

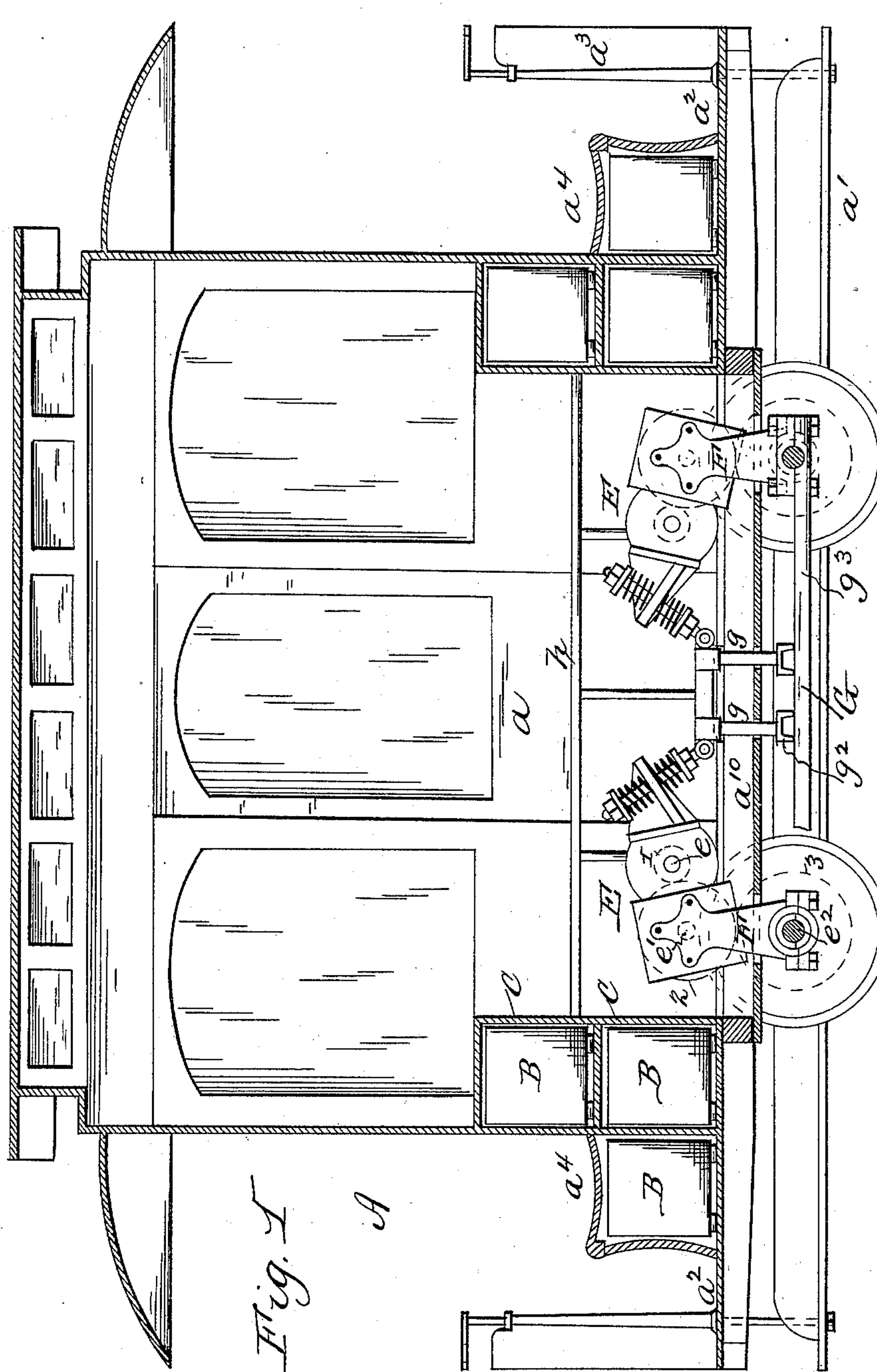
(No Model.)

2 Sheets—Sheet 1.

J. A. BRILL.  
ELECTRIC MOTOR CAR.

No. 426,657.

Patented Apr. 29, 1890.



*WITNESSES:*

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# UNITED STATES PATENT OFFICE.

JOHN A. BRILL, OF PHILADELPHIA, PENNSYLVANIA.

## ELECTRIC-MOTOR CAR.

SPECIFICATION forming part of Letters Patent No. 426,657, dated April 29, 1890.

Application filed February 18, 1890. Serial No. 340,895½. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN A. BRILL, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Electric-Motor Cars, of which the following is a specification.

My invention has relation generally to electric-motor cars, and particularly to that form of the same which is separate from the passenger-cars on a train of same; and it has for its object a construction of car, a support or mounting for the electric motor, and a disposition of the storage-batteries or other analogous source of electric supply on the car, when so used, as will admit of a compact form or size of separate motor-car and of having the entire electric motor or motors located within the body of the car above the floor, so as to always be under the direct and personal supervision of the engineer, and yet be supported partly upon a car-axle and in gear therewith and partly upon the car or a fixture or frame on the running-gear not subject to the action of the car-springs, instead of having said motor located below the floor of the car, as has heretofore mainly been the case in all of the forms of electric-motor cars wherein the motor is partly supported upon and in direct gear with the axle, such location of the motor providing a free and unobstructed space below the floor of the car between the motor-supports on the axle for mounting on the axle automatic brake, bell or alarm, or other attachments.

My invention accordingly consists of a construction of separate motor-car having the electric motor mounted thereon and, when supplied therewith, the location of storage-batteries and the manner of inserting them into and withdrawing them from the car, and of the combinations, constructions, and arrangements of parts, as hereinafter described in the specification and pointed out in the claims.

Reference is had to the accompanying drawings, wherein—

Figure 1 is a longitudinal section of a separate motor-car with electric motor or motors

and storage-batteries embodying my invention, and Fig. 2 is a side elevation of the same.

A represents the car-body, which may be of any suitable configuration, having a sliding or hinged door  $a$ , which may be in its side or end, as desired. In the drawings I have shown said door in one of the sides of the car-body and arranged to slide toward either end of the car-body. When such side door or doors are used, a side platform step or steps  $a'$ , extending the length or a portion of the length of the car-body, are used, as shown more plainly in Fig. 2.

The car-body A may be devoid of end platforms, if desired, or the latter may be provided therefor, as indicated at  $a^2$ , and have end dashers  $a^3$ , and when used I prefer to make the platforms of sufficient length as will admit of transverse seats  $a^4$  being located between the end or ends of the car-body A and its platform-dashers  $a^3$ , such seats preferably having their backs against the ends of the car-body, as shown. The provision of the platforms at one or both ends of the car, with transversely-located seats thereon, provides open apartments separate from the body of the car for passengers, and said apartments may be used for smoking-apartments, and in winter they may be inclosed, as indicated by dotted lines in Fig. 2.

When the seats  $a^4$  are used at one or both ends of the car, either or both of the end panels  $a^5$  of the seats are provided with hinged or removable doors  $a^6$ , to admit of the insertion beneath the seats of storage-batteries or analogous source of electric supply B. Said batteries may rest directly on the floor of the car or on a truck provided with rollers, or the latter may be mounted in the floor of the car. When said seats  $a^4$  are not used or in conjunction with them, suitably-formed transverse battery-apartments C, in tiers or otherwise arranged as desired, may be located at the ends of the car-body within the same, in which case the side panels  $a^7$  of the car-body at the ends of apartments C are provided with hinged or removable doors  $a^8$ , to admit of the insertion of said batteries and their withdrawal from apartments C.



The location of the storage-batteries transversely of the car-body admits of the use of short lengths of batteries, which can be easily handled, and of the utilization of all or any portion of the unused space or room within the car-body for such batteries, so that any desired capacity of battery within the limits of space afforded by the car-body can be placed thereon.

E represents the electric motor, of any suitable construction, entirely located within the car-body A above the floor. Said motor has preferably an armature-shaft  $e$ , a counter-shaft  $e'$  in gear with one another, and said counter-shaft  $e'$  is in gear with one of the axles  $e^2$  of the car, as indicated by dotted lines 1 2 3. One end of the motor is supported on axle  $e^2$  by means of arms F, secured at one end to the motor-frame and at the other sleeved or mounted on said axle  $e^2$ . These arms F extend up through the floor of the car, so as to admit of the motor being located above said floor within the body A and yet have a support at one end on axle  $e^2$  and be in direct gear-connection therewith. The other end of the motor may be suitably secured to the body A, or any fixture thereon, or on a fixture carried on the axles or running-gear. In the drawings I have shown said motor end yieldingly or spring supported upon a pillar or column  $g$  on a frame G, which may be mounted or supported on the axles  $e^2$   $e^2$ , as indicated in Fig. 1, or spring or otherwise supported on the axle-boxes, as indicated at  $g'$ , Fig. 2, so as not to be subject to the action of the car-springs. In the drawings I have shown separate motors mounted as described for each axle  $e^2$   $e^2$  of the car; but, if desired, only one need be used.

When the car is furnished with the two motors, one may be held as a reserve motor, or both may be actuated at once, or one used for light loads or work and both for heavy loads or work.

To avoid undue length of upward projection of the supporting-arms F on the axles, and consequent elevation of the motors within the car-body, the latter in line with the motor has a depressed floor  $a^{10}$ , as indicated in Fig. 1, through which said arms F and the columns or pillars  $g$  when used pass. The latter are preferably supported on cross-bars  $g^2$ , connecting the sides  $g^3$  of frame G.

The depressed part of the floor  $a^{10}$  may be inclosed by a suitable railing, as indicated at  $h$ , so as to provide a foot or passage way around the same in the car-body for the engineer or attendants. If desired, the running-gear for the car may be attached to the car-body, as is usual, or it may be mounted on a truck-frame rigidly secured to the car-body sills between its ends, as indicated at H, Fig. 2, and as fully shown, described, and claimed in another pending application filed June 25, 1888, Serial No. 278,160.

A separate motor-car constructed as de-

scribed has its motor or motors in direct gear with the axles and supported at one end on the axles and spring or yieldingly supported at the other and still located above the floor of and within the car-body, which admits of maintaining the motor-shafts and axles in parallelism with one another as heretofore, of easy access to the motors for repairs or other purposes, of preventing access of dirt to the motors; and leaves ample room for space below the floor between the arms F for automatic brake, alarm, or other like attachments. The extent of the depression of the floor  $a^{10}$  is governed by the extent of motion of the car-springs.

I do not herein make a specific claim for a separate motor-car having a motor entirely located within the car-body above the floor and supported at one end on the axle, and spring or otherwise supported at the other end on the car-body, as the same forms the subject-matter of another separate application filed by me of an even date herewith, Serial No. 340,896 $\frac{1}{2}$ .

While I have shown the motor or motors located within the car-body on a separate motor-car, I do not confine myself thereto, as they may be located on an end platform or in an end apartment of a combined motor and passenger car, or said separate motor-car may be an open car. In all cases, however, the entire motor will be located above the car-floor, and preferably in an approximating horizontal position in order to keep the weight of the motor as near to the axles of the car as possible.

I am aware that a motor journaled at one end directly upon the axle and partly projecting above the car-floor is old; but that differs from my invention in that it is not entirely within the car and under the inspection of the engineer.

What I claim is—

1. An electric-motor car having a motor located above the car-floor and supported at one end by an arm or arms journaled on a car-axle and at the other end supported on the car, and gear-connection between said motor and axle, substantially as described.

2. An electric-motor car having a motor located above the floor of the car and supported at one end by an arm or arms journaled on a car-axle, a frame not subject to the car-springs, a fixture on said frame projecting into the car-body for supporting the other end of the motor, and gear-connection between the motor and axle, substantially as set forth.

3. An electric-motor car having a motor located above the car-floor and supported at one end by an arm or arms journaled on a car-axle, a frame not subject to the action of the car-springs, a fixture on said frame projecting into the car-body, a spring or yielding connection between said fixture and the other end of the motor, and gear-connection be-



tween said motor and axle, substantially as set forth.

4. An electric-motor car having a main floor, a depressed floor  $a^{10}$  below the main floor, an electric motor above said depressed floor, arm or arms journaled on one of the axles of the car for supporting one end of the motor, a fixture projecting through said floor  $a^{10}$  and not subject to the action of the car-springs for supporting the opposite end of said motor, and gear-connection between the motor and axle, substantially as set forth.

5. An electric-motor car having a motor located above the car-floor, an arm or arms pivoted or journaled at one end to a part of the running-gear not subject to the action of the car-springs for supporting one end of said motor, and a fixture not subject to the action of the car-springs projecting through the car-floor for supporting the opposite end of the motor, and gear-connection between said motor and one of the axles of the car, substantially as set forth.

6. In combination with a car-body, a separate frame G, having a column or columns extending above the floor of the car, arms F, sleeved on a car-axle and extending upwardly above said floor, and an electric motor sup-

ported by said arms and columns, substantially as set forth.

7. A separate electric-motor car having two motors located above the car-floor, arms swiveled or journaled to the car-axles for supporting one end of the motors, a frame projecting through the car-body and not subject to the action of the car-springs for supporting the opposite ends of the motor, and gear-connections between said motors and axles, substantially as set forth.

8. An electric-motor car having a side door or doors, end platform with dasher, and a transverse seat on said platform having hinged end, substantially as set forth.

9. A closed electric-motor car without passenger-seats, having a movable side door, transverse storage-battery receptacles or supports within said car, and hinged or removable panels or doors in the sides of the car in line with said receptacles, substantially as set forth.

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

JOHN A. BRILL.

Witnesses:

R. S. REED,  
R. HAWKINS.