

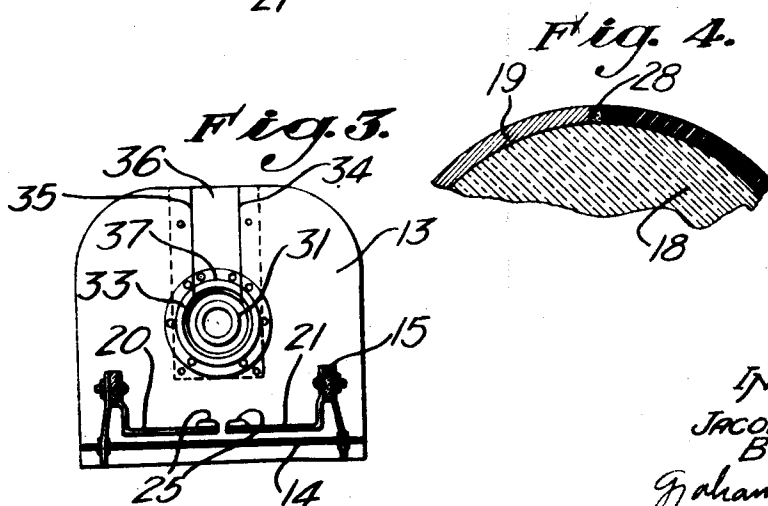
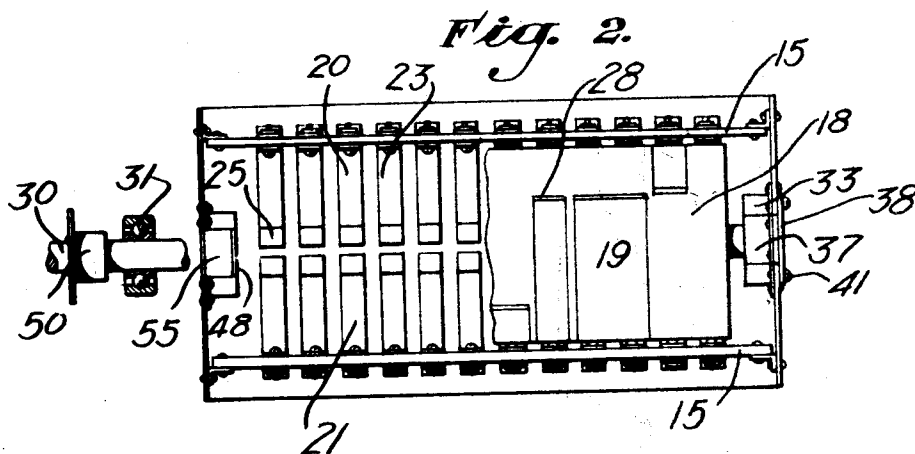
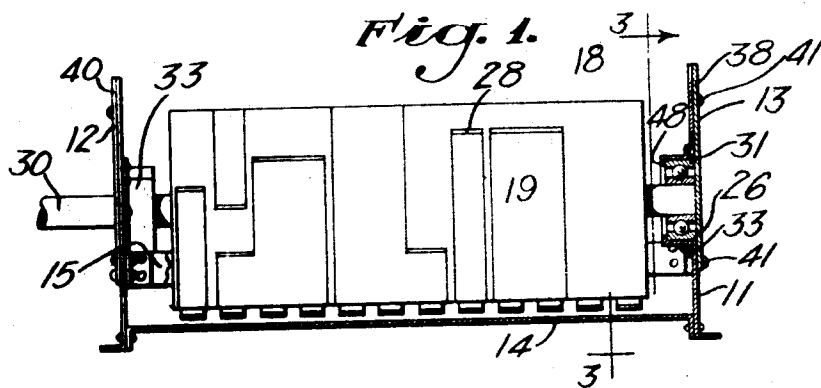
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1,558,052

J. SCHURCH

CONTROLLER FOR ELECTRIC MOTOR VEHICLES

Filed Sept. 15, 1922



INVENTOR:
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UNITED STATES PATENT OFFICE.

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CONTROLLER FOR ELECTRIC MOTOR VEHICLES.

Application filed September 15, 1922. Serial No. 588,490.

To all whom it may concern:

Be it known that I, JACOB SCHURCH, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Controller for Electric Motor Vehicles, of which the following is a specification.

My invention relates to devices for controlling the flow of electric current from a generative source to various electrically actuated elements, and relates particularly to a drum type controller which is especially adapted to use with electrically driven motor vehicles.

It is an object of my invention to provide a controller having means incorporated therewith for eliminating the detrimental burning off of the ends of contact plates due to the arc which is formed between these contact plates and the contact fingers when contact therebetween is broken.

It is a further object of my invention to provide a controller from which the drum may be removed without disturbing the contact fingers, and in which controller the removal of the drum provides free access to the contact fingers thereof.

It is a still further object of the invention to provide in such a device an improved construction which facilitates the removal of the drum.

The specific advantages of my invention and further objects thereof will be made evident hereinafter.

Referring to the drawing which is for illustrative purposes only:

Fig. 1 is a longitudinal vertical sectional view of a controller embodying the features of my invention.

Fig. 2 is a plan view corresponding to Fig. 1, a portion of the drum being removed to show the disposal of the contact fingers thereunderneath.

Fig. 3 is a sectional view taken upon an offset plane as indicated by the line 3—3 of Fig. 1.

Fig. 4 is a fragmentary sectional view showing the manner in which the contact

plates and carbon inserts are mounted upon the peripheral surface of the drum.

The invention consists, as shown in the drawing, of a supporting structure 11 having end plates 12 and 13 which are held in properly spaced arrangement by a longitudinal connecting member 14 and insulator bars 15; a drum 18 rotatably mounted between the end plates 12 and 13, having contact plates 19 mounted thereupon; and two sets 20 and 21 of cooperating contact fingers 23 which are attached in a suitable manner to the insulator bars 15 and extend underneath the drum 18 in such a manner that contact of brushes 25 mounted upon the inner ends thereof may be had with their associated contact plates 19 as the drum 18 is revolved.

It is an inherent tendency of electric currents to draw an arc between contact points of a circuit when such points are drawn out of contact. This arc has the effect of burning off and roughening the metal contact members at the point where the break of contact is made. My invention provides a means whereby the detrimental effects of this arcing of the contacts may be practically overcome. This I accomplish by the employment of carbon inserts 28 which are placed, as shown in Fig. 4, adjacent to the ends of the contact plates 19 at which the make and break of the contact is accomplished.

It will be perceived that as the drum 18 is revolved a finger 23 of one set of contact fingers will make contact with a contact plate 19 and then the opposite finger 23 of the other set will make contact with the contact plate, thus providing through the contact plate a connection between the opposite contact fingers. It is further evident that before contact of a finger can be made with a contact plate, the finger must pass over a carbon insert 28, and that whatever arc is drawn must be from the carbon insert. This is also true with the breaking of a contact between a contact finger and a contact plate, the electric circuit being maintained by the carbon insert after

the finger has left the plate. The particular value of carbon in this utility is that it is of high resistance and cannot be welded under the action of the electric arc, and does not rapidly disintegrate under the action thereof.

Another important feature of my invention resides in the mounting of the drum 18 upon a shaft 30 in such a manner that the drum may with facility be lifted directly upward from between the end plates 12 and 13, for the purpose of renewing inserts or giving attention to the fingers 23, without disturbing these fingers. The shaft 30 is supported in ball bearings 31 held in annular retaining members 33 which are riveted upon the inner faces of the plates 12 and 13, the bearing members being inserted through openings 26 in the plates 12 and 13. From the top edge of the plates 12 and 13 vertical cuts 34 and 35 are extended down through the upper part of the retaining members 33, these cuts being spaced at a slightly greater distance apart than the diameter of the shaft 30. Central filler plates 36 are thus formed to which are attached the filler portions 37 of the retaining members 33.

Riveted upon the front of the filler plates 36 are plates 38 and 40 of somewhat greater width than the filler plates, and extending down to a point below the ball bearings. By the use of screws 41, the plates 38 and 40 are attached to the plates 12 and 13, thus providing a means whereby the filler plates 36 are held in place and also a means for holding the ball bearing members against the inner lips 48 of the retaining members 33 and preventing their moving outwardly upon the shaft 30.

When it becomes necessary to remove the drum 18, the filler plates 36 are removed, as shown at 50 in Fig. 2, by taking out the screws 41 which pass through the plates 38 and 40. The ball bearing members 31 may then be slid outwardly upon the shaft 30, leaving the shaft free to be lifted upwardly through the vertical channels 35 exposed by the removal of the filler members.

I claim as my invention:

1. In a controller, the combination of: a drum; a rotatable shaft for mounting said drum; a pair of suitably spaced supporting members; a bearing receptacle in each of said supporting members, said bearing receptacles each having an open end; a bearing placed in each of said receptacles through said open ends, said bearings rotatably supporting said shaft, there being a channel, of slightly greater width than the diameter of said shaft, extending from the outer edge of each of said supporting members inwardly through one side of each of said bearing receptacles, so as to permit said shaft to be removed radially from said sup-

porting members after the moving of said bearings upon said shaft out of said receptacles.

2. In a controller, the combination of: a drum; a rotatable shaft for mounting said drum; a pair of suitably spaced supporting members; a bearing receptacle in each of said supporting members, said bearing receptacles each having an open end; a bearing placed in each of said receptacles through said open ends, said bearings rotatably supporting said shaft, there being a channel, of slightly greater width than the diameter of said shaft, extending from the outer edge of each of said supporting members inwardly through one side of each of said bearing receptacles, so as to permit said shaft to be removed radially from said supporting members after the moving of said bearings upon said shaft out of said receptacles; a removable filler member for each of said channels, and means with said filler members for preventing the movement of said bearings through the open ends of said bearing receptacles.

3. In a controller, the combination of: a drum; a rotatable shaft for mounting said drum; a pair of suitably spaced supporting members; a bearing receptacle in each of said supporting members, said bearing receptacles each having an open end, a bearing placed in each of said receptacles through said open ends, said bearings rotatably supporting said shaft, there being a channel, of slightly greater width than the diameter of said shaft, extending from the outer edge of each of said supporting members inwardly through one side of each of said bearing receptacles, so as to permit said shaft to be removed radially from said supporting members after the moving of said bearings upon said shaft out of said receptacles; a removable filler member for each of said channels; and a plate mounted upon said filler members for preventing the movement of said bearings through the open ends of said bearing receptacles.

4. In a controller, the combination of: a drum; a rotatable shaft for mounting said drum; a pair of suitably spaced supporting members; structure connecting between said supporting members; contact plates upon said drum; contact fingers under said drum adapted to traverse said contact plates as said drum is rotated; a bearing receptacle in each of said supporting members, said bearing receptacles each having an open end; a bearing placed in each of said receptacles through said open ends, said bearings rotatably supporting said shaft, there being a channel, of slightly greater width than the diameter of said shaft, extending downwardly from the outer edge of each of said supporting members inwardly through one side of each of said bearing receptacles,

so as to permit said shaft to be lifted upwardly from said supporting members after the moving of said bearings upon said shaft out of said receptacles; a removable filler
5 member for each of said channels; and a plate mounted upon said filler members for preventing the movement of said bearings

through the open ends of said bearing receptacles.

In testimony whereof, I have hereunto 10 set my hand at Los Angeles, California, this 8th day of September, 1922.

JACOB SCHURCH.