

June 24, 1924.

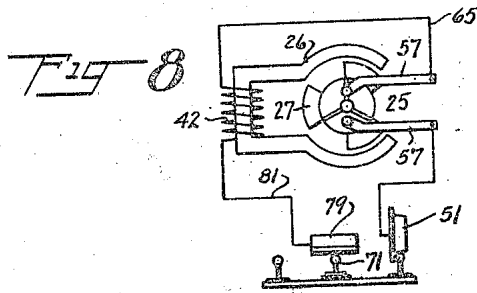
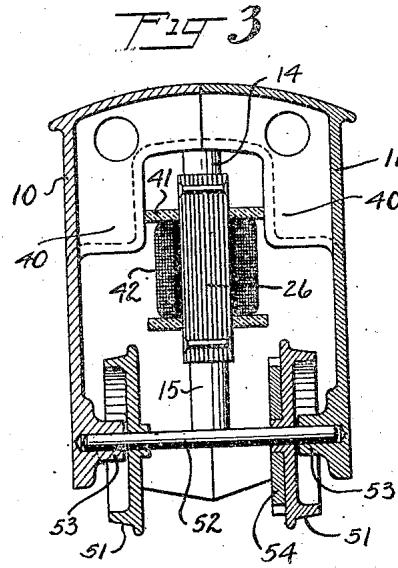
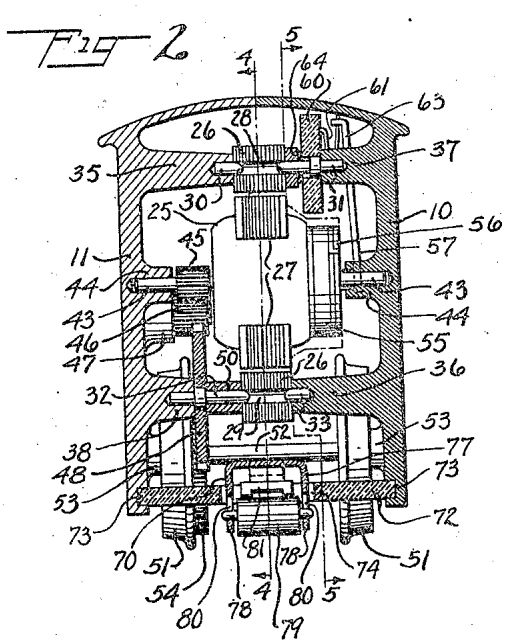
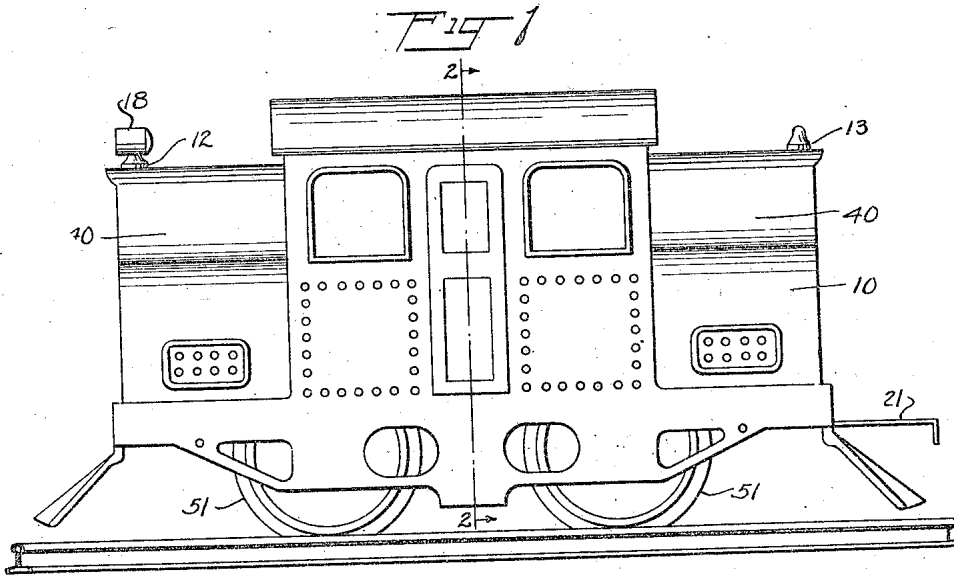
1,498,958

J. FORCHHEIMER

TOY VEHICLE

Filed Aug. 25, 1923

2 Sheets-Sheet 1



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FIG 4

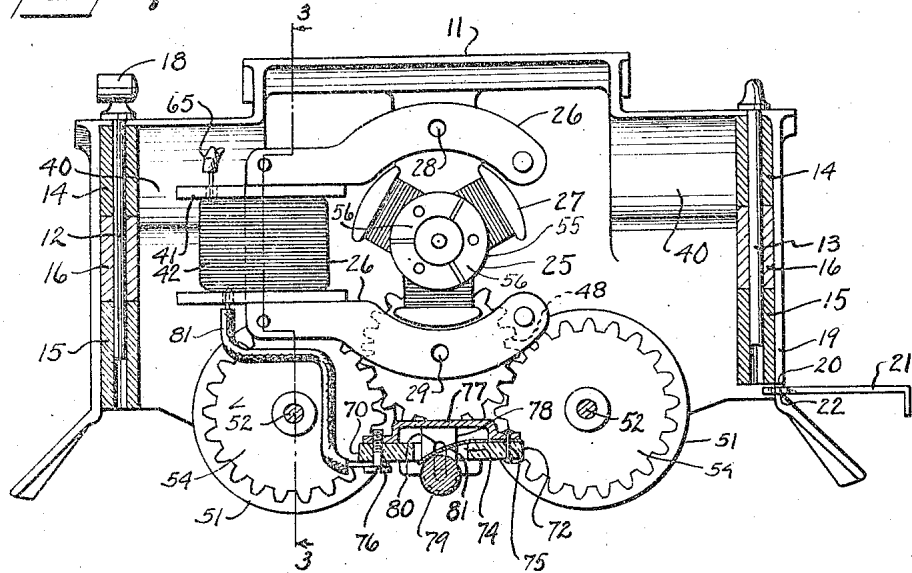


FIG 5

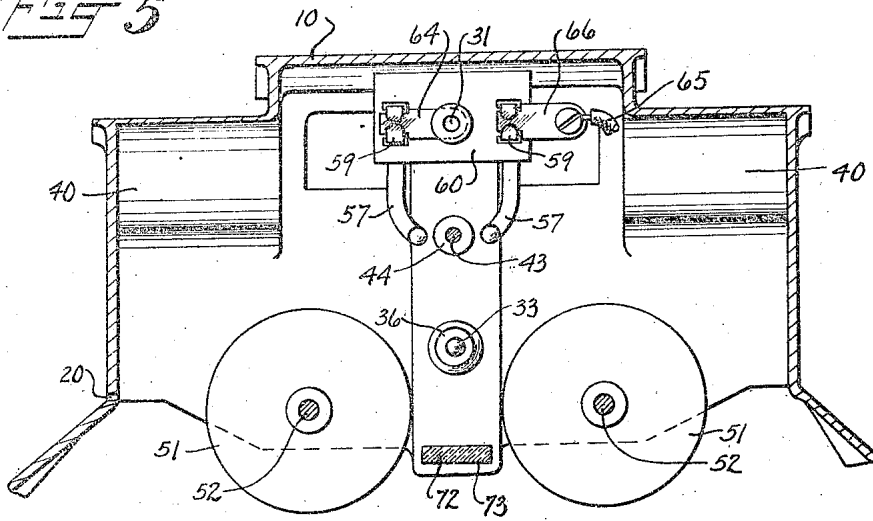
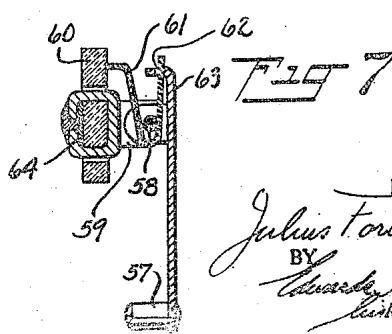
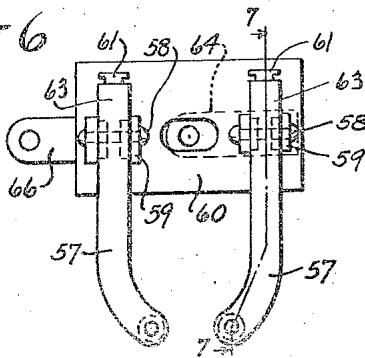


FIG 6



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Patented June 24, 1924.

1,498,958

UNITED STATES PATENT OFFICE.

JULIUS FORCHEHEIMER, OF NEW YORK, N. Y.

TOY VEHICLE.

Application filed August 25, 1923. Serial No. 659,262.

To all whom it may concern:

Be it known that I, JULIUS FORCHEHEIMER, a citizen of Germany, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Toy Vehicles, of which the following is a specification.

This invention relates to toys and particularly to a toy vehicle adapted to be propelled by an electric motor.

Among the objects of my invention is to provide a toy vehicle of the character described wherein the electric motor which is carried by the vehicle is mounted in an external sectional casing which forms the car or locomotive body and which motor is connected by suitable gearing with the track or rod wheels of the vehicle, and a further object is to provide means whereby the motor armature as well as the gearing and track wheels of the vehicle are journaled in an external body casing.

A further object of my invention is to provide an improved mounting for the field magnet of the electric motor.

Further objects of my invention are to produce a device of the class described which shall be simple in construction, durable in use, inexpensive to manufacture, and one which may be easily assembled.

Further objects and advantages of my invention will appear from the following description taken in connection with the accompanying drawings wherein—

Fig. 1 is a side plan view of a toy car or locomotive embodying my invention and showing a portion of the rails upon which the car or locomotive is adapted to run.

Fig. 2 is a sectional view partly in elevation taken on the line 2—2 of Fig. 1 and looking in the direction of the arrows.

Fig. 3 is a view similar to Fig. 2 but taken on the line 3—3 of Fig. 4.

Fig. 4 is a sectional view partly in elevation taken on the line 4—4 of Fig. 2.

Fig. 5 is a view similar to Fig. 4 but taken on the line 5—5 of Fig. 2.

Fig. 6 is a detailed plan view of the motor brushes and their mountings.

Fig. 7 is a sectional view on the line 7—7 of Fig. 6, and

Fig. 8 is a digrammatic view of the car circuits.

Referring to the drawing, the body of the car is formed of two similar sections 10 and 11 preferably formed of cast brass

which are secured together by means of pins 12 and 13 each of which passes through aligned openings in lugs 14 and 15 formed on the section 10 and an intermediate lug 16 formed on section 11. The head 18 of the pin 12 is formed to represent a locomotive headlight. The sections 10 and 11 at one end and at their abutting edges 19 are formed with notches 20 and a bar 21 which serves as a car coupler is formed with a reduced portion 22 adapted to fit and be held in the notches 20 when the sections are assembled.

The motor 25 which propels the vehicle is formed of a stationary field magnet 26 and a rotary armature 27. The former is provided with openings 28 and 29 adapted to receive pins or rods 30, 31, 32 and 33 which are supported from the car body and serve as supporting and holding means for the field magnet. The pins 30 and 33 are carried respectively by the projecting portions 35 and 36 cast integrally with the body sections while the pins 31 and 32 are supported respectively from projecting lugs 37 and 38 also formed integrally with the body sections. Pins 31 and 32 serve other functions than merely to support the magnet, as will be more particularly pointed out hereafter. The field magnet 26 is further held in place by engagement of the re-entrant portions 40 of the body sections with the insulating head 41 of the field magnet spool 42.

The motor armature 25 is provided with a rotary shaft 43 which is journaled in projecting lugs 44 formed integrally with the body castings and this shaft 43 carries a pinion 45 adapted to mesh with a larger pinion 46 rotatably mounted on the projection 47 of the casting 11. The pinion 46 meshes with a gear 48 rotatably mounted on the pin 32 which forms one of the supporting members for the magnet 26. The gear 48 is maintained in position on the pin 32 by a spacing collar or sleeve 50 which is loosely mounted on the pin 32 between the gear 48 and magnet 26. The track wheels 51 of the car are fixed to axles 52 which in turn are journaled in lugs 53 of the body casting and the two wheels at one side of the car have fixed thereto gears 54 both of which are adapted to mesh with and be driven by the gear 48.

The armature 27 of the motor is provided with a commutator 55 formed of contacting segments 56 which are adapted to be en-

gaged by brushes 57. These brushes are each pivoted to a pin 58 supported by brackets 59 extending from an insulating member 60. Leaf springs 61 which engage the insulating member 60 at one end pass through openings 62 formed in the upper extensions 63 of the brushes and serve to maintain the brushes in yielding contact with the commutator segments. One of the brushes is connected by means of a conductor 64 which joins its bracket 59, with the supporting pin 31. The remaining brush is connected through its supporting bracket to the field winding 42 by means of a conductor 65 and strip 66.

The collector 70 which is adapted to take current from a third rail 71 is supported by an insulating block 72 held in recesses 73 formed in the sections 10 and 11 of the car body. The block 72 is formed with a centrally located opening 74 and above this opening and secured to said block by means of a pin 75 and bolt 76 is a sheet metal member 77. This member is formed with depending portions 78 which together with the top of the member 77 form a supporting yoke for contacting roller 79. The depending portions 78 pass downward through the central opening 74 in the block 72 and these portions are each slotted at 80 to receive the trunnions of the roller 79 which is adapted to engage the third rail 71. The leaf spring 81 is secured between the sheet metal member 77 and the block 72 and presses against the upper surface of the roller 79 so as to urge the same toward the bottom of the slots 80 and so maintain the roller in constant engagement with the third rail. The spring also aids in conducting the current from the roller 79 to the sheet metal member 77 from whence it is conducted by means of the bolt 76 and conductor 81 to the field coil 42 of the motor.

From the above it will be seen that the device constructed in accordance with my invention is one which may be readily assembled. The various rotary parts of the mechanism as well as the conducting and insulating elements carried by the car are constructed so that they may be arranged in place relative to one of the body sections and when this is accomplished all may be firmly and securely held by fitting the other section of the body in place and inserting the pins 12 in their respective openings.

I claim:—

1. A toy vehicle formed of detachably connected opposed metal sections forming the vehicle body and a motor for actuating said vehicle having a shaft journaled in a bearing in each of said sections, the detachment and removal of one section from the other serving to remove the bearing of the one section from said shaft.

2. A toy vehicle formed of opposed metal sections forming the vehicle body, said sections being detachably connected at their ends and a motor for actuating said vehicle having a shaft journaled in a bearing in each of said sections, the detachment and removal of one section from the other serving to remove the bearing of the one section from said shaft.

3. A toy vehicle formed of detachably connected opposed metal sections forming the vehicle body, a motor in said body for actuating said vehicle, said motor being held in place in said sections and removable, upon detachment and removal of one of said sections, without other detachment.

4. A toy vehicle formed of detachably connected metal sections forming the body of said vehicle, track wheels for said vehicle, actuating mechanism for said wheels, said wheels and mechanism being removable, upon detachment and removal of one of said sections, without other detachment.

5. A toy vehicle formed of detachably connected metal sections forming the body of said vehicle, track wheels for said vehicle, actuating mechanism for said wheels, comprising an electric motor and transmission gearing, said wheels and mechanism being removable, upon detachment and removal of one of said sections, without other detachment.

6. A toy vehicle formed of detachably connected metal sections forming the vehicle body, actuating means for said vehicle in said body, said actuating means comprising an electric motor, electrical connections carried by said body for supplying current to said motor from an external source, said actuating mechanism and connections being removable, upon detachment and removal of one of said sections, without other detachment.

7. A toy vehicle formed of opposed metal sections forming the vehicle body, said sections being detachably connected at their ends, actuating means for said vehicle in said body, said actuating means comprising an electric motor, electrical connections carried by said body for supplying current to said motor from an external source, said actuating mechanism and connections being removable, upon detachment and removal of one of said sections, without other detachment.

8. A toy vehicle formed of opposed cast metal sections forming the vehicle body, said sections being formed with interfitting projections at their ends having aligned openings and removable pins in said openings for detachably securing said sections together.

9. A toy locomotive formed of opposed cast metal sections forming the locomotive body, said sections being formed with inter-

fitting projections at their ends having aligned vertical openings and removable pins in said openings for detachably securing said sections together, one of said pins having a head formed to represent a locomotive headlight.

10. A toy vehicle formed of opposed cast metal sections forming the vehicle body, said sections being formed with interfitting projections at their ends having aligned openings, removable pins in said openings for detachably securing said sections together and actuating mechanism for said vehicle located in said body and supported and held in place by said sections.

11. A toy vehicle formed of opposed cast metal sections forming the vehicle body, said sections being formed with interfitting projections at their ends having aligned openings, removable pins in said openings for detachably securing said sections together, and actuating mechanism for said vehicle located in said body and supported and held in place by said sections, and removable, upon detachment and removal of one of said sections, without other detachment.

12. A toy car having a body comprising two opposed cast metal sections detachably secured together with abutting edges, one of said edges being formed with a notch and a car coupler formed of a strip of metal having a reduced portion held in said notch by the other of said sections.

13. A toy vehicle comprising opposed detachably connected metal sections forming the body of said vehicle, said sections being formed with journal bearings and inwardly projecting pins, an electric motor for actuating said vehicle comprising a stationary field magnet and rotary armature, said magnet having openings for the reception of said pins and said armature having a shaft which is journaled in said bearings.

14. A toy vehicle comprising opposed detachably connected metal sections forming the body of said vehicle, said sections being formed with journal bearings and inwardly projecting pins, an electric motor for actuating said vehicle comprising a stationary field magnet and rotary armature, said magnet having openings for the reception of said pins and said armature having a shaft which is journaled in said bearings, said magnet and armature being removable, upon detachment and removal of one of said sections, without other detachment.

15. A toy locomotive comprising opposed detachably connected metal sections each of said sections having re-entrant portions forming a part of the roof of said locomotive, and an electric motor for actuating said

locomotive comprising a stationary field magnet held between said sections by engagement with said re-entrant portions.

16. A toy vehicle comprising opposed detachably connected metal sections forming the body of the vehicle, said sections being formed with journal bearings and inwardly projecting pins and an electric motor for actuating said vehicle comprising a field, armature, brushes and brush holder, said armature being journaled in the bearings in said sections and said field and brush holder being carried by said pins in such a manner that upon detachment and removal of one of said sections the parts of said motor may be removed without further detachment.

17. A toy vehicle comprising opposed detachably connected sections forming the vehicle body, each of said sections being formed with a recess, an electric motor for actuating said vehicle carried by said sections, a current collector adapted to form contact with an external conductor and a support for said collector seated in said recesses and removable therefrom upon detachment of said sections.

18. A toy vehicle comprising opposed detachably connected sections forming the vehicle body, each of said sections being formed with a recess, an electric motor for actuating said vehicle carried by said sections, a current collector adapted to form contact with an external conductor said collector comprising a contacting roller, a supporting metal yoke therefor and a spring interposed between said roller and yoke and a support for said collector comprising an insulating bar having its ends seated in said recesses and removable therefrom upon detachment of said sections.

19. A toy vehicle comprising opposed metal sections forming the vehicle body, said sections being detachably connected at their ends and actuating means for said vehicle carried by said sections, said actuating means comprising an electric motor, electrical connections carried by said sections for supplying current to said motor from an external source, said actuating means and connections being removable upon detachment of said sections.

20. A toy car having a body comprising two opposed metal sections detachably secured together with abutting edges one of said edges being formed with a notch and a car coupler consisting of a bar bent to a hook on one end and having a straight shank formed with a reduced portion held in said notch by the other of said sections.

JULIUS FORCHHEIMER.