

April 28, 1931.

L. CARUSO

1,802,458

TOY LOCOMOTIVE

Filed April 26, 1928

FIG. 1.

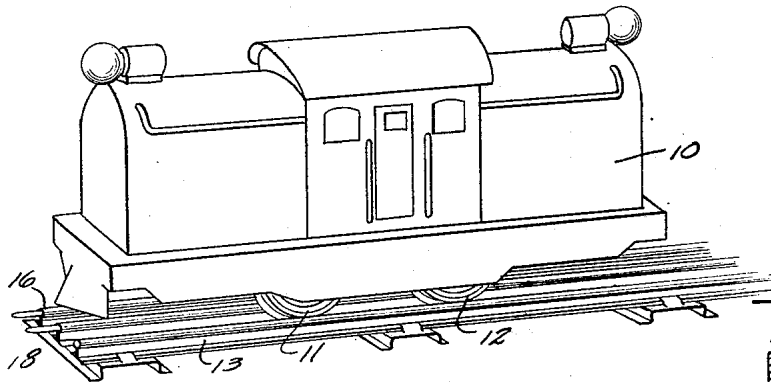


FIG. 2.

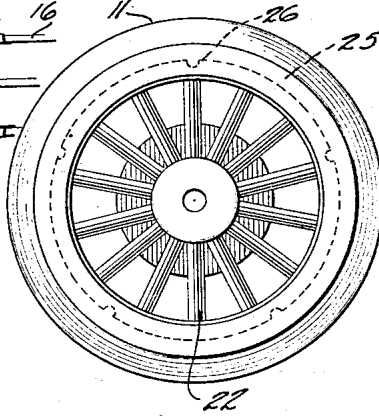
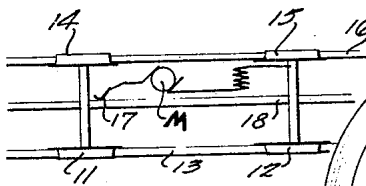


FIG. 6.

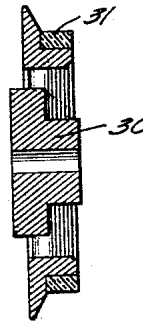


FIG. 3.

FIG. 7.

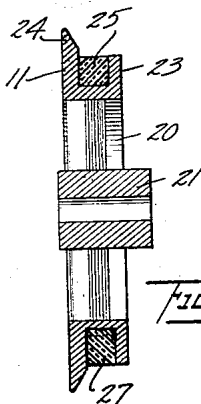
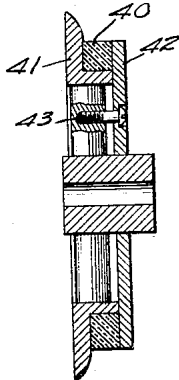
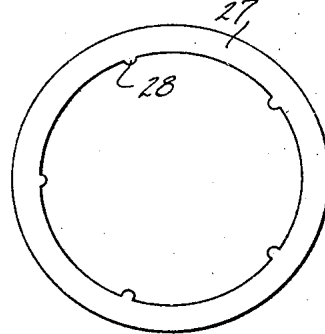


FIG. 5.



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UNITED STATES PATENT OFFICE

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TOY LOCOMOTIVE

Application filed April 26, 1928. Serial No. 272,883.

The present invention relates to toy locomotives and is more particularly directed to the provision of a rubber tired wheel adapted to be run on fixed metal rails.

5 The standard practice for many years has been to provide toy locomotives with four or more driving wheels all of which were in driving relation with the rails. The same type of all metal wheels were used on mechanically
10 driven toy locomotives and on toy electric locomotives. In the toy electric locomotive it is customary to ground one side of the motor circuit onto the frame of the toy locomotive and have the current conducted through the
15 wheels into the track rails, one or both of the track rails being used as the return conductor for the current used in the motor.

The purpose of a toy locomotive is to provide the pull or tractive effort on the cars so
20 as to draw them along the track. The length and weight of the train which can be drawn over the track by a particular locomotive depends on the power which the motor is capable of developing. The tractive effort,
25 however, is also dependent upon the weight of the locomotive and on the coefficient of friction between the driving wheels and track.

These toy railroad tracks are ordinarily made of sheet steel, while the locomotive
30 wheels are made of ordinary castings or die castings, or may be provided with applied metal treads such as shown in reissue Patent 16,351. In all these cases the contact has been between the metal rails and metal wheel
35 and the coefficient of friction from metal to metal is the determining factor which limits the amount of tractive effort which can be applied, for as soon as the load becomes too great, the wheels slip, making it impossible
40 for the locomotive to satisfactorily pull the train.

According to the present invention the tractive effort is remarkably increased by utilizing one or more wheels having treads provided with material with a high coefficient of
45 friction with respect to steel. More particularly the present invention is directed toward providing one or more of the wheels of the toy locomotive with a rubber band or tread
50 which will engage with the track and pre-

vent slipping of the locomotive wheels. Where the wheels are to be used on an electric locomotive, it is preferable to employ at least one all metal wheel in order to insure the proper grounding of the motor circuit. In
55 some cases, only one rubber tired wheel will be used, while in other cases two such wheels will be used. The rubber tired wheels may be placed in any desired position on the toy locomotive. Where two such rails are used, it
60 will be preferable to have them diagonally opposite one another on the trucks, for, in this case, the application of the rubber tired wheels will permit grounding the motor to both rails so that the signal and power supply
65 circuits will function in the ordinary manner.

The accompanying drawings show, for purposes of illustrating the present invention, two of the many possible forms of toy
70 wheel which may be employed, it being understood that the drawings are illustrative of the invention rather than limiting the same.

In these drawings:

75 Figure 1 is a perspective view illustrating a toy locomotive on a section of toy railway track;

80 Figure 2 is a diagrammatic view illustrating the trucks of the locomotive on the track;

Figure 3 is a side elevational view of one form of toy wheel;

Figure 4 is a central sectional view of the same;

85 Figure 5 is a form of rubber tire or band which may be used with Figure 3;

Figure 6 is a sectional view showing a modified form of construction; and

90 Figure 7 is a sectional view showing another modified form of construction.

The toy locomotive is indicated at 10 in Figure 1 and is provided with the usual wheels 11 and 12 adapted to ride on the track rail 13. Other similar wheels 14 and 15 are adapted to ride on the opposite track rails
95 16. As diagrammatically indicated in Figure 2, the toy locomotive has a motor M connected to a collecting shoe 17 adapted to cooperate with the third rail 18 in the usual manner. The locomotive motor M is ground-
100

ed to the running gear so that the current passing the motor goes through the running gear of the locomotive and the track rails 13 and 16. In this arrangement the wheel 11 for example may be the wheel provided with the anti-slip tread while the remaining wheels 12, 14 and 15 may be the ordinary all metal construction. By this arrangement the grounding of the circuit through the motor will not be interfered with.

The form of wheel shown in Figures 3, 4 and 5, contemplates the use of a die casting indicated generally by the character 20. It has a hub 21 adapted to receive the truck shaft, a number of spokes 22 adapted to support the tread portion 23, and a flange 24 adapted to pass down inside the track rail in the usual manner. The die casting is also provided with an annular channel or recess 25. This recess is notched as indicated at 26 and a rubber ring 27 shown in Figures 4 and 5 is adapted to be placed into the recess or channel 25. This rubber ring has projections indicated at 28 adapted to be fitted into the notches 26. Various other forms of interfitting members between the casting and the lever ring may be employed for the purpose of preventing slippage of the rubber ring on the cast wheel body.

In the form of construction shown in Figure 6 the wheel 30 is of the same general shape as that shown in Figure 4 but instead of using a rubber tread which fits into an annular recess or channel the rubber tread 31 as here shown is in the form of a simple ring which is held in the tread portion of this wheel.

In the form of construction shown in Figure 7, the anti-slip tread 40 is held in place on the cast wheel body 41 by means of a plate 42 attached to the wheel body by bolts 43.

While the preferred material for use as an anti-slip tread is composed principally of rubber, it is to be understood that other materials having high coefficient of friction may be substituted.

It has been found that locomotives equipped with one or more of these specially tired wheels are capable of producing a higher tractive pull than is the case when the same size locomotive and motor is employed with all metal wheels. A single rubber tired wheel will effectively prevent slipping under a load which could not be carried with all metal treads.

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

I claim:

1. A mobile electric toy adapted to run on fixed metallic track having rails, one of which

acts as a grounded return, said toy having at least one driving wheel which is always in conducting relation with the track and at least one driving wheel having an anti-slip tread to increase the tractive pull available.

2. A toy electric locomotive wherein a portion of the driving wheels have metallic treads adapted to ground the motor circuit, and other driving wheels having anti-slip treads to increase the tractive pull available.

Signed at Irvington, in the county of Essex, and State of New Jersey, this 19th day of April, 1928.

LOUIS CARUSO.