

(No Model.)

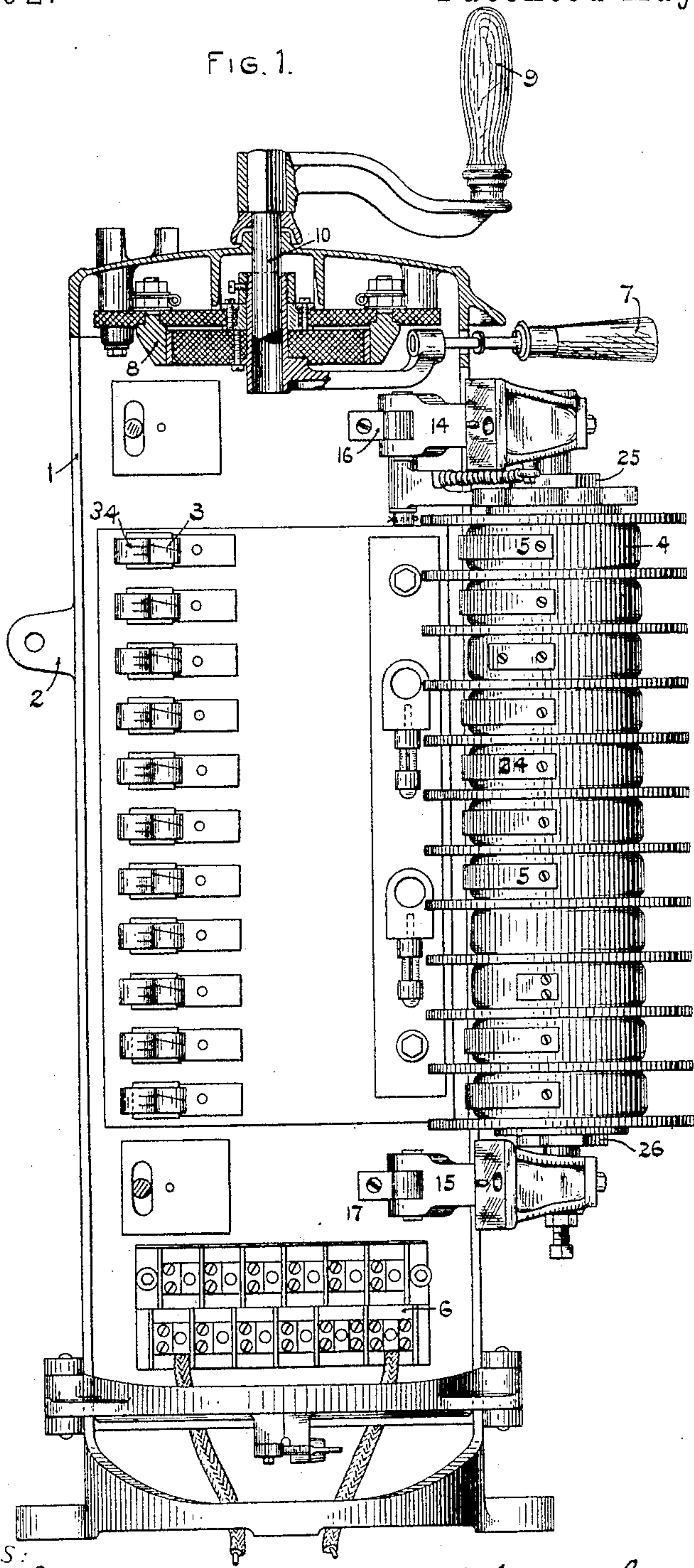
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A. SCHMID & H. P. DAVIS.  
CONTROLLER FOR ELECTRIC CARS.

No. 582,102.

Patented May 4, 1897.

FIG. 1.



WITNESSES:

Ethan D Dadds  
Hubert C Tener

INVENTOR.

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Albert Schmid & Harry P. Davis  
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(No Model.)

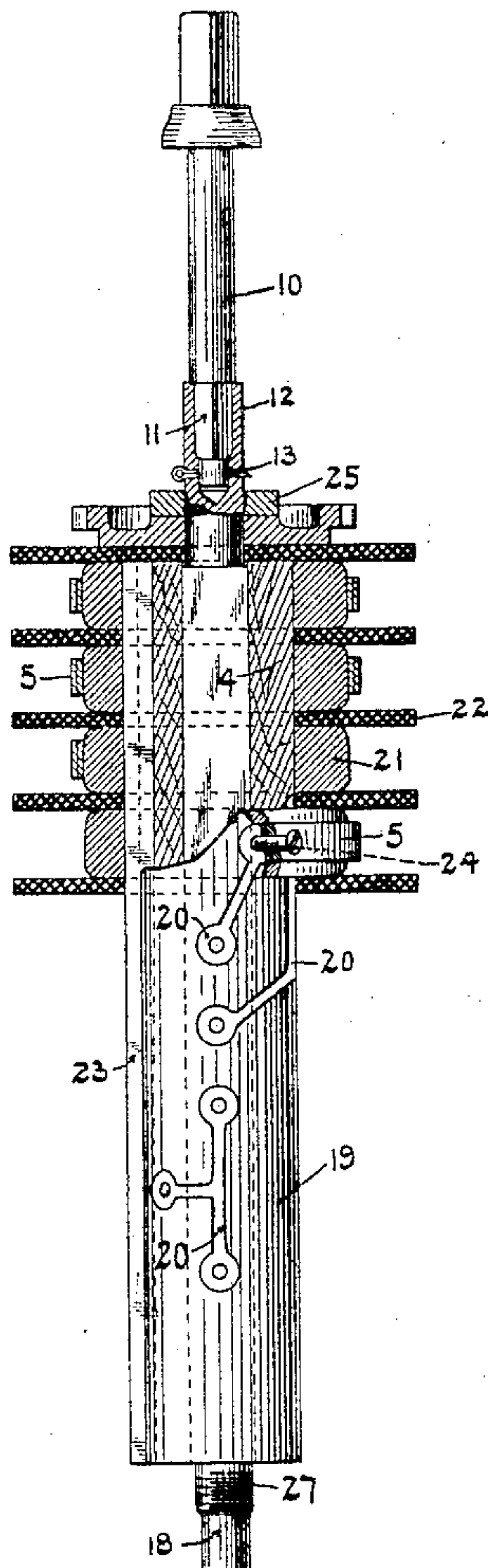
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FIG. 2.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

ALBERT SCHMID AND HARRY P. DAVIS, OF PITTSBURG, PENNSYLVANIA,  
ASSIGNORS TO THE WESTINGHOUSE ELECTRIC AND MANUFACTURING  
COMPANY, OF SAME PLACE.

## CONTROLLER FOR ELECTRIC CARS.

SPECIFICATION forming part of Letters Patent No. 582,102, dated May 4, 1897.

Application filed January 17, 1895. Serial No. 535,212. (No model.)

*To all whom it may concern:*

Be it known that we, ALBERT SCHMID and HARRY P. DAVIS, citizens of the United States, residing in the city of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Controllers for Electric Cars, (Case No. 592,) of which the following is a specification.

Our invention has relation to controllers for electrically-driven vehicles, and particularly to such as are used for the proper manipulation of two or more motors driving one car.

The object of our invention is the provision of a form of controller which can be easily opened and inspected, which can be cheaply and quickly built, and be free, as far as possible, from all danger of the formation of arcs.

Our invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of our controller, showing the movable drum swung back and the reversing-switch in section, the shaft for turning the movable drum being shown broken off. Fig. 2 is a view, partly in section and partly in side elevation, of an unfinished movable drum to be used in connection with our controller, showing the mode of assemblage of parts in building up the drum.

The operative parts of our controller are mounted, as is usual, upon any convenient form of base or stand 1, preferably adapted to be fastened to the platform or other portion of the car by means of lugs 2 or otherwise. The controller belongs to that type in which are employed a number of fixed or stationary contacts 3, which are pressed forward by springs 34 or other suitable means, and a cooperating rotatable drum, (indicated generally by numeral 4,) which carries contact-pieces 5 in position to be engaged by the contacts 3 as the drum is rotated.

The wiring of the controller is indicated in a general manner at 6 and is not described herein, as it forms no part of our present invention.

8 is the reversing-switch, and 7 is the handle for operating it.

In the operation of our controller the drum

4 is turned by means of the handle 9 and the shaft 10, the connection of which with the drum is shown in Fig. 2. In this figure the lower end of the shaft 10 is shown squared at 11 to fit a corresponding socket 12 in the top of the drum 4, and a pin 13 is employed for fastening these parts together.

It is essential to our invention or to one portion thereof that the shaft 10 be removable from the drum 4 in order to permit the latter to be swung back, as shown in Fig. 1, but any suitable means for detachably connecting the drum and its operating-shaft may be employed.

The drum 4 is supported by brackets 14 and 15, located, respectively, at the top and bottom thereof, said brackets being hinged, as shown at 16 and 17, to the base of the controller. This mode of fastening the drum permits it to be swung back, as shown in Fig. 1, in order to expose the whole of the drum and the contact 3 for the purposes of inspection and repair. In order to permit this swinging back, the shaft 10 must of course first be detached from the drum and moved longitudinally upward until its end is freed from its socket.

The manner in which the drum 4 is built up is clearly shown in Fig. 2. A rod 18 extends through a cylinder of wood or other insulating material 19, and the latter is provided with suitable recesses in which are located strips of copper or other conducting material 20, by means of which the proper electrical connection between the contact-pieces 5 is effected.

Upon the cylinder 19 are placed alternately rings 21 and disks or plates 22, each being perforated in such a manner as to closely fit the cylinder 19, the latter having a spline 23 fitting into a corresponding notch in each of the rings and disks, or being otherwise formed so as to insure rotation of the rings and disks with the cylinder 19 and with each other.

Upon the peripheries of the rings 21, which are preferably made of porcelain, are borne the contact-pieces 5, these latter being electrically connected to the strips 20 and at the same time properly fastened to their rings and the cylinder 19 by means of screws 24, as shown in Fig. 2.



When all the rings and disks have been placed upon the cylinder 19, they are firmly pressed and held together by means of the screw-clamps 25 and 26, which engage, respectively, with threads at the top and bottom of the rod 18, one of which is shown at 27 in Fig. 2. It is in the top of this rod 18 that the socket 12 is located in the form of our invention shown in Fig. 2. The disks 22, being of a diameter considerably greater than that of the rings 21, serve to prevent arcing between adjacent stationary contact-pieces 3, these disks extending into the spaces between the said contact-pieces.

We do not desire to limit ourselves in any manner to the details of construction shown and described, as many variations may be made by one skilled in the art without departing from the spirit of our invention.

What we claim is—

1. In a controller for electric motors, a rotatable contact-bearing cylinder, in combination with a shaft for rotating the same, said shaft being detachably connected with said cylinder, and being longitudinally movable when disconnected therefrom, substantially as described.

2. In a controller for electric motors, stationary contacts and a base therefor; in combination with a rotatable contact-bearing cylinder coöperating with said contact-points, and brackets supporting said cylinder and hinged to said base, substantially as described.

3. In a controller for electric motors, a foundation-cylinder of insulating material carrying connection-strips embedded in its surface; in combination with insulating-rings, contact-pieces on the peripheries of said rings, and means for electrically connecting the strips embedded in the foundation-cylinder with the contact-pieces on the insulating-rings, substantially as described.

4. In a controller for electric motors, a foundation-cylinder of insulating material and

alternate rings and insulating-disks mounted thereon, said rings carrying contact-pieces on their peripheries, substantially as described.

5. In a controller for electric motors, a central rod threaded at its ends, a foundation-cylinder of insulating material thereon, alternate insulating rings and disks on said foundation-cylinder, and a clamp screwed onto each end of the central rod for holding said parts in position, substantially as described.

6. In a controller for electric motors, a rotatable drum comprising a central rod, and conducting and insulating parts assembled thereon, in combination with a shaft for rotating said drum and means for detachably connecting it to the central rod, said shaft being longitudinally movable when disconnected from said rod, substantially as described.

7. In a controller for electric motors, the combination with stationary contacts, of a rotatable drum comprising a rod, a series of contact-pieces mounted upon said rod and insulated therefrom and a series of insulating-disks alternating with said contact-pieces and projecting between the stationary contacts.

8. In a controller for electric motors, the combination with a set of stationary contacts, of a coöperating drum comprising an insulating-cylinder and suitably-connected contact-pieces supported thereby and insulating-plates alternating with the stationary contacts and projecting between the same.

In testimony whereof we have hereunto subscribed our names this 10th day of January, A. D. 1895.

ALBERT SCHMID.  
HARRY P. DAVIS.

Witnesses:

J. M. TATE, Jr.,  
J. WILLIAM SMITH.