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469,656

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Complete Specification Left: Sept. 26, 1936.

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PROVISIONAL SPECIFICATION

Electrical Railway Toy

We, VEREINIGTE SPIELWARENFABRIKEN ANDREAS FÖRNER & J. HÄFFNER'S NACHFOLGER GESELLSCHAFT MIT BESCHRÄNKTER HAFTUNG, of 15, Kobergerstrasse, Nuremberg, Germany, a Company registered under the Laws of Germany, and SIEGFRIED KAHN, of the Company's address, a German Citizen, do hereby declare the nature of this invention to be as follows:—

This invention relates to an electrical railway toy in which two trains on a track are adapted to be controlled, simultaneously from a distance. The track, which is composed of three insulated rails insulated from each other, is arranged to form two circuits, each in circuit with a controller and source of power, in such a manner that one outer rail and central rail are included in one circuit, and the other outer rail and the central rail are included in the other circuit.

According to this invention, the locomotive is constructed with an electro-motor geared to the driving wheels, and the locomotive is provided with a collector shoe or equivalent in electric contact with the motor, and so positioned that it contacts with one of the rails, which is common to both circuits. The locomotive is also provided with a second collector shoe or shoes in electrical connection with the motor, such second collector shoe or shoes being so constructed or arranged that the motor can be placed in electrical contact through the shoe or shoes with either of the other rails, whereby the motor can be included in either of the circuits.

Preferably the central rail is common to both circuits and the common shoe is central of the locomotive, and the other shoe may be detachable from the locomotive so that it can be positioned on one or the other sides of the central shoe so as to contact with one or the other of the outer rails, or a shoe can be secured to each side of the central shoe and connected to the motor through a reversing switch or equivalent, so that either outside shoe can be electrically connected with the motor.

The shoes are preferably duplicated,

and the wheels of the train are insulated from each other, either by mounting the wheels on insulated shafts or constructing the wheels of an insulating material so as to avoid short circuiting between the rails.

The invention can be carried into effect in a variety of ways as to detail construction, and as one example, the locomotive is constructed in any suitable manner with an electro-motor drive, driving wheels and running wheels insulated from each other and longitudinally and centrally of the under side of the body of the locomotive is secured a strip of metal electrically connected to one side of the electro-motor, and to such strip are connected two metal collector shoes, positioned one at each end, which may each be in the form of a strip of metal having approximately half its length flat and the other half curved, the flat end being provided with side lugs. The shoe is mounted in a box or frame with the side lugs engaging in recesses in the walls of the box and the box secured to the metal strip by a screw, so that the shoes are resiliently secured in electrical contact with the strip, with the curved portions positioned so as to press on the central rail when the locomotive is placed on the track.

On each side of the central strip, and at the forward and rear ends of the body are positioned metal strips or members in electrical connection with the other side of the electro-motor, and to the strips or members on one side are connected two side collector shoes by screws, so positioned that they make contact with one of the outer rails when the locomotive is placed on the track.

If the two locomotives have their side shoes on the same side of the locomotive, then the two locomotives would have to be placed on the track to run in opposite directions, so that one locomotive is in electrical contact with the central rail and the inside rail and the other with the central rail and the outside rail. When it is desired to run the trains in the same direction, the side shoes on one locomotive are removed and placed on the

other side of the central shoes, so that the side shoes on the two locomotives are on opposite sides of the central shoe.

In another example side shoes could be positioned on both sides of the central shoes, either both on the engine, or one set of side shoes on the engine and one set on the opposite side on the tender, in which case, the electrical connections from the supports for the side shoes to the motor would be through a reversing switch or equivalent, so that the motor

could be connected either to the shoes on one side or the shoes on the other side.

The shoes or equivalent can be of any suitable construction or form.

Various other detail alterations and modifications can be made.

Dated this 29th day of October, 1935.

H. GARDNER & SON,
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Agents for the said Applicants.

COMPLETE SPECIFICATION

Electrical Railway Toy

We, VEREINIGTE SPIELWARENFABRIKEN
20 ANDREAS FÖRTNER & J. HAFNER'S
NACHFOLGER GESELLSCHAFT MIT BESCHRÄNKTER HAFTUNG, of 15, Kobergerstrasse, Nuremberg, Germany, a Company registered under the Laws of Germany, and SIEGFRIED KAHN, of the Company's address, 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:—

This invention relates to an improvement or modification of the invention set forth in the specification and drawings of
35 British Patent Application No. 30095 of 1935, and is intended to form a Patent of Addition thereto.

According to the invention set forth in application No. 30095 of 1935, two
40 electric toy trains on one track are independently controllable in two circuits from a distance, and the said invention is characterised in that, the two circuits are provided in a track composed of two running rails and a "third" rail that are
45 all insulated from each other, one of the running rails and the "third" rail being included in one circuit; and the other running rail and the "third" rail
50 included in the other circuit; and that the wheels on one side of the vehicles are insulated from the wheels on the other side.

The electro-motor of each locomotive
55 was in electrical connection with a shoe coacting with the common "third" rail, and the motor was also in electrical connection with the running wheels which contacted with the running rails and a reversing switch could be provided in the
60 locomotive for selectively switching the motor to one or the other of the wheels, and the object of the present improvement or modification is to provide improved
65 means on the locomotive for coacting with the rails.

According to the present improvement or modification, there is provided on the underside of the vehicle a current-collector connected with the motor which
70 coacts with the "third" rail which is common to both circuits, and in addition there is provided on the underside of a vehicle a current collector or collectors adapted to coact, selectively, with one of
75 the other two running rails.

It has been proposed to enable two or more trains to run at the same time on a track independently of each other and under separate control. In this case, in
80 addition to the ordinary non-insulated wheels and running rails, a plurality of "third" rails insulated from each other and the running rails were provided, the "third" rails being in separate electric
85 circuits with the running rails, and the engine had a transversely adjustable shoe for contact with a selected one of the "third" rails. Alternatively two non-adjustable shoes could be employed in
90 contact with two "third" rails, the shoes being electrically connected with a switch in the engine which could be set for operating the train from one or the other "third" rail, the running rails
95 and wheels acting as the common return.

The improvement or modification will be clearly understood from the following description aided by the accompanying
100 drawings in which:—

Figure 1 is a side elevation of the locomotive, in partial section along the line A—B of Figure 3.

Figure 2 is a front elevation of the locomotive and a cross section of the
105 track.

Figure 3 is a view of the locomotive from below.

Figure 4 is a partial section, through a set of wheels, along the line C—D of
110 Figure 3, and

Figures 5 and 6 show the central current collector, in elevation and plan.

As in the main application the track

consists of two outer rails 1 and 2, insulated from each other, and a central "third" rail 3 insulated from the rails 1 and 2, the central rail 3 forming the circuit I with the rail 1, and the circuit II with the rail 2, the centre rail 3 being therefore common to both circuits. On this track run two locomotives of identical construction.

10 The construction of such a locomotive is shown in the accompanying drawings, especially with regard to the members serving to collect and convey the current.

15 According to this modification or improvement there is attached to the frame *a*, longitudinally and centrally of the underside of the body of the locomotive, a strip of metal *b* electrically connected to one pole of the electro-motor

20 *c*. Both ends of said strip *b* are provided with metal current-collector shoes *d*, *e*, which may each be in the form of a strip of metal having one portion flat and the other portion *f* curved in a semi-circle

25 open at the top, the flat portion being provided with side lugs *g*, *h* which engage in slots *l*, *m* in the side walls *i* of a box or casing *k*, so that the shoes are able to describe a slight rocking movement in

30 the longitudinal direction of the vehicle. The box *k* is secured to the metal strip *b* of the frame *a* by a screw *n* (Figures 1 and 3), and the shoes are in electrical contact with the strip *b*, with the curved

35 portions positioned so as to press on the central rail 3 when the locomotive is placed on the track.

40 In order to keep the shoes *d*, *e* in continuous touch with the live rail, the box *k* houses a spring *o* which presses the curved portions *f* downwards on to the live rail.

45 Owing to the pivotal arrangement, the shoes *d*, *e* are able to follow any irregularities in the track.

50 On each side of the central strip *b*, and at the forward and rear ends of the body are positioned other metal strips *p*, *q* electrically connected with the other pole

55 of the electro-motor *c*, said strips *p*, *q* being arranged on suitable mounts *t* on the frame of the locomotive. Adapted to be secured to said strips *p*, *q* are casings *u* carrying side collector-shoes *r*, *s* which correspond in design to the shoes *d*, *e*.

60 The mounting of the shoes *r*, *s* in the casings *u* is similar to that of the shoes *d*, *e* in the casing *k*. The curved ends of the shoes corresponding to the parts *f* are

65 able to slide on one of the outer rails 1 and 2 when the locomotive runs on the track. To enable selective coaction with one of the outer rails 1 and 2, the casings *u* are detachable, so that they can be

mounted either on one side of the loco-

motive, or the other, as indicated in broken lines in Figure 3.

The running wheels are insulated on the axles, so that the two circuits I and II are completely separated. Said insulation is effected either by using an axle of insulating material, or by employing bushes *v* of insulating material, by means of which the wheels are mounted on the axle—see Figure 4.

70 If the two locomotives have their side shoes *r*, *s* on the same side of the locomotive, then the two locomotives would have to be placed on the track to run in opposite directions, so that one locomotive is in electrical contact with the central rail 3 and the inside rail 1, and the other with the central rail 3 and the outside rail 2. When it is desired to run the trains

80 in the same direction, the side shoes *r*, *s* on one locomotive are removed and placed on the other side of the central shoes *d*, *e* so that the side shoes *r*, *s* on the two locomotives are on opposite sides of the central shoes *d*, *e*.

90 Alternatively, side shoes could be positioned on both sides of the central shoes *d*, *e*, either both on the engine, or one set of side shoes on the engine and one set on the opposite side of the tender, in

95 which case, the electrical connections from the supports for the side shoes to the motor would be through a reversing switch so that the motor could be connected either to the shoes on one side or

100 the shoes on the other side, merely by actuating the said switch.

105 The shoes or equivalent can be of any suitable construction or form, and instead of being in pairs, that is two shoes for each rail, a single shoe could be employed in place of a pair.

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

1. The improvement in or modification of the electrical railway toy, as set forth in the specification and drawings of

115 Application No. 30095 of 1935, characterised in that there is provided on the underside of the vehicle a current-collector connected with the motor which coacts with the "third" rail which is

120 common to both circuits, and in addition there is provided on the underside of the vehicle a current-collector or collectors adapted to coact, selectively, with one of the other two running rails.

2. Electric railway toy according to Claim 1, characterised in that the current-collector coacting with the running rails is detachably mounted and can be selectively attached on one side or the

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other of the toy in order to coact with the one or other of the running rails.

3. Electric railway toy according to Claim 1, characterised in that, current-
5 collectors coacting with both running rails are provided under both sides of the vehicle and can be selectively switched-in by means of a reversing switch, there-
10 by enabling the one or other of the two circuits to be selectively brought into operation.

4. Electric railway toy according to Claim 3, characterised in that the
15 current-collectors are provided on the underside of the locomotive and also on the underside of the tender.

5. Electric railway toy according to Claim 4, characterised in that the collect-
20 ing shoes on the locomotive and tender are allocated to different live rails

6. Electric railway toy according to Claim 5, characterised in that the current
25 collectors on the locomotive and tender are connected to the motor and can be selectively switched over by means of a reversing switch.

7. Electric railway toy according to Claim 1, characterised in that the current
30 collectors always consist of two simultaneously acting collecting shoes.

8. Electric railway toy according to Claims 1 and 7, characterised in that the current-collectors each consist of a strip

of metal having one portion flat and the other portion curved in a semi-circle open
35 at the top and a spring presses said curved portion on to the rails.

9. Electric railway toy according to Claims 7 and 8, characterised in that the
40 collecting shoes are mounted in a box or casing in such a manner as to be able to describe a slight rocking movement in the longitudinal direction of the vehicle.

10. Electric railway toy according to Claim 9, characterised in that the portions
45 of the collecting shoes, by which the latter are mounted, are flat in shape and engage by means of lateral lugs in slots in the side walls of the box or casing.

11. Electric railway toy according to Claim 1, characterised in that for insula-
50 tion purposes, either an axle of insulating material is employed, or else the wheels are mounted on the axle by means of a bush of insulating material. 55

12. In electric railway toys as set forth in Application for British Patent
60 No. 30095 of 1935, the improvement or modification of the locomotive constructed substantially as described with reference to the accompanying drawings. 60

Dated this 26th day of September, 1936.

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Fig. 1

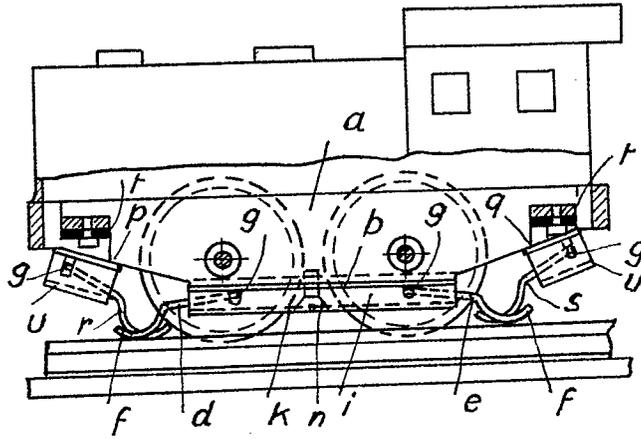


Fig. 2

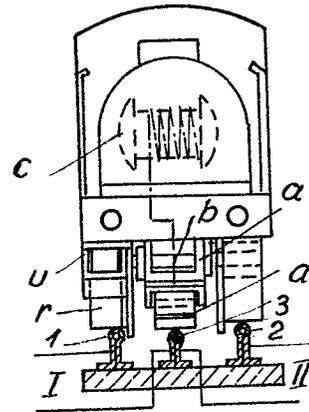


Fig. 3

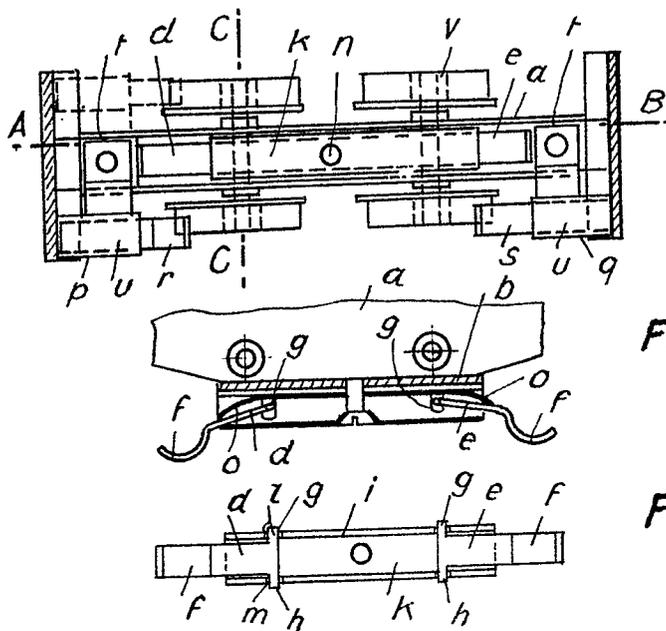


Fig. 4

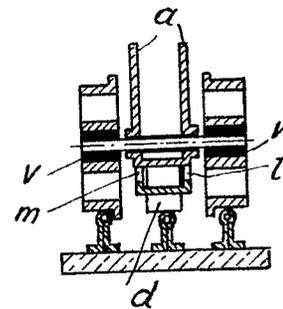


Fig. 5

Fig. 6

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