

PATENT SPECIFICATION

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COMPLETE SPECIFICATION

Improvements in or Connected with Toy Railways

We, **TRIX LIMITED**, of 11, Old Burlington Street, London, W.1, a British Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to clockwork driven toy railway locomotives. It is common to provide a clockwork driven toy locomotive with a stopping and starting device, the device being usually actuated manually by a lever on the locomotive and in consequence it is necessary to hold the locomotive whilst actuating the lever. The object of the present invention is to provide means whereby the stopping and starting of the locomotive, after being wound up, can be effected by remote control, or instead of the starting and stopping device, a device can be used for effecting the reversal of the direction of travel of the locomotive.

According to this invention, a clockwork driven toy locomotive incorporating a stopping and starting device, or a reversing device, for the clockwork motor and running on a track having insulated rails, is provided with an electrically operated mechanism connected to the device for effecting the starting or stopping, or the device for effecting the reversing, for actuating same, the electrical mechanism being controlled from a remote controller or switch and battery connected to the rails of the track and picked up by shoes and/or wheels of the locomotive.

The invention will be clearly understood from the following description aided by the accompanying drawings, in which:

Figure 1 is a diagrammatic view showing one example of carrying the invention into effect. Figure 2 is a part of a mechanism and Figure 3 an under plan showing another example.

The invention can be carried into effect
[Price 3s. 0d.]

in various ways as to detailed construction.

In the example shown in Figure 1, the track consists of a known track having two insulated rails 1, 2 and commonly used with toy electric trains.

On the clockwork driven locomotive is a mechanism for actuating the stopping and starting device which in this example comprises a yoke 3 or member slidably located in suitable guides 4, the yoke 3 being connected by a link 5 to the device which effects the starting and stopping. On each end of the yoke 3 and at a distance apart is secured a permanent bar magnet 6, 7 with say the S poles opposite each other on the inside.

In the gap between the permanent magnets 6, 7 is a fixed electro-magnet 8 comprising a coil of wire and a straight core. The ends of the wire of the coil of the electro-magnet are connected to shoes 9, 10 on the locomotive which ride on the insulated rails 1, 2.

The two rails 1, 2 are connected by a length of twin flex cable to a controller 11 or switch and a battery 12.

The clockwork motor is wound up and the locomotive placed on the rails with the yoke at one end of its travel so that the S pole of the permanent magnet, say 6, is next to the N pole of the electro-magnet 8 for the link 5 to position the starting and stopping device to stop the running of the motor. To allow the motor to start the direction of the current to the electro-magnet is reversed by the switch or controller 11 so that the poles are reversed, i.e. the S pole of the electro-magnet 8 is next to the S pole of the permanent magnet 6 and the S pole of the electro-magnet 8 repels the S pole of the permanent magnet 6 and at the same time the S pole of the other magnet 7 is attracted by the N pole of the electro-magnet 8 causing the permanent magnets 6, 7 and yoke 3 to move to the other end of their travel and through the

link 5 move the starting and stopping device. By reversing the direction of the electric current in one direction or the other, the yoke 3 can be moved in either direction to stop or allow the motor to function. There is sufficient space or gap between the permanent magnets 6, 7 to allow the required movement of the yoke 3 in relation of the electro-magnet 8.

As an alternative the permanent magnets can be fixed and the electro-magnet made movable and connected by the link with the starting and stopping device.

It will be understood that the wheels of the engine and other vehicles must be insulated from one another.

The electrical mechanism can be located in the engine or tender, and can be employed for actuating a reversing device instead of the stopping and starting device.

Various modifications may be made, for instance one movable permanent magnet could be employed with spring means to urge it in one direction and the electro-magnet to repel it in the other direction.

In the example shown in Figures 2 and 3, the toy locomotive comprises a chassis provided with wheels for running on the track. On the chassis is mounted a frame 13 carrying a motor driven by a coiled spring 14 which can be wound up on a shaft connected through known gearing 15 with the driving wheels, the gearing 15 also incorporating a rotatable governor 16 and on the governor shaft are secured stops 17 or projections. In the frame 13 is pivotally mounted a lever 18 with projecting catch 19 arranged so that the lever 18 can be rocked for the catch 19 to come into or out of the path of travel of the stops 17 on the governor shaft.

On the lever 18 is a U-shaped permanent magnet 20.

In the frame 13 is fitted an electro-magnet 21 consisting of a single bobbin with the core 22 projecting in between the poles of the permanent magnet 20. The ends of the wire of the electro-magnet 21 are connected to shoes on the locomotive which ride on insulated rails in the track.

The spring 14 is wound up with the catch 19 engaging with one of the stops 17 on the governor shaft to prevent the motor operating and the locomotive placed on the rails with the permanent magnet 20 at one end of its travel so that the S pole of the permanent magnet 20 is next to the N pole of the electro-magnet 21 with the motor held in the stopped position. To allow the motor to start the current to the electro-magnet 21 is reversed by operation of the switch or controller so that the poles are reversed and rocks the permanent magnet 20 to the other end of its travel and actuates the lever 18 to move the catch 19

away from the stops 17 on the governor shaft to allow the motor to start and drive the locomotive.

It will be understood that an impulse of current to move the permanent magnet 20 is all that is required and the current can be cut off except when a movement of the permanent magnet 20 is required.

For forward and reverse running of the locomotive, two motor mechanisms with electric stop and starting means may be employed in the locomotive, one motor driving the train in one direction and the other motor driving the train in the opposite direction, each motor mechanism being provided with a free wheel device so that the gear of the motor not driving can run free of the motor. Switches or controllers are provided so that one or the other of the motors can be allowed to drive whilst the other is stopped.

Conveniently a switch or controller is provided incorporating a manually operated rotary contact member co-operating with fixed contacts so arranged and connected in circuits with the track and battery that in turning the rotary member to say the left contacts are engaged to cause current to flow through the first electro-magnet in one direction and when turned further to contact with the other contacts to reverse the direction of the current to the electro-magnet and when turned in the other direction the rotary contact member performs similar actions with the second electro-magnet, so that by turning the rotary member in one or the other directions, the appropriate magnet is energised to stop or allow the motor to run for forward or reverse direction of travel of the train.

What we claim is :—

1. A clockwork driven toy locomotive incorporating a stopping and starting device, or a reversing device, and running on a track having insulated rails, is provided with an electrically operated mechanism connected to the device for effecting the starting or stopping, or the device for effecting the reversing, for actuating same, the electrical mechanism being controlled from a remote controller or switch and battery connected to the rails of the track and picked up by shoes and/or wheels of the locomotive.

2. A clockwork driven toy vehicle incorporating a stopping and starting device, or a reversing device, for the clockwork motor and running on a track having insulated rails, is provided with a slidable yoke connected to the starting and stopping device, or the reversing device, a permanent bar magnet on each end of the yoke at a distance apart with the S poles opposite each other on the inside, an

electro-magnet with a straight core located between the permanent magnets on the yoke, the winding of the electro-magnet being connected to shoes and/or wheels of the locomotive running on insulated rails which are connected to a remote controller or switch and a battery so that on energising the electro-magnet the sliding yoke is moved in one or the other directions by attraction and repulsion of the electro-magnet according to the direction of the current to the electro-magnet.

3. A clockwork driven toy locomotive as claimed in claim 2, wherein the yoke and permanent magnets are fixed and the electro-magnet is movable and connected to the starting and stopping device, or reversing device, substantially as set forth.

4. A clockwork driven toy locomotive incorporating a single core electro-magnet connected to pick-up shoes and or wheels on the locomotive running on insulated rails of a track, the rails being connected to a remote controller or switch and a battery, a U-shaped permanent magnet having a lever provided with a catch pivotally mounted in the locomotive, an electro-magnet one end of the core of which is located between the poles of the perma-

nent magnet, stops on the shaft of a governor of the clockwork mechanism, so arranged that by reversing the current to the electro-magnet the permanent magnet can be rocked in one or the other directions for the catch to engage or disengage with the stops on the governor shaft, substantially as set forth.

5. A clockwork driven toy locomotive as claimed in claim 4, wherein two motor mechanisms with electric stopping and starting means are provided in the locomotive, each mechanism being provided with a free wheel device and driving in opposite directions, remote controllers or switches and batteries being provided, so that one or the other of the motors can be allowed to drive whilst the other is stopped, substantially as set forth.

6. A clockwork driven toy locomotive substantially as described with reference to Figure 1 of the drawings.

7. A clockwork driven toy locomotive substantially as described with reference to Figures 2 and 3 of the drawings.

Agents for the Applicants,

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PROVISIONAL SPECIFICATION

No. 6817 A.D. 1952.

Improvements in or Connected with Toy Railways

We, **TRIX LIMITED**, of 11, Old Burlington Street, London, W.1, a British Company, do hereby declare this invention to be described in the following statement:—

This invention relates to clockwork driven toy railways. It is common to provide a clockwork driven toy engine with reversing means so that the engine can run either forwards or backwards, the reversing means being usually actuated by a lever on the engine and in consequence the engine has to be held whilst the lever is actuated. The object of this invention is to provide means whereby the reversing of the engine drive and/or other operations can be effected by a remote control that is at a distance from the track.

According to this invention, in a clockwork driven toy train incorporating reversing means and running on a track having insulated rails, providing in the engine or train an electrical means for actuating the reversing means of the clockwork motor, the electrical means being controlled from a remote controller or switch and battery connected to the rails of the track and picked up by shoes on the engine or train.

The invention can be carried into effect in various ways as to detailed construction

and as one example, the track consists of a known track having either two or three insulated rails and commonly used with toy electric trains.

On the clockwork driven engine is a device for operating the reversing means which in this example comprises a yoke or member slidably located in suitable guides, the yoke being connected to the member which effects the change of direction of the drive or reversing of the engine. On each end of the yoke and at a distance apart is secured a permanent bar magnet with say the S poles opposite each other on the inside.

In the gap between the permanent magnets is a fixed electric magnet comprising a coil of wire and a straight core. The ends of the wire of the coil of the electric magnet are connected to shoes on the engine which ride on two of the insulated rails.

The two rails are connected by a length of twin flex to a reversing switch or controller with a battery.

The clockwork motor is wound up and the engine placed on the rails with the yoke at one end of its travel so that the S pole of this permanent magnet is next to the N pole of the electric magnet for say the forward running of the engine. To

reverse the direction of travel of the engine the direction of the current to the electric magnet is reversed by the switch or controller so that the poles are reversed, i.e. the S pole of the electric magnet is next to the S pole of the permanent magnet and the S pole of the electric magnet repels the S pole of the permanent magnet and at the same time the S pole of the other permanent magnet is attracted by the N pole of the electric magnet causing the permanent magnets and yoke to move to the other end of their travel and actuate the reversing means of the clockwork motor. By reversing the direction of the electric current in one direction or the other the yoke can be moved in either direction. There is sufficient space or gap between the permanent magnets to allow the required movement of the yoke in relation to the electric magnet.

Where three insulated rails are employed in one track, one rail can be a common

return lead, one rail used for actuating the reversing means and the other rail for actuating a relay or other mechanism for say stopping or allowing the clockwork motor to work or for other purposes.

As an alternative the permanent magnets can be fixed and the electric magnet connected with the reversing means.

It will be understood that the wheels of the engine and other vehicles must be insulated from one another.

The electric mechanism can be located in the engine or in the tender.

Various modifications and alterations may be made, for instance one permanent magnet could be employed with spring means to urge it in one direction and for the electric magnet to repel it in the other direction.

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PROVISIONAL SPECIFICATION

No. 19779 A.D. 1952.

Improvements in or Connected with Toy Railways

We, **TRIX LIMITED**, of 11, Old Burlington Street, London, W.1, a British Company, do hereby declare this invention to be described in the following statement:—

This invention relates to clockwork driven toy railways. It is common to provide a clockwork driven toy locomotive with a stopping and starting means, the means being usually actuated manually by a lever on the locomotive and in consequence it is necessary to hold the locomotive whilst actuating the lever. The object of the present invention is to provide means whereby the stopping and starting of the locomotive, after being wound up, can be effected by a remote control, also, if desired, remote control for effecting a reversal of the direction of travel of the train.

According to this invention, in a clockwork driven toy locomotive incorporating a stopping and starting device for the clockwork motor and running on a track having insulated rails, providing in the engine or on the tender an electrical means for actuating the starting and stopping means, the electrical means being controlled from a remote controller or switch and battery connected to the rails of the track and picked up by shoes and/or wheels on the locomotive or tender.

The invention can be carried into effect in various ways as to detailed construction, and as one example, the track consists of a known track having either two or three insulated rails and commonly used with

toy electric railways.

The toy locomotive comprises a chassis provided with wheels for running on the track. On the chassis is mounted a frame carrying a clockwork driven mechanism connected through known gearing with the driving wheels, the gearing also incorporating a rotatable governor and on the governor shaft is secured a stop or projection. In the frame is pivotally mounted a lever with a projecting pin or catch arranged so that the lever can be rocked for the pin or catch to come into or out of the path of travel of the stop on the governor shaft.

On the chassis is an electrical means for actuating the starting and stopping lever which in this example comprises a permanent magnet consisting of a bar having its ends bent inwards at right angles to the bar to form the N and S poles, the magnet being slidably located in guides, and suitably connected to the starting and stopping lever.

In the gap between the poles of the permanent magnet is fitted an electric magnet consisting of a single bobbin with the core parallel with the bar portion of the permanent magnet. The ends of the wire of the electric magnet are connected to shoes on the locomotive which ride on two of the insulated rails of the track.

The two rails are connected by a length of twin cable to a reversing switch or controller with a battery.

The clockwork motor is wound up with

the lever pin engaging the stop on the governor shaft and the engine placed on the track with the permanent magnet at one end of its travel so that the S pole of the permanent magnet is next to the N pole of the electric magnet with the motor held in the stopped position. To allow the motor to start the current to the electric magnet is reversed by operation of the switch so that the poles are reversed, i.e. the S pole of the electric magnet is next to the S pole of the permanent magnet and the S pole of the electric magnet repels the permanent magnet and at the same time the S pole of the permanent magnet is attracted by the N pole of the electric magnet causing the permanent magnet to move to the other end of its travel and actuate the lever to move its pin away from the stop on the governor shaft to allow the spring motor to start and drive the locomotive.

By reversing the direction of the current in one or the other directions the permanent magnet can be moved in either direction there being sufficient space or gap between the poles of the permanent magnet to allow of the required movement of the permanent magnet in relation to the electric magnet.

It will be understood that an impulse of current to move the permanent magnet is all that is required and the current can be cut off except when a movement of the permanent magnet is required.

As an alternative, the permanent magnet can be fixed and the electric magnet made movable and connected with the starting and stopping lever.

In a modification the poles of the permanent magnet may be at an outward angle to the bar and the connecting bar pivotally mounted and connected with the lever so that the energising of the electric magnet rocks the permanent magnet to

actuate the stopping and starting means. 45

For forward and reverse running of the locomotive, two spring motor mechanisms with electric stop and starting means may be provided in the locomotive, one spring motor driving the train in one direction and the other spring motor driving the train in the opposite direction, each spring motor mechanism being provided with a free wheel device so that the gear of the spring motor not driving can run free of the spring motor. Switches or controllers are provided so that one or the other of the spring motors can be allowed to drive whilst the other is stopped. 50 55

Conveniently a switch or controller is provided incorporating a manually operated rotary contact member co-operating with fixed contacts so arranged and connected in circuits with the track and battery that in turning the rotary member to say the left contacts are engaged to cause the current to flow through the first electric magnet in one direction and when turned further to contact with the other contacts to reverse the direction of the current to the electric magnet and when turned in the other direction the rotary contact member performs similar actions with the second electric magnet, so that by turning the rotary member in one or the other directions, the appropriate magnet is energised to stop or allow the spring motor to run for forward or reverse direction of travel of the train. 60 65 70 75

Various modifications and alterations can be made whereby the spring motor or motors is or are allowed to run or stop by remote control of impulses of current. 80

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733,920 COMPLETE SPECIFICATION

1 SHEET

This drawing is a reproduction of the Original on a reduced scale.

FIG.1.

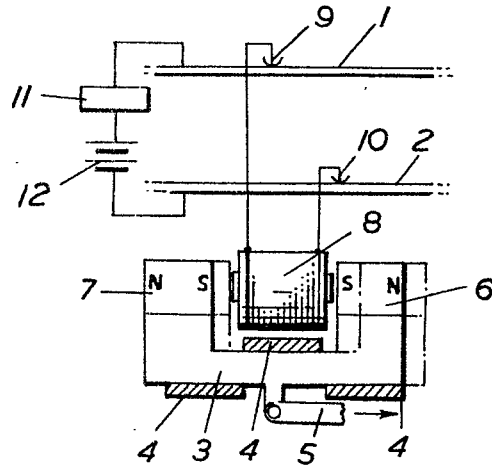


FIG.2.

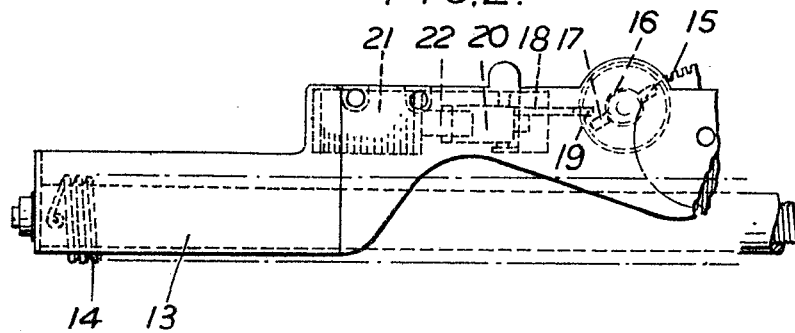


FIG.3.

