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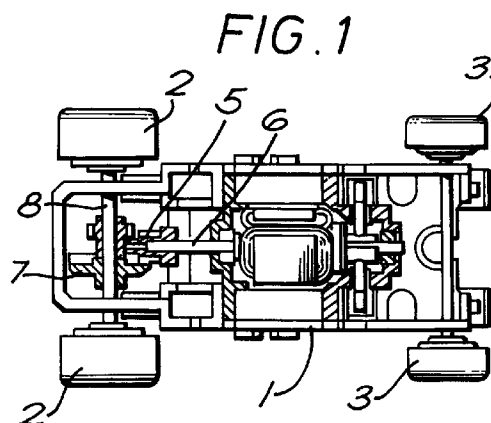
(71) Applicant : **THE REFINED INDUSTRY CO LTD**
Seventh Floor, Sun King Factory Building, 1-7
Shing Chuen Road
Taiwai, Shatin (HK)

(72) Inventor : **Hung, Hing Wing, Seventh Floor, Sun**
King
Factory Building, 1-7 Shing Chuen Road
Taiwai, Shatin, New Territories (HK)

(74) Representative : **Findlay, Alice Rosemary et al**
Lloyd Wise, Tregear & Co. Norman House
105-109 Strand
London WC2R 0AE (GB)

(54) **Improvements in toy cars.**

(57) A toy car for use with a slotted track with a pick-up shoe (10) arranged to pick up current from a wire on the track and a pick-up shoe holder (12) mounted on the car's motor (4) casing and arranged to contact the motor whereby current passes from the track wire via the pick-up shoe and pick-up shoe holder to the motor by contacting an electric brush of the motor.



The present invention relates to toy cars and in particular to an improved toy racing car.

Toy racing car sets are known in which an endless track is provided and cars, driven electrically, are raced against one another around the track. There are two basis systems for achieving this. The first system is known as "slot racing" since a slot is provided in the track into which a pin on the underside of the car projects, whereby the car is guided round the track in a particular lane. The second system is known as "slotless racing" in which each car does not have to move in a particular lane but can move from one lane to another. The present invention is directed to cars for use in the slot racing system.

We have sought to provide a toy racing car for use with a slotted track with better stability than known toy racing cars.

Accordingly, the present invention provides a toy car for use with a slotted track, the car comprising a motor arranged to drive a set of wheels the motor having a shaft with a pinion on one end thereof, the pinion arranged to rotate a crown gear on the rear axle of the car, a pick-up shoe arranged to pick up current from a wire in the track, a pick-up shoe holder mounted on the motor casing and arranged to contact the motor whereby current passes from the track wire via the pick-up shoe and pick-up shoe holder to the motor by contacting an electric brush of the motor.

The other end of the pick-up shoe holder may be provided, if desired, with one or two lugs to act as electrical terminals for the car head-lights.

A spring is preferably provided which biases the pick-up shoe into contact with the track wire.

Electrical current reaches the car motor from the track wire by means of the pick-up shoe and the pick-up shoe holder. The current turns the motor on its shaft in a counterclockwise direction. As a result a pinion on the end of the motor shaft also turns in the same direction, rotating a crown gear mounted on the rear axle thereby rotating the rear axle and the rear wheels mounted at either end of the axle - thus propelling the car forward.

The crown gear has a straight-sided tooth profile which is illustrated in the accompanying drawings. The advantages of the particular tooth profile are that there is less wear on the crown gear, less slippage of the pinion gear and less energy is used to drive the car. Two grand magnets are mounted directly on the chassis. When the car is on the track the magnetic force of the motor is passed to the grand magnets which are then attracted to the track wire. This lowers the centre of gravity of the car and prevents it from overturning at high speeds. Mounting the grand magnets on the chassis, rather than in special holders, also reduces the cost of manufacture.

The heat from the motor has a tendency, after a period of time, to deform the brush and brush springs of the motor and thus to reduce the life of the car. By

positioning the pick-up shoes on the motor casing rather than on the chassis they help to dissipate the heat from the motor and thus to prolong the life of the car.

The present invention is further illustrated in the accompanying drawings wherein:

Figure 1 is a plan view of an embodiment of the present invention;

Figure 2 is a side view of an embodiment of the present invention;

Figure 3 is an underneath view of an embodiment of the present invention; and

Figure 4 is cross-section through part of the teeth of a crown gear of the present invention.

The Figures 1 to 3 show a car in accordance with the present invention which includes a chassis 1, rear wheels 2, front wheels 3 and motor 4. The motor 4 drives the rear wheels 2 through a pinion 5 on the end of motor shaft 6 which meshes with a crown gear 7 which is mounted on rear axle 8, to the two ends of which are mounted the rear wheels 2.

In use the car is placed on a track and a guide pin 9 locates in a slot in the track. The track is also provided with a continuous wire through which electricity passes. Pick-up shoes 10 (see Figure 2) are forced into good contact with the wire in the track by springs 11. The current picked up from the track wire by the pick-up shoes 10 passes through pick-up shoe holder 12 (see Figure 3) to the motor 4. The current turns the motor 4 on its shaft in a counterclockwise direction. As a result the pinion 5 also turns in the same direction rotating the crown gear 7 which in turn rotates rear axle 8 and rear wheels 2 to propel the car forward.

Grand magnets 13 are provided to pick up the magnetic force of the motor 4 and thereby create a magnetic attraction for the car onto the track wires which serves to lower the centre of gravity of the car and thereby prevent its overturning at high speed.

As shown in Figure 4 the teeth have straight sides 14 and straight top surface 15 and bottom surface 16.

Claims

1. A toy car for use with a slotted track, the car comprising a motor arranged to drive a set of wheels the motor having a shaft with a pinion on one end thereof, the pinion arranged to rotate a crown gear on the rear axle of the car, a pick-up shoe arranged to pick up current from a wire in the track, a pick-up shoe holder mounted on the motor casing and arranged to contact the motor whereby current passes from the track wire via the pick-up shoe and pick-up shoe holder to the motor by contacting an electric brush of the motor.
2. A toy car as claimed in claim 1, in which the pick-

up shoe holder is provided with one or more lugs to act as electrical terminals for the car headlights.

3. A toy car as claimed in claim 1 to 2, in which the pick-up shoe is biased into contact with the track wire by a resilient means. 5
4. A toy car as claimed in claim 3, in which the resilient means is a spring. 10
5. A toy car as claimed in any of claims 1 to 4, in which the teeth of the crown gear are straight-sided with a straight top surface and a straight bottom surface. 15
6. A toy car as claimed in any of claims 1 to 5, in which two grand magnets are mounted directly on the chassis. 20

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FIG. 1

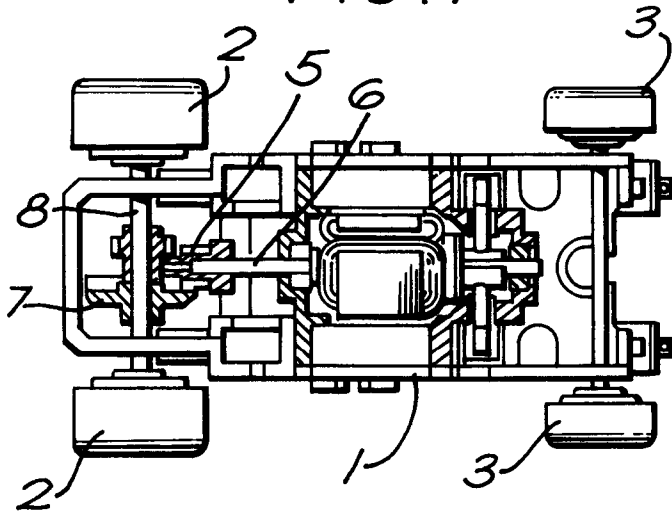


FIG. 4

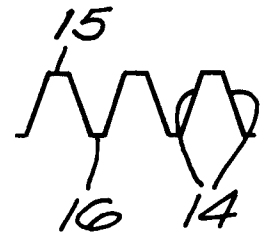


FIG. 2

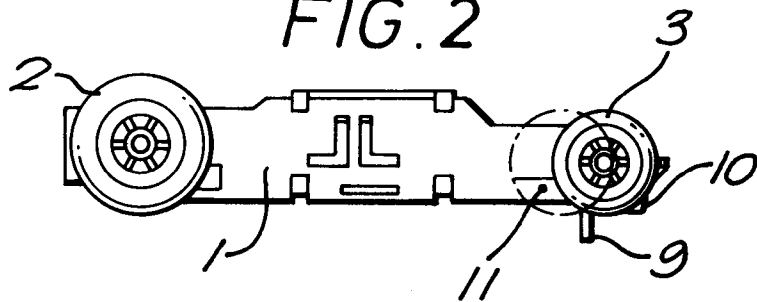


FIG. 3

