Feb. 22, 1938. L. ROUSSY ET AL 2,109,403

MEANS FOR GUIDING TOY VEHICLES

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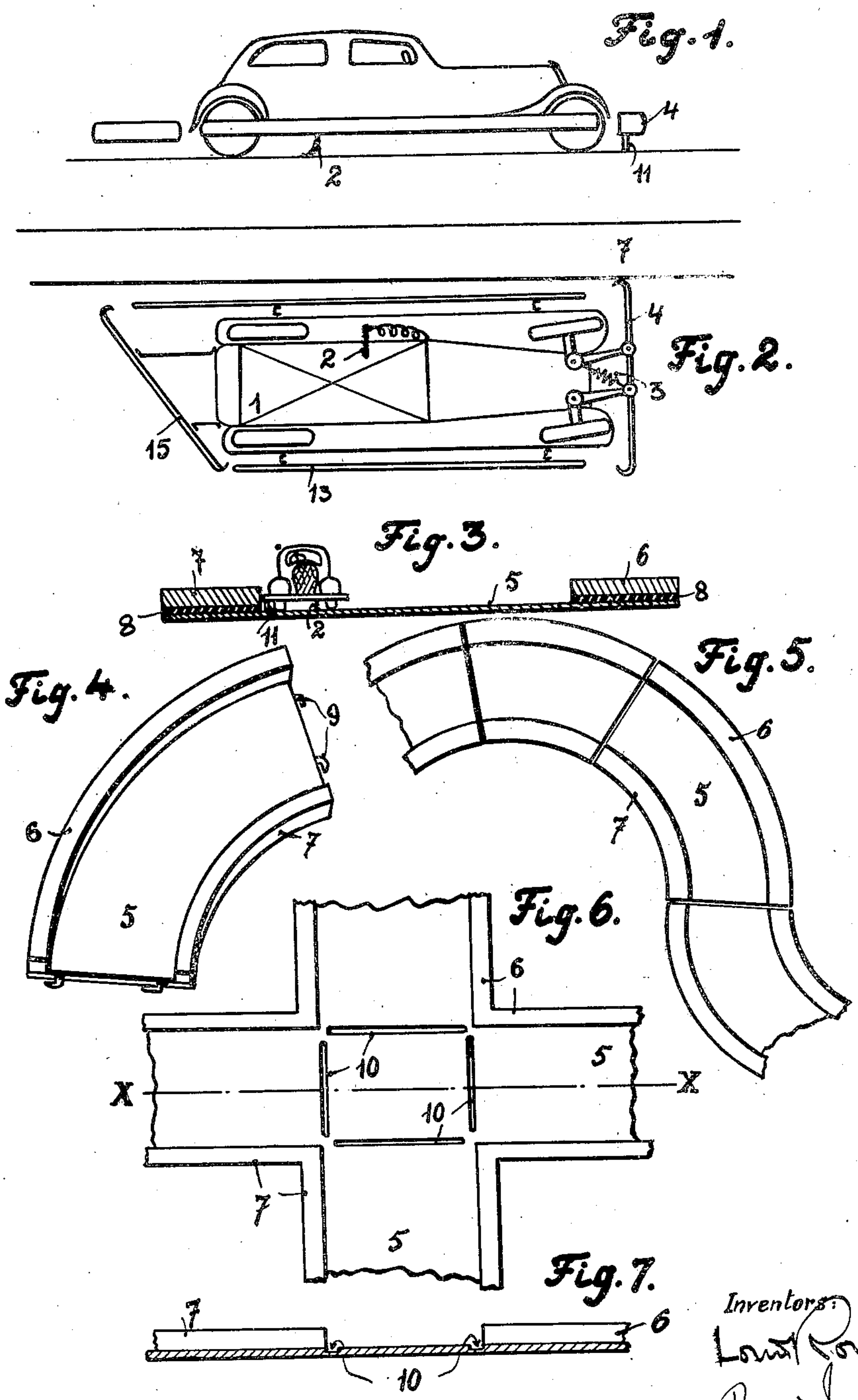

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Fig. 8.

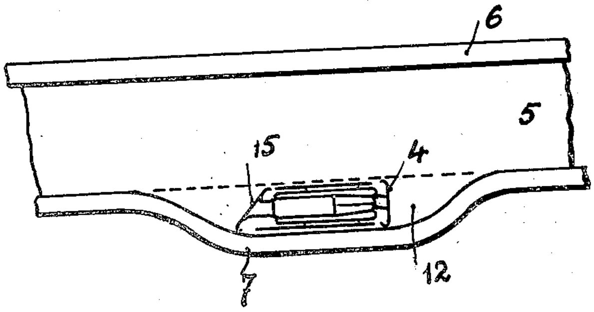


Fig. 9.

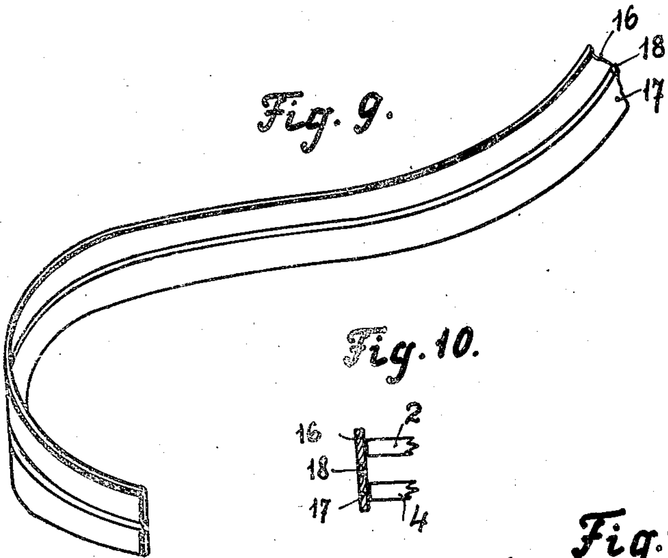
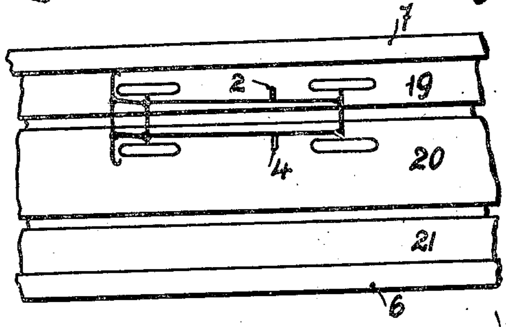


Fig. 10.

Fig. 11.



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MEANS FOR GUIDING TOY VEHICLES

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3 Claims. (Cl. 104—60)

The invention relates to means for guiding toy vehicles on a track and can be applied to all toy vehicles, whatever may be their mode of propulsion.

The principal object of the present invention is to provide means whereby a toy vehicle or boat may be automatically guided upon its running surface and also means for supplying current to the electric propulsion motor whereby all of said means help to give said vehicle and track or said boat and its running surface the resemblance of a full sized vehicle running along a street or a full sized boat skimming over a river or canal.

A further object of the present invention is the provision of means whereby toy electrically propelled vehicles or boats running upon a current, supplying surface and automatically guided upon said surface or a current supplying surface and current supplying curbs mounted upon the edges of said surface, are permitted to pass one another upon said track.

Other objects of the present invention will be in part obvious and in part pointed out in the following description of the device and its operation.

In order to show how the invention can be applied to the said mechanical toys, an example will be described of an application of the invention to electrically propelled vehicles and more particularly to those having the form of an actual motor car. The example to be described is not to be taken as a limitation but is given only in order to make the invention more readily understood.

On the attached diagrammatic drawings:—

Fig. 1 shows, in side view, a toy electric vehicle constructed according to the invention.

Fig. 2 is a view from underneath the vehicle of Fig. 1.

Fig. 3 shows diagrammatically, in section, the track constructed in accordance with the invention, with a vehicle.

Fig. 4 shows one sector of the track while Fig. 5 represents to a much smaller scale several sectors of the track assembled.

Fig. 6 shows a crossing and Fig. 7 a section along X—X of Fig. 6.

Fig. 8 shows a piece of the track including a part set aside for garaging vehicles.

Fig. 9 shows a conducting curb while Fig. 10 is a transverse section of Fig. 9.

Fig. 11 shows a track made up of two sets of insulated strips.

As can be seen from Figs. 1 and 2 the toy vehicle carries an electric motor 1 which acts on the rear wheels. One terminal of this electric motor is connected to an insulated brush 2 located, in this case, underneath the vehicle, and the other to the framework. The front gear of the vehicle is arranged in such a manner as to bring about a slight tendency to turn, for example, through a certain angle to the right and this is obtained, for example, by the aid of a spring 3. The other brush is constituted, for example, by a buffer 4 which forms part of the framework of the vehicle. The vehicle is also enveloped by a conducting strip 13 connected to the framework and is also provided with a rear buffer inclined for example at 45°.

Fig. 3 shows in section a track arranged to cause circulation of the vehicle constructed according to Figs. 1 and 2. This track consists of a conducting plate 5 and of two curbs 6 and 7 insulated at 8 from the plate 5. On a source of current being connected to the plate 5 and to the curbs 6 and 7 in order to cause circulation of the vehicle, it is only necessary to place the vehicle on the track with the buffer in contact with the curb 7. The brush 2 making contact with the plate 5 will send current to the motor 1 and complete a circuit by the framework, the buffer 4 and the curb 7 to the source of current. The motor will begin to rotate and advance the vehicle. As a result of the deviating tendency of the front wheels of the latter, the brush or buffer 4 connected to the framework of the vehicle will be continuously pressed against the curb 7. The turning tendency should at all times be such that once the vehicle has touched the edge of the track its steering gear adjusts itself so that the vehicle can run along the edge without being pressed too strongly against the latter. Thus the vehicle, while retaining its independent nature, will be able to run along the track however long it may be.

Fig. 5 shows how such a track can be made up of sectors of which one is represented in Fig. 4. A form of bolt 9 permits the sectors to be assembled together.

In a case where a vehicle has to go over a crossing, slits or crevices 10 are provided and can be disposed as shown in Fig. 6. The brush or buffer 4 carries an insulated spur 11 which rests on the plate 5 and is kept in contact therewith by the weight of the buffer 4. When the vehicle comes into the crossing the spur 11 enters the slit 10 and the vehicle by its momentum can reach the conducting curbs beyond the crossing and continue its course.

Referring to Fig. 8, the track being metallic and current conductive, there can be provided a space 12 disconnected from the course by enlargement. The edges 6 and 7 being conductive throughout, a vehicle which enters this enlargement 12, as shown in Fig. 8, will come to rest, since the motor circuit established by the contact of the brush 2 with the metallic track will be broken.

Suppose now that another vehicle arrives after the first; it will follow the curb 7, will slide along the rear inclined buffer 15 of the stationary vehicle, (the brush of the latter being always in contact with the "dead" part of the track) then along the conducting strip and, by re-making contact with the curb 7, will continue its course. Thus is solved the problem of the passing of vehicles, even those which are stationary on an insulated space. In the case where vehicles are made to travel along the track at different speeds the faster vehicles can pass the others in the manner described above. It is to be noted that the vehicles should have sufficient momentum to be able to regain the curb of the track or another conducting member if when travelling on the track they should become momentarily isolated.

It will be readily understood that when a vehicle has broken down on the track, passing can take place in similar fashion.

In the case of an electric vehicle taken as a practical example of the invention (see Figs. 9–11), by disposing the two brushes 22 and 24 one above the other on the side of the vehicle and with the same biased arrangement of steering gear of the vehicle, the latter can be made to run along a band comprising two conducting strips and which is placed for example on an ordinary floor and can be very long. The vehicle will then run along this band, which plays the part of the curbs 6 and 7 of the preceding figures. It will in effect be in continuous contact with the band which can take the form shown in Fig. 8. The band can be made up of two conducting strips 16 and 17 insulated at 18. The brushes 2 and 4 make contact with the parts 16 and 17 respectively of the band, which thus permits of the supply to the motor of the vehicle. It will be understood that a similar band could serve to guide any other form of vehicle of which the steering gear is constructed according to the invention.

In similar fashion to the above manner of carrying out the invention the track could include bands 19, 20, 21 insulated from one another (Fig. 11) and lying flat, the strips 19 and 21 being connected to the same pole of the source of current. The vehicle will then be furnished with two brushes 2 and 4 disposed on the chassis and running along these bands.

What we claim is:

1. Means for guiding and for supplying current to an electrically propelled vehicle comprising in combination an electrical conducting track, electrical conducting curbs on both edges of said track, insulating means interposed between said track and said curbs, and an electrical conducting bumper for contacting said curbs mounted on said vehicle and in electrical connection to one pole of the electric propelling motor of said vehicle and also in operating connection with the steering mechanism of said vehicle, means for electrically connecting the other pole of said electric propelling motor with said electrical conducting track, a second electrical conducting bumper so mounted on said vehicle as to guide all similar vehicles coming in contact therewith to one side of said vehicle, electrical conducting strips mounted on the side of said vehicle, said second bumper and said conducting strips being in electrical connection with said first bumper in order to impart electrical current to one pole of the propulsion means of said passing similar vehicle which has been guided away from one of said curbs by said second bumper.

2. Means for guiding and for supplying current to an electrically propelled vehicle comprising in combination an electrical conducting track, electrical conducting curbs on both edges of said track, insulating means interposed between said track and said curbs, and an electrical conducting bumper for contacting said curbs mounted on the front of said vehicle and also in operating connection with the steering mechanism of said vehicle, electrical conducting plates mounted on each side of said vehicle for contacting the bumpers of a similar vehicle when said vehicles are passing one another, a second bumper mounted on the rear of said vehicle in such a manner as to guide passing similar vehicles to one side of said vehicle, said first bumper, said conducting plates, said second bumper and one pole of said propelling motor being electrically connected to the framework of said vehicle in order that said propelling motor may receive current from any of the members electrically connected thereto and means connecting the second pole of said vehicle propelling motor with said conducting track.

3. Means for guiding and for supplying current to an electrically propelled vehicle comprising in combination an electrical conducting track, an insulated siding formed with said track at desired points to receive said vehicle in order to permit the passing of a similar vehicle, electrical conducting curbs mounted adjacent all edges of said track and said insulated siding, insulating means mounted between each edge of said track and the curbs of said track and siding, an electrical conducting bumper for contacting said curbs mounted on the front of said vehicle and also in operating connection with the steering mechanism of said vehicle, electrical conducting plates mounted on each side of said vehicle for contacting the bumpers of a similar vehicle when said vehicles are passing one another, a second bumper mounted on the rear of said vehicle in such a manner as to guide passing similar vehicles to one side of said vehicle, said first bumper, said conducting plates, said second bumper and one pole of said propelling motor being electrically connected to the framework of said vehicle in order that said propelling motor may receive current from any of the members electrically connected thereto and means connecting the second pole of said vehicle propelling motor with said conducting track.

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