No. 667,275. Patented Feb. 5, 1901.

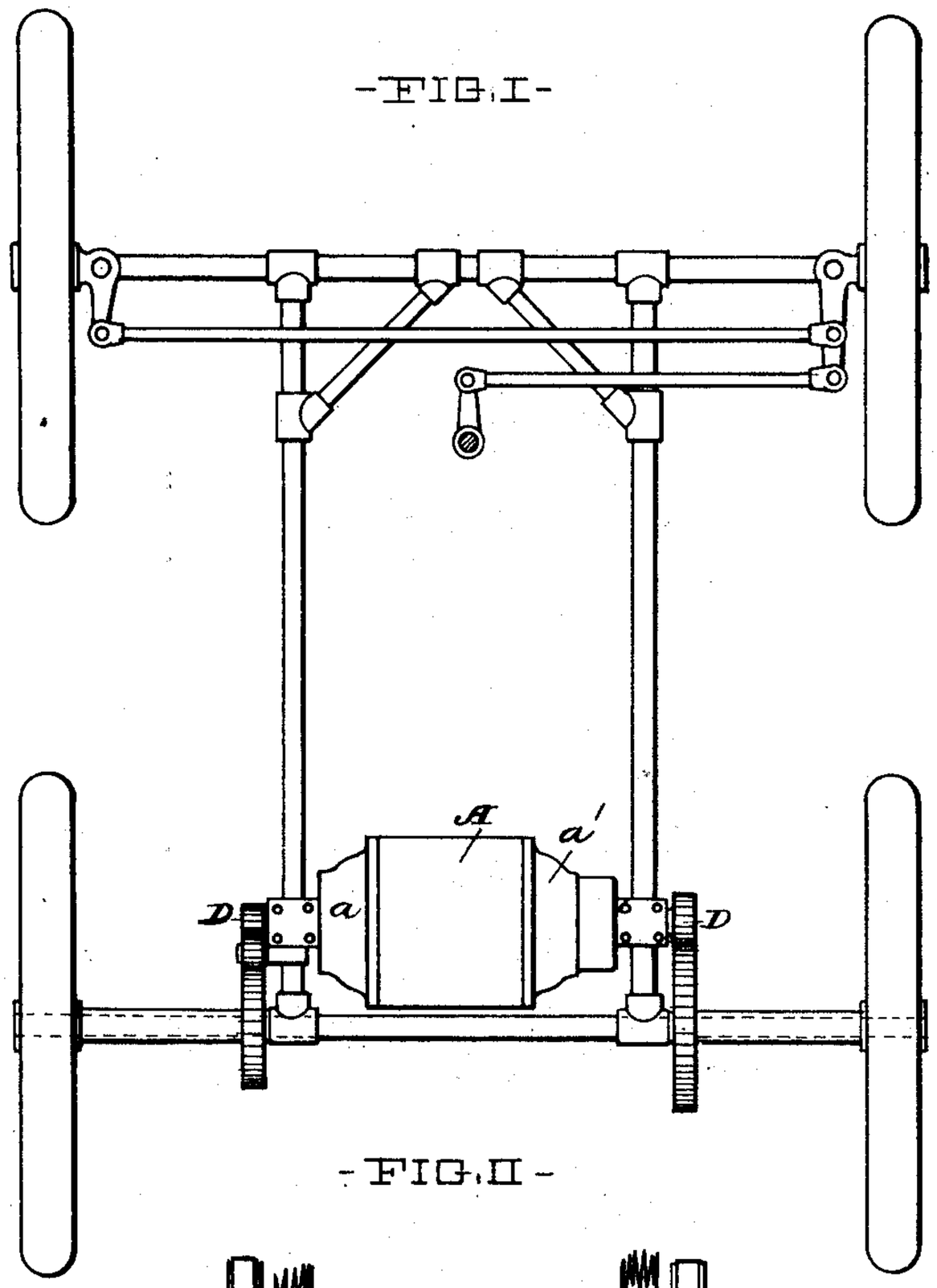
G. E. WEISENBURGER.

ELECTRIC MOTOR.

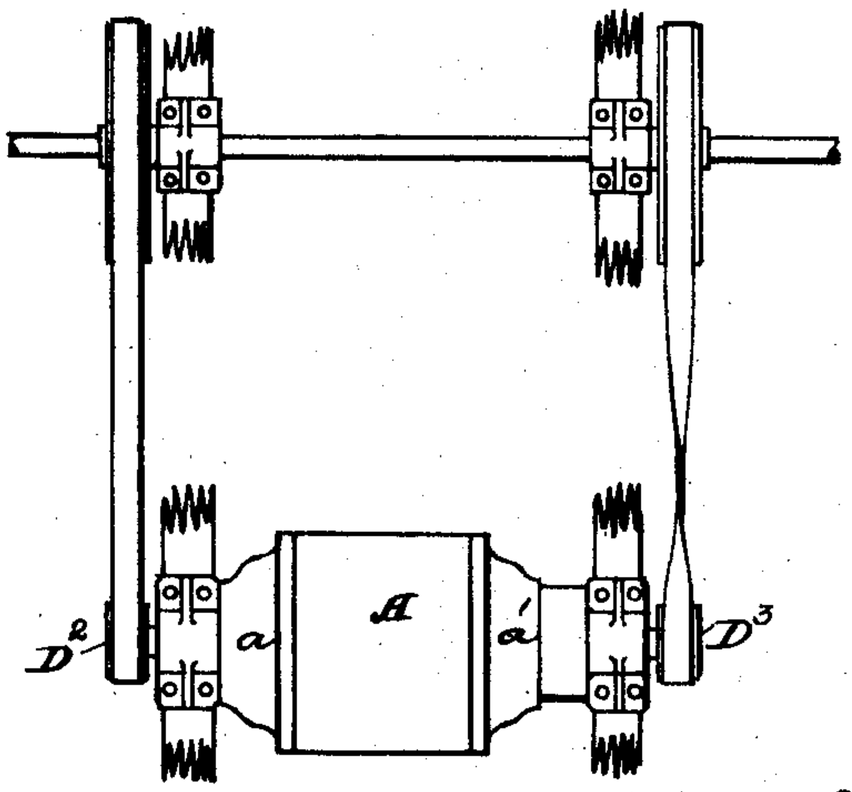
(Application filed Feb. 21, 1900.)

(No Model.) 2 Sheets—Sheet 1.

-FIG. I-



-FIG. II-



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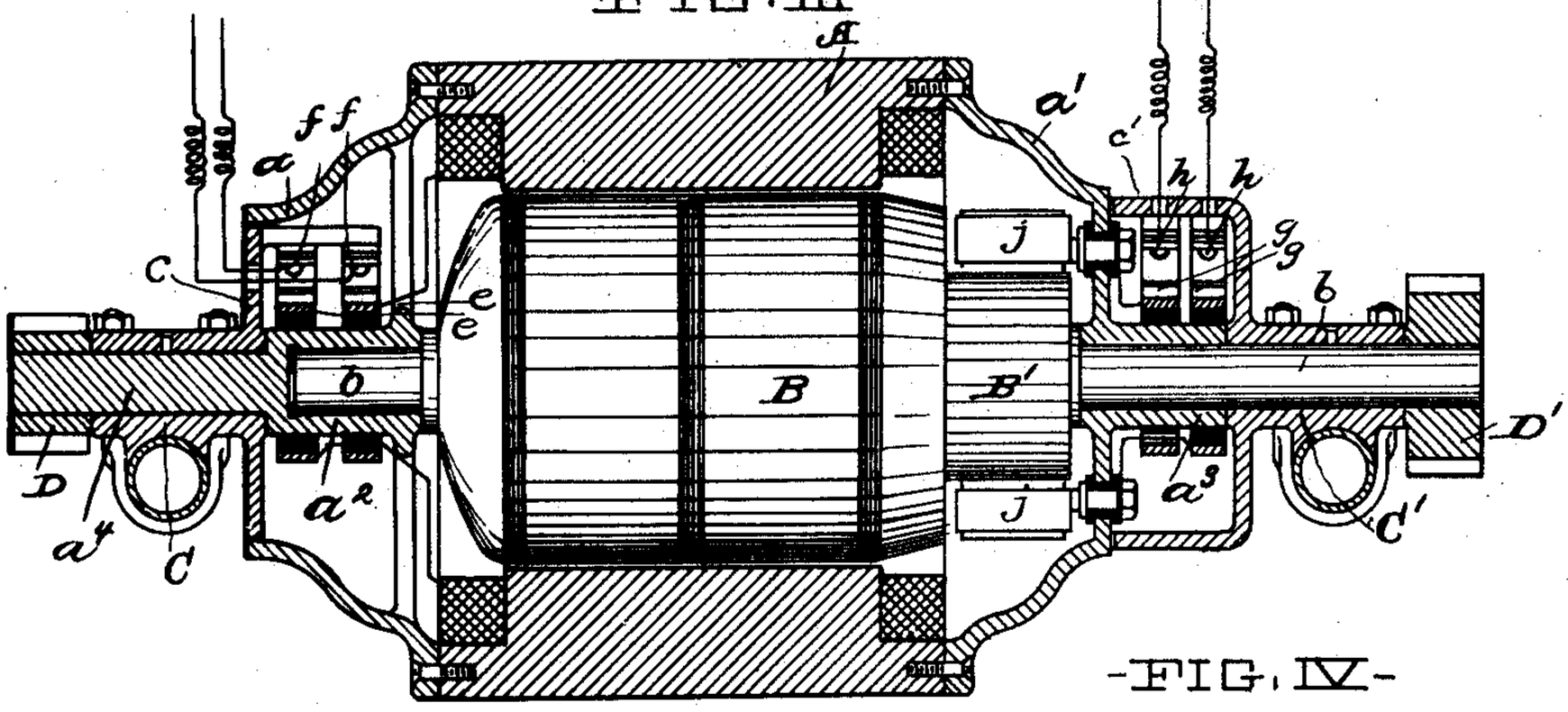
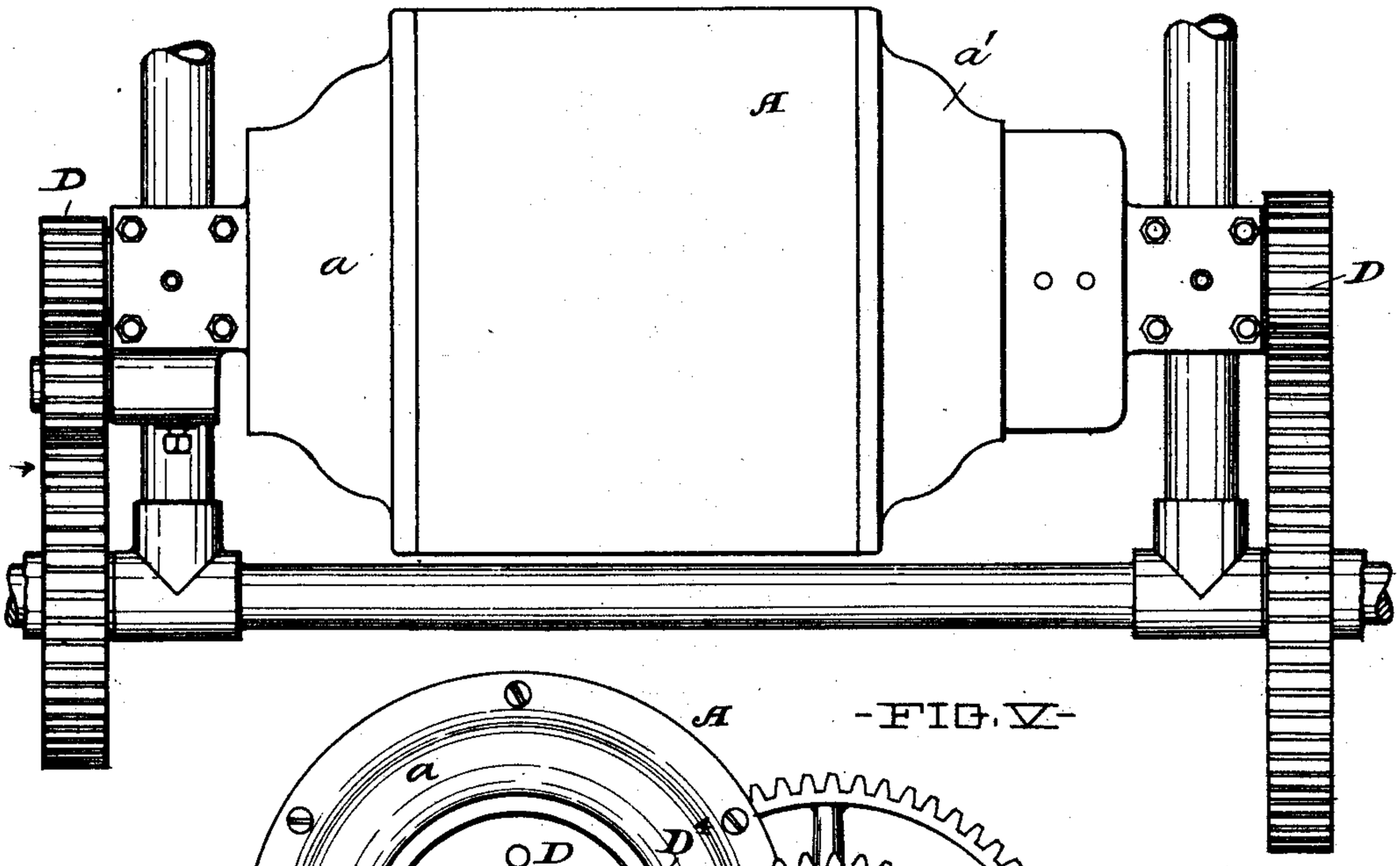
(No Model.) 2 Sheets—Sheet 2.

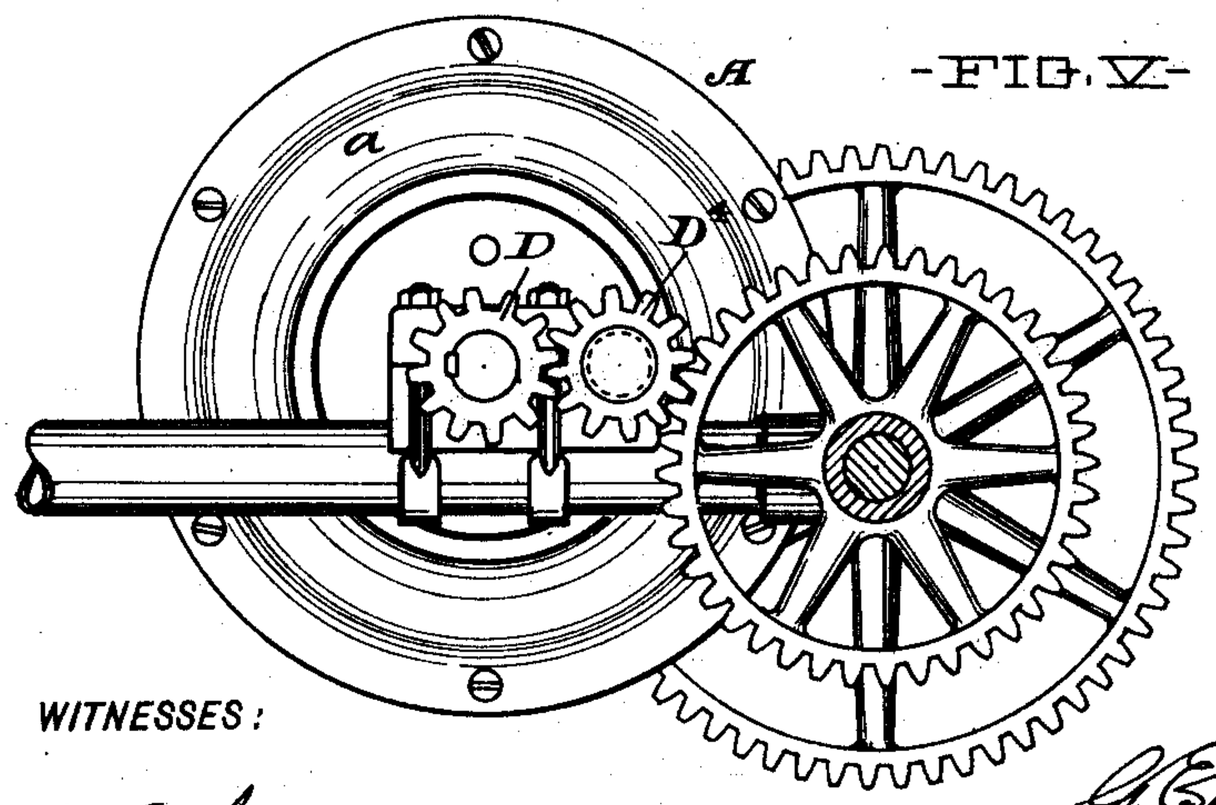
-FIG. III-



-FIG. IV-



-FIG. V-



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ELECTRIC MOTOR.

SPECIFICATION forming part of Letters Patent No. 667,275, dated February 5, 1901.

Application filed February 21, 1900. Serial No. 6,010. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. WEISENBURGER, a citizen of the United States, and a resident of Sharon, county of Mercer, and State of Pennsylvania, have invented a new and useful Improvement in Electric Motors, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention relates to electrical devices for use in the transmission of power; and it consists of means hereinafter fully described.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings, Figure I represents a plan view of the running-gear of an autovehicle to which my invention may be applied. Fig. II represents a plan view of said invention, illustrating its application to the transmission of power to a line-shaft. Fig. III represents an axial section of the field, its bearings, and attached parts of the motor forming part of my invention. Fig. IV represents a plan view of said motor and intermediate gear of said autovehicle; and Fig. V represents a side elevation of same, taken in the direction indicated by the arrow in Fig. IV.

The field-magnet A is provided at each end with a frame a and a', respectively, each of which is formed with a centrally-located bearing a^2 and a^3, respectively, for the two journals of the shaft b of an armature B, as shown in Fig. III. The portion of frame a which forms the bearing a^2 is extended axially with reference to same to form a trunnion a^4, which is journaled in and projects beyond a fixed bearing C. That portion of the shaft b supported by bearing a^3 is extended and is mounted in and projects beyond a second bearing C'. To the projecting ends of the trunnion a^4 and the shaft b are respectively keyed pinions D and D'.

Upon the outer surface of and insulated from the portion of the frame a, which forms bearing a^2, are secured two collector-rings $e\,e$, each of which is contacted by one of two brushes $f\,f$, secured to a support c, formed integral with or which may be secured to the fixed bearing C. In a similar manner two collector-rings $g\,g$ are secured to and insulated from that portion of frame a' which forms the bearing a^3, two brushes $h\,h$ respectively contacting said rings and secured to a support c', formed integral with or secured to the fixed bearing C'.

Secured to the inside of the frame a' are two brushes $j\,j$, which contact the commutator B', secured to the armature-shaft.

The field-terminals are respectively connected with one of the two collector-rings $e\,e$, the rings $g\,g$ each being connected with the one of the two brushes $j\,j$. Brushes $f\,f$ and $h\,h$ are respectively connected with terminals in separate electrical circuits. It is thus seen that the field and armature are each rotatable and that each may be wound so as to cause them to rotate in opposite directions by supplying proper current in the respective circuits. Current being supplied under such conditions, such opposite rotation results, the field carrying with it the brushes $j\,j$.

When the motor constructed as above described is utilized to drive shafting, the pinions D and D' are replaced by pulleys D^2 and D^3, Fig. II, and one of the belts is crossed in order to obtain the same direction of rotation from the oppositely-rotating armature and field. In the case of its application to a vehicle an idler-pinion D^4, Figs. IV and V, is utilized to obtain such direction of rotation.

The above-described motor is particularly applicable for use where it is advantageous to be able to obtain a lower speed than it is possible to obtain with the ordinary motor, such lower speed being capable of being had from my motor where it is impossible to obtain same from an ordinary motor of the same capacity and winding.

In vehicles it is an important feature to have the motor connected so that in turning a curve the driving-wheel moving upon the greater arc may rotate at a higher speed than the other. This result is usually effected by the use of a compensating gear when a single motor is used or by using two independent

motors each connected with one driving-wheel independently of the other. The use of compensating gear and double motor may be dispensed with in vehicles to which my device is applied, inasmuch as the armature may be connected with one driving-wheel and the field connected to the other, the two wheels being independent of each other. There being no positive connection between armature and field, the two driving-wheels may hence rotate at different speeds. The same power may also be obtained from my motor at one-half the speed required of the ordinary motor having the same winding, but having either field or armature fixed, thus reducing the loss by friction and the objectionable features resulting from vibration.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means covered by any one of the following claims be employed.

I therefore particularly point out and distinctly claim as my invention—

1. In an electric motor, a rotatable armature and its shaft, a rotatable field-magnet, having removable end casings, said casings being pivotally mounted on said armature-shaft, one of said casings forming a substantially closed chamber, collector-rings mounted on said casings and having movement therewith, and stationary brush-supports for the collector-ring brushes, said supports forming closed chambers for the collector-rings and their brushes, substantially as described.

2. In an electric motor, a rotatable armature and its shaft, a rotatable field-magnet, a closed chamber for the commutator and its brushes, and independent series of collector-rings and brushes, inclosed and in circuit with the armature and the field-magnets, substantially as described.

3. In an electric motor, a rotatable armature and its shaft, a rotatable field-magnet, having removable end casings pivotally mounted on said shaft, one of said casings forming a socket for one end of said shaft, the opposite end casing forming a closed commutator-chamber, a series of collector-rings mounted on said end casings and movable therewith, said rings being in series, each series being on opposite sides of the field-magnet, and stationary brush-supports for the collector-ring brushes, said supports forming closed chambers for the collector-rings and their brushes, substantially as described.

Signed by me this 17th day of February, 1900.

GEORGE E. WEISENBURGER.

Attest:
A. W. CHASE,
W. B. HULL.