March 17, 1942. J. L. BONANNO 2,276,645

TOY RAILROAD

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Fig. 1.

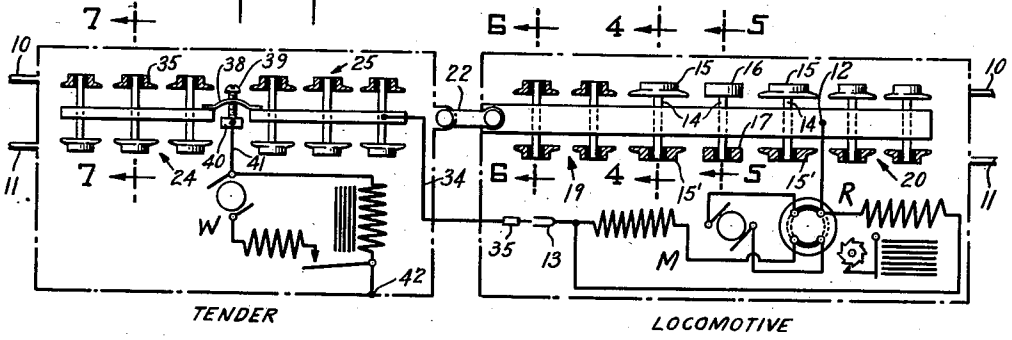


Fig. 2.

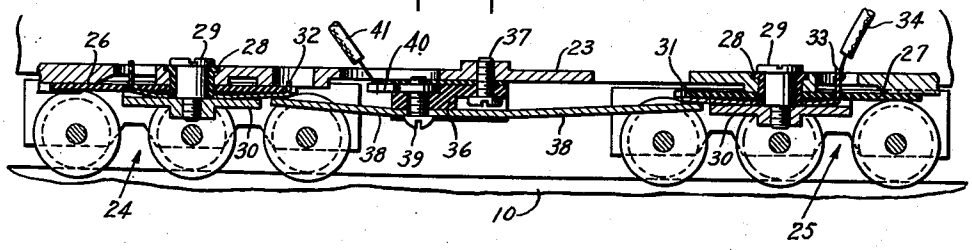
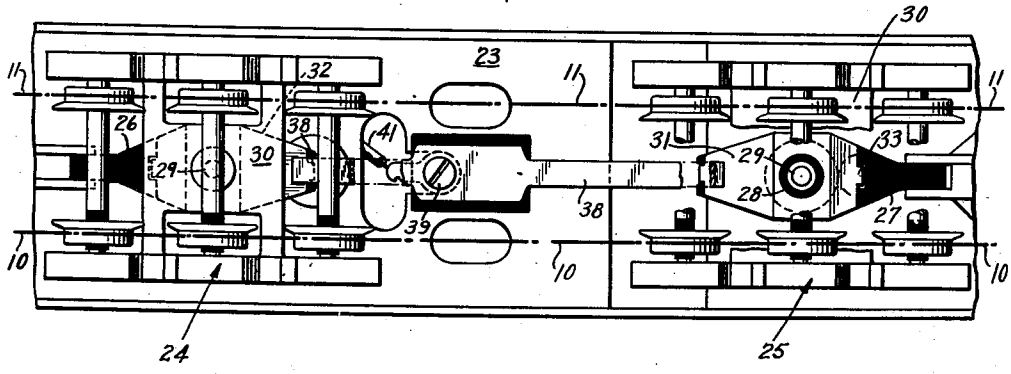


Fig. 3.



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Fig. 4.

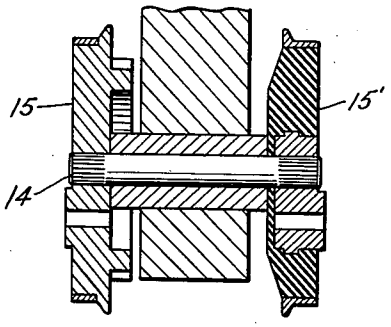


Fig. 5.

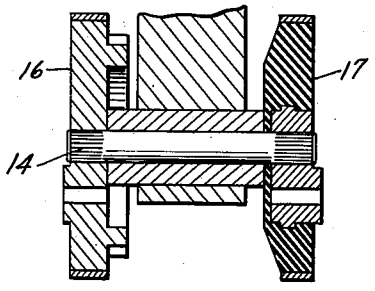


Fig. 6.

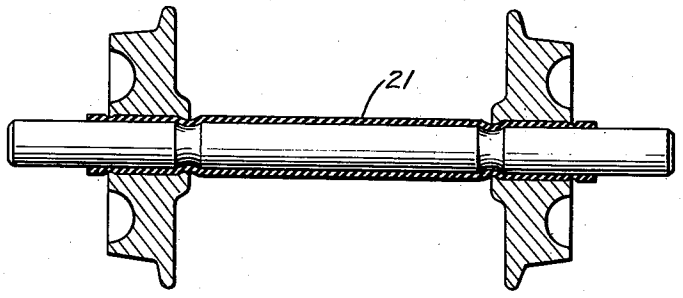
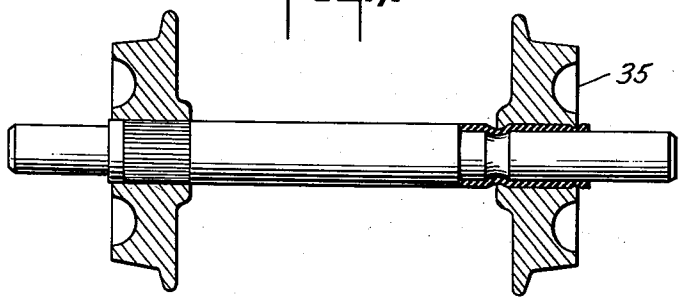


Fig. 7.



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TOY RAILROAD

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Application October 14, 1940, Serial No. 361,058

4 Claims. (Cl. 191—2)

The present invention relates to toy railroads, and is more particularly directed toward toy railroads wherein current from two insulated wheel bearing rails is employed for train operation.

The present invention contemplates a toy railroad having the two insulated wheel bearing rails and wherein two vehicles, such as locomotive and tender, are designed cooperatively so that apparatus carried by one of these vehicles connected to one of the rails is connectible to the other rail through the other vehicle.

According to the present invention the locomotive has all the wheels which cooperate with one of the track rails insulated and at least some of the wheels (preferably the drivers) which cooperate with the other rail act as collector shoes to carry current to the frame of the locomotive. The frame of the locomotive is connected to current consuming devices, such as propulsion motor, and this propulsion motor is connected through a jumper to the wheel bearing rails on the opposite side of the tender which act as shoes to conduct current to the other rail.

The invention also contemplates that the tender may carry an additional current consuming device, such as a whistle, and that this whistle will have one side permanently grounded to the frame of the vehicle and the other side connected to the running gear of the tender. The frames of the tender and locomotive are conductively coupled usually by a drawbar, and it is thus possible for the circuit of the current consuming device carried on one vehicle to be completed through wheels forming part of the other vehicle.

The accompanying drawings show, for purposes of illustrating the present invention, one of the many embodiments in which the invention may take form, it being understood that the drawings are illustrative of the invention rather than limiting the same.

In these drawings:

Figure 1 is a diagrammatic top plan view illustrating a locomotive and tender with associated current consuming devices;

Figure 2 is a longitudinal sectional view through the bottom of the frame and the trucks and associated parts of a tender;

Figure 3 is an inverted plan view of the tender; and

Figures 4 to 7, inclusive, are cross sectional views on the correspondingly numbered lines of Figure 1.

In the drawings two track rails indicated at 10 and 11 are insulated from one another and form parts of a track layout. This may be either of the 2-rail or of the all insulated, 3-rail type, but, if of the 3-rail type, the third or central rail will be inactive.

The locomotive carries a conventional propulsion motor M and reverser R. One terminal of the motor-reverser circuit is connected as indicated at 12 to the frame of the locomotive. The other terminal of the motor-reverser circuit goes to an insulated receptacle 13 which may conveniently be mounted in the cab. The propulsion motor M is mechanically connected to axles 14 carrying driving wheels 15, indicated on the upper side of the figure as grounded to the frame and opposite driving wheels 15' insulated from the axles, as indicated in Figure 4. The locomotive also has unflanged driving wheels 16 and 17, the latter being insulated from the axle, as indicated in Figure 5, and has pilot trucks 19 and 20, all of whose wheels on the lower side of Figure 1 are insulated from the axles. This insulation is indicated at 21 in Figure 6.

It will thus be seen that the current consuming devices carried by the locomotive are permanently connected to one side of the circuit through the collector shoes in the form of wheels, as indicated in the upper side of Figure 1, and that these current consuming devices can only be energized by completing the circuit from the receptacle 13.

The locomotive is connected through a metallic drawbar 22 with the tender so that the body of the tender is at the same potential as the body of the locomotive. The body of the tender is indicated more in detail at 23 in Figure 2. The tender has two 3-wheeled trucks, indicated at 24 and 25. These trucks are insulated from the body of the tender by insulating plates indicated at 26, 27 and insulating rings 28, 28. They are swivelly connected with the tender frame by studs indicated at 29. These studs are firmly secured to the frames 30, 30 of the trucks.

Interposed between the frames 30, 30 of the trucks and the insulating plates 26, 27 are conducting plates 31 and 32. The plate 31 has a soldered lug 33 connected to a wire 34 which extends from the tender across toward the locomotive and has a pin 35 to cooperate with the receptacle 13. In this way the truck 25, which has been insulated from the truck body, and which has insulated wheels 35 on one side as indicated more clearly in Figure 7, may act as a collector shoe in cooperation with the lower rail 11 and the circuit is completed from the propulsion motor M to the rail 11.

An insulator 36 is secured to the central part

of the tender body by a screw 37, and this insulator carries a jumper 38 whose right-hand end bears on the conducting plate 31 above the truck 25 and whose left-hand end bears on the conducting plate 32 above the truck 24. This connects the two trucks so that all the wheels on the lower side of the tender, as illustrated in Figure 1, becomes collector shoes. The screw 39 by which the jumper 38 is secured in place couples the jumper to a soldering lug 40 for a wire 41. This wire is connected to the circuit for a whistle motor and controller indicated generally at W, the other side of which is grounded as indicated at 42 to the frame of the tender. The circuit for the whistle motor is completed through the drawbar 22, the frame and uninsulated running gear of the locomotive.

In the arrangement above described it is possible to complete the assembly of the entire locomotive with propulsion motor and reversing controller and to complete the tender with the whistle, motor and accessories and when they are coupled together by the drawbar and jumper, all the usual operations of the locomotive and whistle may be had by controls of the same type which are used with the more usual 3-rail type of toy railroad. Furthermore the same equipment may be used with 3-rail toy railroad track layouts of the type in which the wheel bearing rails are insulated from one another, as, for example, with track sections in which the wheel bearing rails are carried in molded insulating bodies.

The arrangement shown makes it possible to place practically the entire weight of the locomotive on the drivers so that most efficient traction is secured and current collected from one wheel bearing rail, and at the same time avoid splitting the axles. Here the axles are solid and power is transmitted to the drivers in the usual way. The pilot trucks are not suitable for use as current collectors as they do not make good contact. The tender which carries the whistle as usual is heavy and makes good contact through all the wheels on one side.

It will, of course, be obvious that the connections may be rearranged so that the locomotive motor circuit could be completed through the drawbar and the tender circuit through the plug and receptacle.

It is obvious that the invention may be embodied in many forms and constructions within the scope of the claims and I wish it to be understood that the particular form shown is but one of the many forms. Various modifications and changes being possible, I do not otherwise limit myself in any way with respect thereto.

What is claimed is:

1. In a toy railroad, a track layout having two wheel bearing, current conducting rails of opposite polarity, a locomotive and a tender each having trucks provided with metal axles and wheels to fit said rails, all the wheels on one side of the locomotive being insulated from the axles and from the opposite wheels thereof so that said opposite wheels may be used as current collectors from a rail of one polarity, all the wheels on the tender which contact said rail being insulated from the axles and from the wheels opposite them so that said latter mentioned opposite wheels may act as current collectors for the rail of the other polarity, a propulsion motor carried by the locomotive and directly connected to the axles and to the current collecting wheels thereof, and a jumper connected from the opposite side of the propulsion motor to the axles and current collecting wheels of the tender.

2. In a toy railroad, a track layout having two wheel bearing, current conducting rails of opposite polarity, a locomotive and a tender, having their bodies conductively coupled together for train operation, each having trucks provided with metal axles and wheels to fit said rails, all the wheels on one side of the locomotive being insulated from the axles and from the opposite wheels thereof so that said opposite wheels may be used as current collectors from a rail of one polarity, the body of the locomotive being connected with the axles thereof, all the axles of the tender being insulated from the body thereof, all the wheels on the tender which contact said rail being insulated from the axles and from the wheels opposite them so that said latter mentioned opposite wheels may act as current collectors for the rail of the other polarity, a propulsion motor carried by the locomotive and directly connected to the body and the current collecting wheels thereof, a jumper connected from the opposite side of the propulsion motor to the current collecting wheels of the tender, and a current consuming device on the tender having one side connected to the body of the tender and through the conductive coupling and the body of the locomotive to the first rail and its other side connected to the other rail through the uninsulated wheels of the tender.

3. In a toy railroad, a track layout having two wheel bearing, current conducting rails of opposite polarity, a locomotive and a tender having their bodies conductively coupled together for train operation, each having wheeled trucks fitting said rails, all the wheels on one side of the locomotive being insulated from the opposite wheels thereof so that said opposite wheels may be used as current collectors from a rail of one polarity, all the wheels on the tender which contact said rail being insulated from the wheels opposite them so that said latter mentioned opposite wheels may act as current collectors for the rail of the other polarity, the body of the locomotive being connected with the uninsulated wheels thereof, the body of the tender being insulated from all the wheels thereof, a current consuming device carried by the tender and directly connected at one side to the current collecting wheels thereof and at the other side to the body of the tender and through the conductive coupling to the uninsulated current collecting wheels of the locomotive.

4. In a toy locomotive having metallic axled wheeled trucks cooperative with two rail track, insulation between all the wheels on one side of the locomotive and the axles, the wheels on the other side being uninsulated from the axles, a propulsion motor carried by the locomotive and connected at one side to the uninsulated wheels, and a tender having insulation between all the wheels on one side of the tender and the axles, the wheels on the other side being uninsulated from the axles, the uninsulated wheels thereof being aligned with the insulated wheels of the locomotive and connected to the opposite side of the motor.

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