the second-mentioned opening in the insulator, and in electrical connection with the first-mentioned conductor, the contact member being adapted to engage the second conductor, a truck on which the frame is mounted, a rod having rack teeth secured to the truck, a gear wheel engaging the rack teeth for advancing the truck relatively thereto, means for rotating the gear wheel, means for controlling the last-mentioned means, and an electric circuit connected with the said two conductors having means for commanding the means for controlling the gear wheel.

5. A truck, a rod having rack teeth secured thereto, a gear wheel engaging the rack teeth for advancing the truck relatively to the gear wheel, a clutch member secured to the gear wheel, a companion clutch member for engaging the first-mentioned clutch member, a cylinder adapted to be connected with the train pipe of the train, a piston in the cylinder, a piston rod secured to the piston, and means for connecting the piston rod with the second mentioned clutch member for operating the latter.

6. A truck, a rod having rack teeth secured thereto, a gear wheel engaging the rack teeth for advancing the truck relatively to the gear wheel, a clutch member secured to the gear wheel, a companion clutch member for engaging the first-mentioned clutch member, a cylinder adapted to be connected with the train pipe of the train, a piston in the cylinder, a piston rod secured to the piston, and means for connecting the piston rod with the second-mentioned clutch member for operating the latter, two insulated contact members on the truck, one adapted to contact with the other, a battery, a sole-

noid, a circuit connecting the contact members with the battery, and the solenoid, and a valve adapted to be connected with the train pipe commanded by the solenoid.

5 7. A truck, two insulated contact members normally spaced apart mounted on the front of the truck and projecting forwardly therefrom, one of the contact members being adapted to engage the other, a locomotive
10 having a train pipe, a valve commanding the train pipe, an armature for controlling the valve, and a solenoid for commanding the armature having electrical connection with the contact members.

15 8. A main truck, an auxiliary truck movable relatively to the main truck, two contact members insulated from each other normally spaced apart mounted on the auxiliary truck, one of the contact members being
20 adapted to engage the other, means for propelling the auxiliary truck relatively to the main truck, and electrical means for controlling the said means, having electrical connection with the contact members.

25 9. A truck, a rod having rack teeth secured thereto, a gear wheel for engaging the rack teeth for advancing the truck relatively to the gear wheel, a clutch member secured to the gear wheel, a companion clutch member for engaging the first-mentioned clutch
30 member, means for operating the second-mentioned clutch member, two contact members insulated from each other, normally spaced apart, mounted on the truck, one of the contact members being adapted to engage the other contact member, and electrical means for electrical connection with the contact members for controlling the said operating means.

40 10. In combination with a locomotive having a truck, with axles, an auxiliary truck normally disposed in front of the locomotive, a rearwardly extending member secured to the auxiliary truck, a clutch member mounted to rotate on one of the axles of the locomotive, means connecting the clutch member with the rearwardly extending member for advancing the rearwardly extending member by the rotation of the
45 clutch member on the axle, a second clutch member keyed to the last-mentioned axle, and adapted to engage the first-mentioned clutch member, a lever on the locomotive, and means by which the lever is adapted to
50 operate the clutch.

55 11. In combination with a locomotive having a train pipe and a truck with axles, an auxiliary truck normally disposed in front of the locomotive, rearwardly extending
60 members secured to the auxiliary truck, a clutch member mounted to rotate on one of the axles in the locomotive, means connecting the clutch member with the rearwardly extending member for advancing the rear-
65 wardly extending member by the rotation of

the clutch member on the axle, a second clutch member keyed to the last-mentioned axle and adapted to engage the first-mentioned clutch member, a cylinder connected with the train pipe, a piston in the cylinder, and means by which the piston is adapted to operate the second-mentioned clutch member.

12. In combination with a locomotive having a truck with two axles, an auxiliary
75 truck normally disposed in front of the locomotive, a rearwardly extending member secured to the auxiliary truck, clutch members adapted to rotate on the axles respectively, means adapted to be actuated by one of the clutch members for moving the rearwardly extending member in one direction, means adapted to be actuated by the other clutch member for moving the rearwardly extending member in the opposite direc-
80 tion, additional clutch members mounted to rotate with the axles and movable relatively to the first-mentioned clutch members, and means for moving one of the said additional clutch members into engagement with one of the first-mentioned clutch members as the other additional clutch member is moved out of engagement with the other of the first-mentioned clutch members.

13. In combination with a locomotive hav-
95 ing a train pipe and a truck with two axles, an auxiliary truck normally disposed in front of the locomotive, a rearwardly extending member secured to the auxiliary truck, clutch members adapted to rotate on the axles respectively, means adapted to be actuated by one of the clutch members for moving the rearwardly extending member in the opposite direction, additional clutch members mounted to rotate with the axles
100 and movable relatively to the first-mentioned clutch members, means for moving one of the said additional clutch members into engagement with one of the first-mentioned clutch members as the other additional
105 clutch member is moved out of engagement with the other of the first-mentioned clutch members, and means adapted to be actuated by a variation of the pressure in the train pipe for moving the last-mentioned means.

14. A truck, a rearwardly extending member secured to the truck, two insulated contact members on the truck, spaced from each other, a wire carried by the rearwardly extending member, a reel having a contact
120 member to which the wire is secured, a battery, a solenoid adapted to command a train pipe valve, an electric circuit connecting the contact member on the reel, the contact members on the truck, the wire, the battery and
125 the solenoid.

15. A truck, a rearwardly extending member secured to the truck, two insulated contact members on the truck, spaced from each other, a wire carried by the rearwardly ex-
130

tending member, a reel having a contact member to which the wire is secured, a battery, a solenoid adapted to command a train pipe valve, an electric circuit connecting the contact member on the reel, the contact members on the truck, the wire, the battery and the solenoid, a rotary member engaging the rearwardly extending member for moving the rearwardly extending member relatively thereto, and means adapted to be connected with the train pipe and operable by a variation of pressure therein for commanding the rotary member.

16. A truck, a rearwardly extending member secured to the truck, two insulated contact members on the truck, spaced from each other, two bars carried by the rearwardly extending member, and connected with the contact members respectively, a reel having a drum with two contact plates to which the wires are secured respectively, electrical communicating means leading to the plates, stationary contact members engaging the electrical communicating means, a battery, a solenoid adapted to command a train pipe valve, and an electric circuit connecting the stationary contact members with the battery and the solenoid.

17. A truck, a rod having rack teeth secured thereto, a gear wheel engaging the

rack teeth for advancing the truck, relatively thereto, a clutch member connected with the gear wheel for operating the same, a companion clutch member for engaging the first-mentioned clutch member, and means connected with the truck for operating the second-mentioned clutch member.

18. A truck, a contact member secured to the front of the truck, a second, transversely disposed, contact member disposed in front of the first-mentioned contact member, in position to be engaged by an obstruction, the second-mentioned contact member being normally spaced from the first-mentioned contact member and being adapted to engage the first-mentioned contact member, means for propelling the truck, means commanding the first-mentioned means, an armature for controlling the second-mentioned means, and a solenoid commanding the armature having electrical connection with the contact members.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ISAAC WOLPER.

Witnesses:

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PHILIP D. ROLLHAUS.