July 18, 1939. A. E. CULLEN 2,166,752

ROADWAY FOR TOY ELECTRIC VEHICLES

Original Filed March 27, 1936

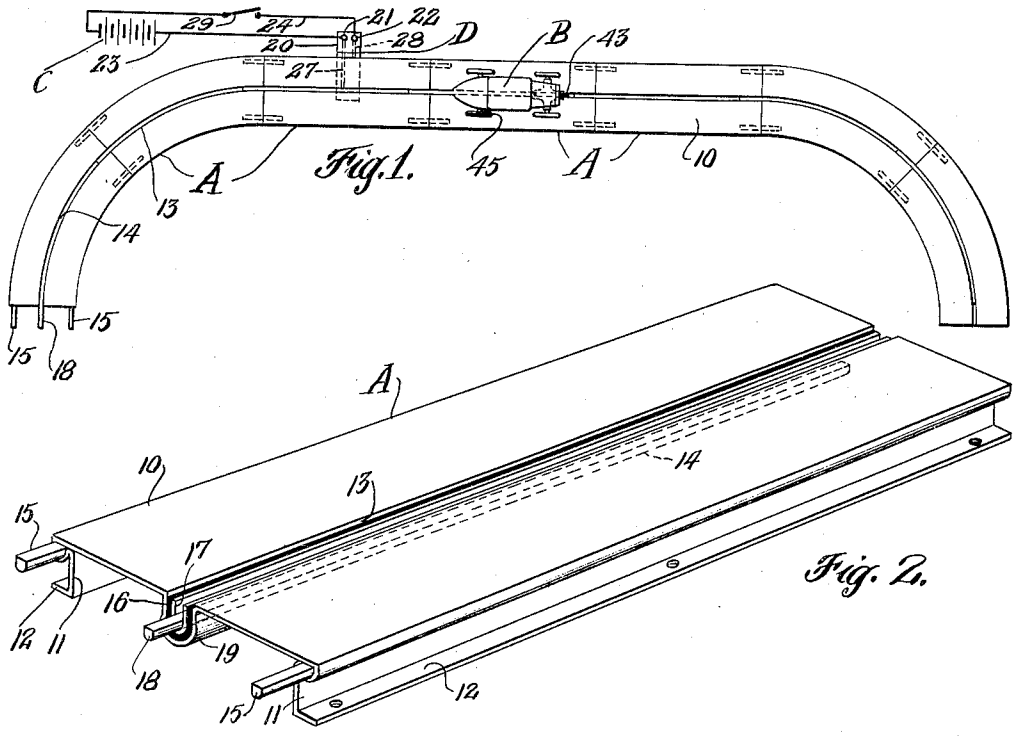


Fig. 1.

Fig. 2.

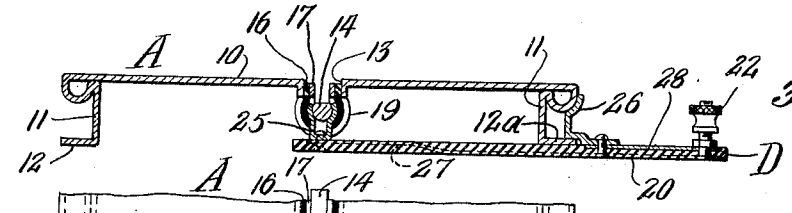


Fig. 3.

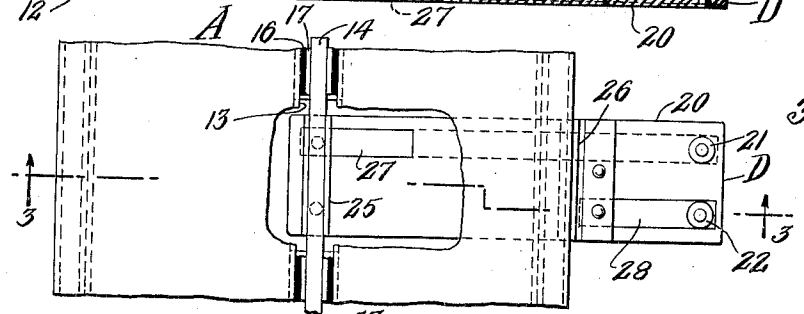


Fig. 4.

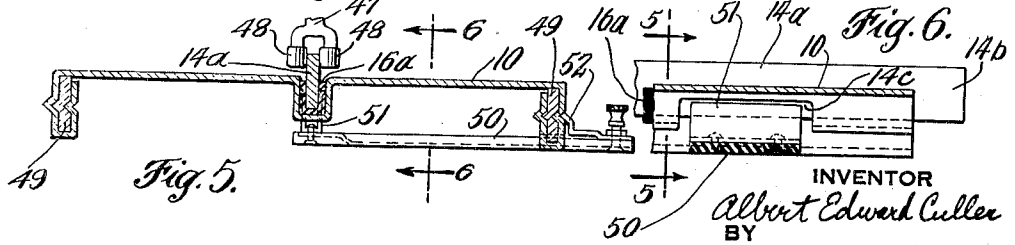


Fig. 5.

Fig. 6.

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ROADWAY FOR TOY ELECTRIC VEHICLES

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Original application March 27, 1936, Serial No. 71,236. Divided and this application September 1, 1937, Serial No. 161,892

2 Claims. (Cl. 238—10)

This invention relates to roadways for toy electric vehicles and is a division of my copending application Serial No. 71,236, filed March 27, 1936.

One of the primary objects of my invention is the provision of a sectional roadway for toy electric vehicles in which the roadway is adapted to supply the electric current in a novel manner.

Another object of my invention resides in the provision of a roadway for toy electric vehicles which is provided with electric conductor means adapted to effect guiding and steering of the vehicle.

A further object of my invention is the provision of a roadway for toy automobiles having a plane road surface over which the wheels of the automobile travel in the usual manner of automobiles and having longitudinally extending electric conductor means constructed to effect guiding and steering of the automobile.

Another object resides in the provision of a road section and electric connector means of novel construction.

How the foregoing together with such other objects and advantages as will hereinafter appear or are incident to my invention are realized, is illustrated in preferred form in the accompanying drawing, wherein—

Figure 1 is a more or less diagrammatic plan view illustrating a portion of a roadway constructed in accordance with my invention;

Figure 2 is an enlarged perspective view of a section of the roadway;

Figure 3 is a cross-section through a section of the roadway illustrating the application of an electric connector, the section being taken on the line 3—3 of Figure 4;

Figure 4 is a fragmentary plan view of Figure 3 with a portion of the road surface broken away;

Figure 5 is a cross-section through a section of roadway of modified construction, the section being taken on the line 5—5 of Figure 6; and

Figure 6 is a fragmentary logitudinal section of the form of my invention illustrated in Figure 5, the section being taken on the line 6—6 of Figure 5.

In Figure 1 I have illustrated a portion of a roadway comprising a plurality of road sections A connected together endwise; an electric motor driven automobile B; a source of electric current such as a battery C; and a connector D for making the electric connections between the battery and the roadway.

The track sections A are preferably constructed of sheet metal and each comprise a plane road surface 10, side wall portions 11 provided with flanges 12 for securing the sections to a platform or the like, a longitudinally extending groove 13 preferably located centrally of the section, an electric conductor 14 located in said groove and substantially coextensive therewith, and means such as pins 15 for connecting the sections together. The road surface 10 may be roughened and artificially colored to imitate concrete or dirt roads by a metallic substance that will conduct electricity.

The groove 13 is formed by bending the metal of the section in the form of a U in cross section and the conductor 14 is electrically insulated therefrom as by means of a U shaped insulator 16 coextensive with the groove. In this instance a U-shaped metal member 17 is located between the insulator 16 and the conductor 14. The conductor projects from the end of the groove as illustrated at 18 in Figures 1 and 2 so as to serve as a connecting pin. At its other end the conductor ends short of the end of the groove so that the projecting end of the conductor of the adjacent section may be received by the groove. It will be noted that the metal member 17 serves to make an electrical connection between the conductors of adjacent sections so that it is not necessary for these conductors to come into end to end contact.

The conductor 14, insulator 16 and member 17 may be secured in the groove in any suitable manner for example by providing a bulge as shown at 19 to prevent their displacement. The members may be inserted from the end of the groove or since they are somewhat yieldable the insulator 16 and member 17 may be inserted from the top of the groove and the conductor 14 forced in from the top with a snap action.

In Figures 1, 3 and 4 I have illustrated an electrical connector D attached to one of the sections comprising a base plate 20 of insulating material such as fiber, a pair of terminals 21 and 22 to which wires 23 and 24 leading from the battery C are connected, clip means 25 adapted to have snap engagement with the conductor 14, clip means 26 having snap engagement with the side of the section, a conductor 27 leading from the terminal 21 to the clip means 25, and a conductor 28 leading from the terminal 22 to the clip means 26. As illustrated in Figures 3 and 4 the groove 13, insulator 16 and member 17 are slotted to expose the bottom of a portion of the conductor for snap engagement of the clip 25. Since the members 14 and 17 are in contact with each other, the clip 25 may have snap engagement with the member 17 instead of the member 14 in

which case only the groove and insulating material would be slotted. The bottom of base plate **20** is made flush with the bottom of the road section by providing a recess **12***a* in the flange **12** of the section.

It will be seen from the foregoing that one side of the battery C is connected to the conductor **14** by wire **23**, conductor **27** and clip **25** and that th other side of the battery is connected to the roadway by wire **24**, conductor **28** and clip **26**. A controlling switch **29** may be included in the circuit as indicated in Figure 1.

Referring to Figure 1, I have illustrated a toy automobile such as shown in my above-mentioned co-pending application applied to the roadway, which automobile is provided with a roller **43** adapted to run in the groove **13** of the roadway for steering and guiding purposes and also to pick up electric current for the motor of the automobile by contact with the conductor **14**.

The wheels of the automobile are provided with rubber tires to run on the road surface in the usual manner of automobiles. In order to complete the electric circuit for the motor a metallic member or disc **45** is associated with one of the rear wheels of the automobile to have contact with the metal surface of the roadway.

In Figures 5 and 6 I have illustrated a roadway and electric connector of modified forms In this instance the electric conductor **14***a* is in the form of a flat strip fitting the groove and projecting above the road surface **10** and insulated from the groove by a U-shaped insulator **16***a*. The electric pick up is by means of a forked member **47** carried by the front truck of the automobile and having a pair of guiding or steering rollers **48** engaging the sides of the conductor. In this instance I have shown flat pins **49** for connecting the sections together and the projecting end portion **14***b* of the conductor **14***a* is adapted to contact with the adjacent end of the conductor of the adjacent section. U-shaped metal members similar to the members **17** above-described may be employed to ensure a good electrical connection between adjacent conductors.

As shown at **14***c* in Figure 6 a portion of the conductor **14***a* is bared for reception of the connector **50** which is provied with a clip **51** having snap engagement with this bared portion, a clip **52** having snap engagement with the side wall of the road section and terminals for the connection of the electric wires in the manner described above.

Referring to the form of road section illustrated in Figure 2 in which the conductor **14** is set below the road surface this is particularly advantageous because it prevents short circuiting by metal objects being place on the roadway or by the automobile if it should for some reason sway excessively.

While I have only illustrated straight and curved road sections it is to be understood that these sections may take other forms to provide crossings, tangential road intersections and the like.

I claim:

1. A sectional toy roadway for toy electric automobiles, each section comprising a flat sheet metal road surface having a groove therein extending longitudinally thereof, an electrical conductor in said groove extending substantially for the full length of the section, a second electrical conductor contacting said first mentioned conductor and projecting from one end of the section and terminating short of the other end of the section and means insulating said conductors from the groove.

2. A sectional toy roadway for toy electric automobiles, each section comprising a flat sheet metal road surface having a groove therein extending longitudinally thereof and of U-shape in cross-section, insulation in said groove extending for the length thereof and of corresponding U-shape in cross-section, an electric conductor of U-shaped cross-section fitting said insulator, and a second electrical conductor fitting said U-shaped conductor and projecting from one end of the section.

ALBERT EDWARD CULLEN.