

(No Model.)

S. HARRIS.  
ELECTRIC STREET CAR MOTOR.

No. 558,491.

Patented Apr. 21, 1896.

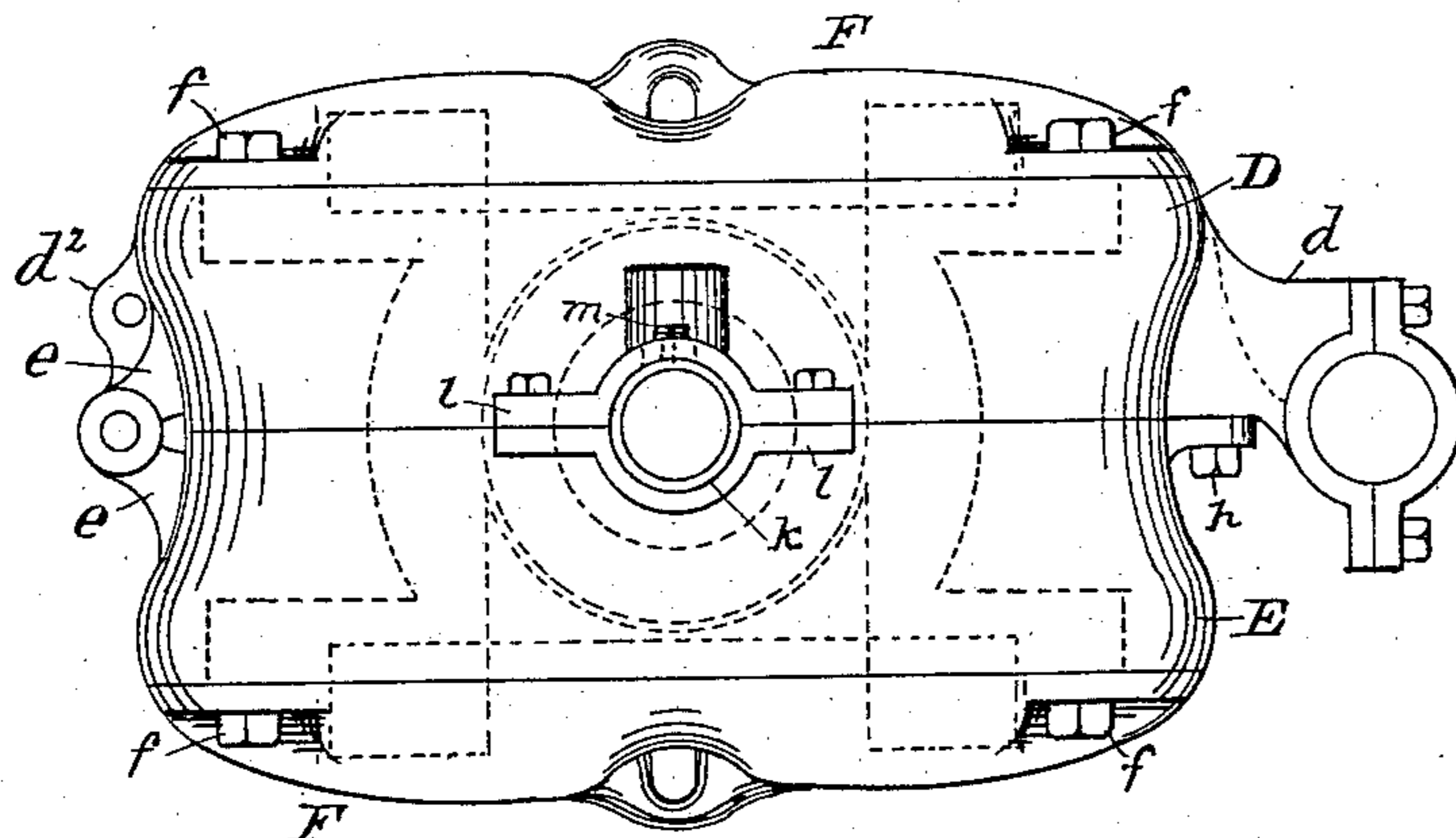


Fig. 1

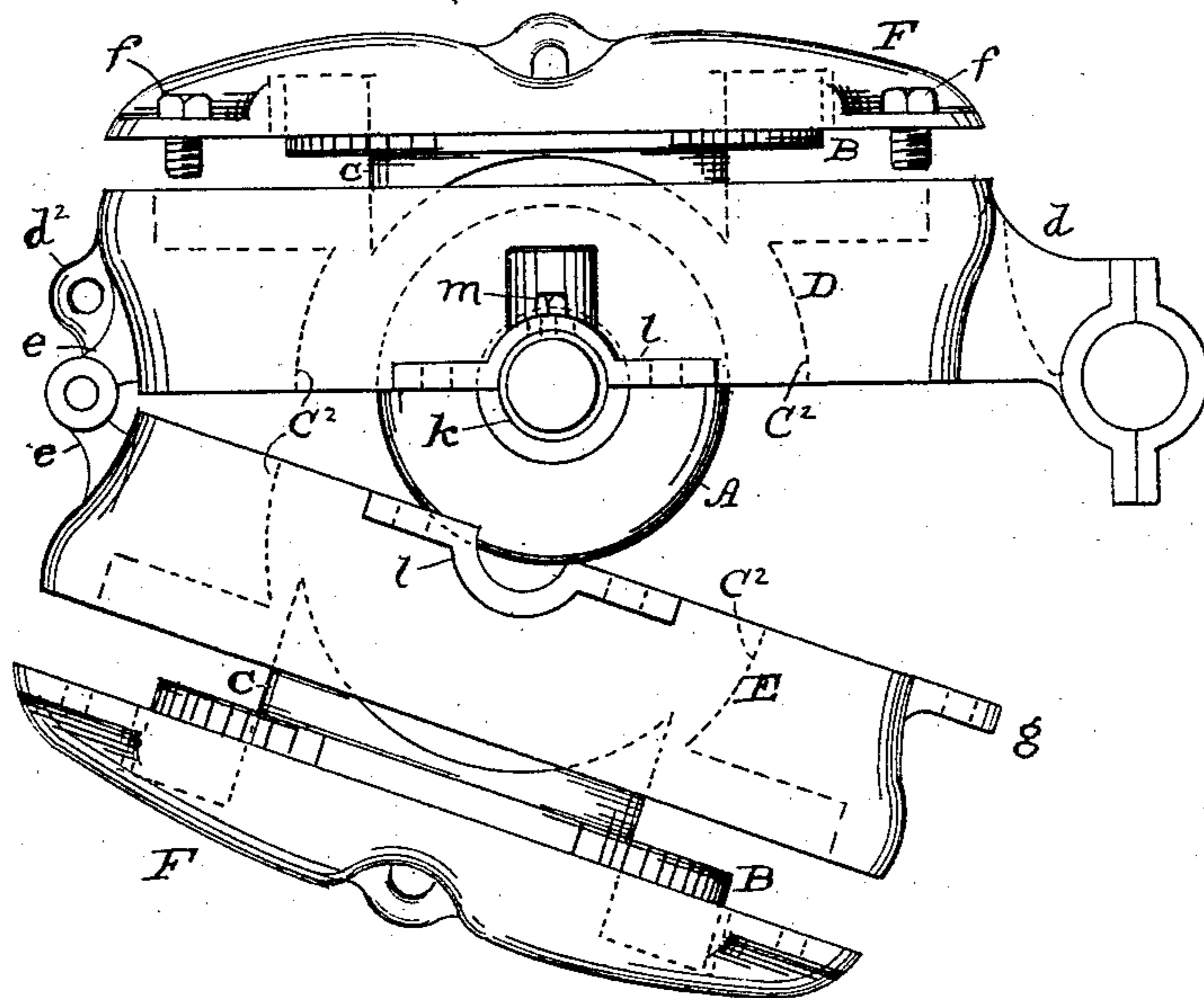


Fig. 2

Witnesses:

Myron B. Vorce  
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# UNITED STATES PATENT OFFICE.

SAMUEL HARRIS, OF CLEVELAND, OHIO, ASSIGNOR TO THE STEEL MOTOR COMPANY, OF SAME PLACE.

## ELECTRIC STREET-CAR MOTOR.

SPECIFICATION forming part of Letters Patent No. 558,491, dated April 21, 1896.

Application filed February 10, 1896. Serial No. 578,662. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL HARRIS, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Electric Street-Car Motors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in electric motors for street-railways, and is designed to effect the most complete facility of inspection and repair.

In the drawings, Figure 1 represents in side elevation a motor embodying my invention, shown in the position it occupies when attached to the car; and Fig. 2 represents the same with its parts separated, to illustrate the manner in which the various parts are made accessible for examination, replacement, or repair without detaching the motor from the car.

A represents the armature; B B, the field-coils; C C, their poles around which they are placed. The poles C C are attached to, or preferably form part of, cap-plates F F, which are removably secured to the main parts D E of the shell or body, as by bolts *f f*. The main part D of the body or shell is secured to the car-truck by means of lugs or arms *d d*<sup>2</sup>, of which *d* is secured to the car-axle and *d*<sup>2</sup> to some suitable part of the truck or truck-frame. The lower body E is hinged at one side to the main body, as by lugs *e*, and bears one or more strong lugs *g*, through which a bolt or bolts *h* pass and are threaded into the main body D, or into a corresponding lug thereon, and secure the parts D and E firmly together. Pole-pieces C<sup>2</sup> are formed on the shell on each side, and are divided, as the motor-shell is, in line with the axis of the armature-shaft, as shown in Fig. 2, in which one-half of the poles C<sup>2</sup> is indicated in dotted lines in each of the parts D and E. These poles C<sup>2</sup> need not be provided with field-coils.

The armature-shaft has its bearing at each end in a ring *k*, which fits in the boxes *l l*, one of which is on each of the parts D E, and a bolt *m*, passing through the upper box, fas-

tens the ring *k* thereto. By simply removing the bolt *h* the lower half of the shell can be opened, and the armature can be completely inspected on all sides (by turning it in its bearings) without removing it from its shell or disturbing any of its connections, as seen in Fig. 2. By removing the bolts *m* before opening the shell the armature will rest on the lower part E when the shell is opened.

By the above construction I attain the following advantages: First, either one of the field-coils can be examined, replaced, or repaired separately without interfering with any other parts of the motor; second, the parts to be moved in making any change or repair of the field-coils are smaller and lighter than in any other construction in use, which renders repairing easier and quicker than usual; third, the complete removal of the field coil and core enables the same to be worked upon in repairing more handily and efficiently than where the poles are attached to a hinged part of the case, and enables a damaged part to be replaced by a new one (the parts being made interchangeable) without delaying the car for repairs, as is usual; fourth, the armature can be reached and removed for examination or repair by merely removing the bolt *h*, without disturbing any of the field-coils, and much more readily and conveniently than when accessible only through the car-floor, as usual; fifth, no other part of the motor or its connections to the truck need be removed to enable the armature to be removed, replaced, or renewed.

Having thus described my invention, what I claim as novel, and desire to secure by Letters Patent, is—

1. An electric street-car motor having each of its field-coils separately detachable with its core from the motor-body and the body separable in the plane of the armature-shaft, substantially as described.

2. A street-car motor having each of its field-coil poles attached to a separable cap-plate and removable with its coils from the motor-body, and having the body separable in the plane of the armature-shaft, substantially as described.

3. A completely-incased street-car motor having its field-coil poles integral with the

cap-plates independently detachable from the motor-body, and having the body separable in the plane of the armature-shaft and attached to the car-truck by the upper portion of the  
5 body, substantially as described.

4. A completely-incased four-pole motor having its field-coil poles attached to separate cap-plates independently detachable with the pole and coils from the motor-body, and hav-  
10 ing the body separable in the plane of the ar-

mature-shaft and with poles which divide in the same line as the body, substantially as described.

In testimony whereof I hereto affix my signature in presence of two witnesses.

SAMUEL HARRIS.

Witnesses:

JOHN R. RYDER,

WM. G. TAYLOR.