

## PATENT SPECIFICATION



Convention Date (Germany) : Oct. 22, 1938.

**525,046**

Application Date (In United Kingdom) : Feb. 14, 1939.

No. 4189/39.

Complete Specification Accepted : Aug. 20, 1940.

### COMPLETE SPECIFICATION

#### Improvements in or connected with Toy Electric Railways

I, ERNST VOELK, sole personally responsible partner of VEREINIGTE SPIELWARENFABRIKEN ANDREAS FÖRTNER & J. HAFNER'S NACHFOLGER (a Kommanditgesellschaft registered under the Laws of Germany), of 10, Schillerstrasse, Nuremberg, Germany, a German Citizen, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The invention relates to a toy electrical railway vehicle, which is provided with an uncoupling device and an electrically operated switch member serving for controlling, from a distance, changes in the direction of running.

The invention consists in that the switch member for changing the direction of running—or an additional electrically operated switch member intended for controlling other functions (lighting, signalling, etc.)—is provided with a mechanical device influencing the movable coupling member.

In the case of known railway tops fitted with an uncoupling device the coupling member is actuated by lever mechanism which is subjected to the action of the armature of an electromagnet. In contrast therewith according to this invention, the uncoupling is effected mechanically and directly, by a switch member, (such as that for changing the direction of running) which is present in any case.

According to this invention, the mechanical arrangement consists—when an electromagnetically operated switch drum is employed as a switch member—of a cam, eccentric or the like which is seated on said drum and influences a lever acting on the coupling member.

If, in addition to the coupling member located on the rear end of the locomotive or tender, a coupling member on the front end is to be actuated, the cam may be arranged to influence two levers, one of which acts in a forward, and the other in a rearward direction. For this purpose, however, a second cam, eccentric, or the like may also be provided,

The switch member provided with a cam, is preferably subjected to the action of a current of higher voltage than that of the motor current. 55

The invention will be clearly understood from the following description aided by the accompanying drawings in which a typical embodiment of the invention is illustrated, diagrammatically, and in which: Figure 1 is a side elevation of a toy motor and tender, the superstructure being removed. Figure 2 is a plan of same, and Figure 3 shows the switch drum provided with the mechanical device. 60 65

The truck consists of the rails 1, 2 and 3. The current is drawn from the rails and supplied to the motor by means of the pair of shoes 4. The rotational movement of the motor is transmitted to the track wheels through an intermediate gear. 70

The change in the direction of running is controlled by the switch drum 5, the intermittent rotation of which is effected by the rocking movement of the armature 6 of the switch magnet 7, in known manner. For this purpose, the rocking movement of the armature 6 is transmitted, through the lever 8, to the ratchet wheel 9 secured on the drum 5. Said drum 5 effects the controlling of the vehicle for: running ahead; stop; reversing; stop; according as one or other of the contact points comes into contact with the corresponding contact springs 10, 11, 12 or 13. 75 80 85

If the vehicle is provided with a switch drum for solely changing the direction of running, this drum is equipped—according to the invention—with a cam, eccentric or the like, which is in permanent contact with the free end of a movable—preferably rockable—lever which acts on the coupling member. The cam is arranged on the drum in such a manner that, during the intermittent rotation of the drum, it actuates and preferably lifts the coacting lever prior to the partial rotational movement for “reverse”. 90 95 100

If, as in the embodiment shown, two switch drums are provided, one of which, 5, serves to control the change in the 105

direction of running, and the other 14, to control other functions (lighting, signalling, etc.), the cam is preferably arranged on the second drum. On this account, the drum 14 in the embodiment shown is provided with an eccentric 27 against which the lever 20, which is rockably mounted at 28, is maintained in permanent contact, at its free end, by the action of the spring 21. On its other end the lever 20 carries the coupling hook 22. When the eccentric 27 occupies its highest position—indicated by chain-dotted lines in Figure 1—the lever 20 is swung into the position indicated by chain-dotted lines in Figure 1, so that the coupling hook 22 descends and the uncoupling is effected.

By means of the ratchet wheel 15 the arm 16 and the armature 17—designed as a rocking lever—of the switch magnet 18, the switch drum 14 is set in intermittent rotation every time a current impulse is imparted to the switch magnet 18. After each impulse has ceased, the armature 17 is returned into neutral position by a spring 19.

The drum 14 is provided with contacts 23 and 24 which coact with the contact springs 25 and 26. According as the contact members 23, 25 or 24, 26 come into mutual contact, the lights are switched on, or a sound signal is emitted.

If desired, the cam 27—whether seated on the drum 14, or the drum 5 is immaterial—can actuate another lever mechanism which acts on a coupling member located on the front end of the vehicle, another cam, eccentric or the like being provided for that purpose, if desired. However, the front coupling member may also be swung out of action by the aid of the movable armature of a separate electro-magnet which is switched into the circuit by a further pair of contacts on one of the switch drums.

It has been found of particular advantage to actuate the switch drums or their switch magnets—and preferably the drum, carrying the cam—by means of a current of higher voltage than that for the motor. This arrangement ensures that the uncoupling switch drum will function satisfactorily.

In the case of vehicles in which the coupling members are mounted on bogies to facilitate easy running round curves, should a force act anywhere outside the pivoted point of the bogey frame, a torque is set up with relation to the pivotal point which tends to turn the bogey frame round said point and affects the running of the vehicle, and to overcome this the coupling members are attached to the bogey frame

in such a manner that the force set up during the actuation of the coupling members coincides with the pivotal point of the bogey frame. 65

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:— 70

1. Electric toy railway vehicle with uncoupling device and with an electrically operated switch member for changing the direction of running, characterised in that said switch member—or an additional electrically operated switch member, intended for example, to control other functions (lighting, signalling, etc.)—is provided with a mechanical device influencing the movable coupling member. 75

2. Electrical toy railway vehicle, according to Claim 1 in which an electromagnetically operated switch drum serves as a switch member, characterised in that the mechanical device consists of a cam, eccentric or the like, which is seated on the switch drum and influences a movable lever acting on the coupling member. 80

3. Electric toy railway vehicle according to Claim 2, characterised in that the cam, eccentric or the like coacts with two transmission levers, one of which acts on the coupling member located on the rear end, and the other acts on the coupling member on the front end of the vehicle. 85

4. Electric toy railway vehicle according to Claim 3, characterised in that one of the coupling members is actuated by the armature of an electromagnet which is switched into the circuit by means of contacts which are temporarily closed by one of the switch members. 90

5. Electric toy railway vehicle according to Claims 1—4, characterised in that the switch member equipped with the mechanical device is subjected to a current of higher voltage than the current supplied to the motor. 95

6. Electric toy railway vehicle according to Claims 1—5, characterised in that in the case of vehicles in which the coupling members are seated on bogies, the coupling members are attached to the bogey frame in such a manner that the force set up during the actuation of the coupling members coincides with the pivotal point of the bogey frame. 100

7. Electric toy railway vehicles, constructed substantially as described with reference to the accompanying drawings. 105

Dated this 14th day of February, 1939.

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[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 1

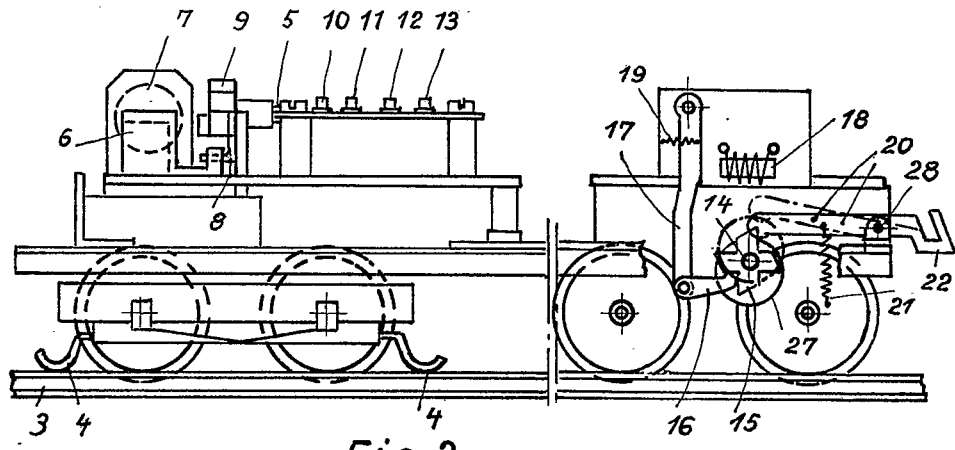


Fig. 2

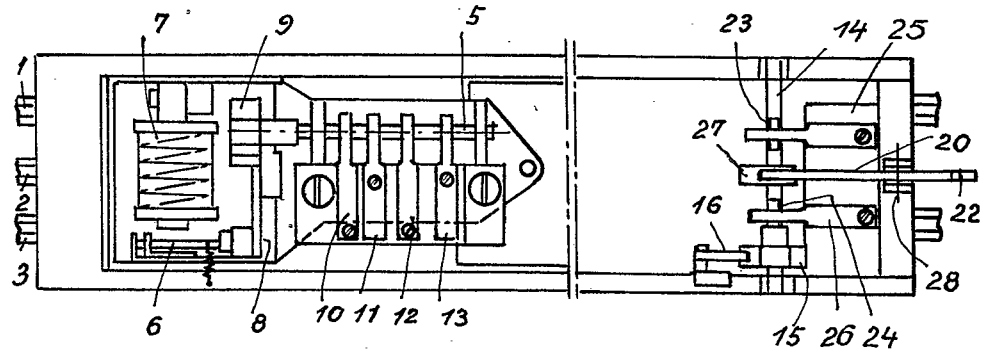


Fig. 3

