

(No Model.)

E. A. SPERRY.  
POWER GEARING FOR ELECTRIC CARS.

No. 561,354.

Patented June 2, 1896.

FIG. 1.

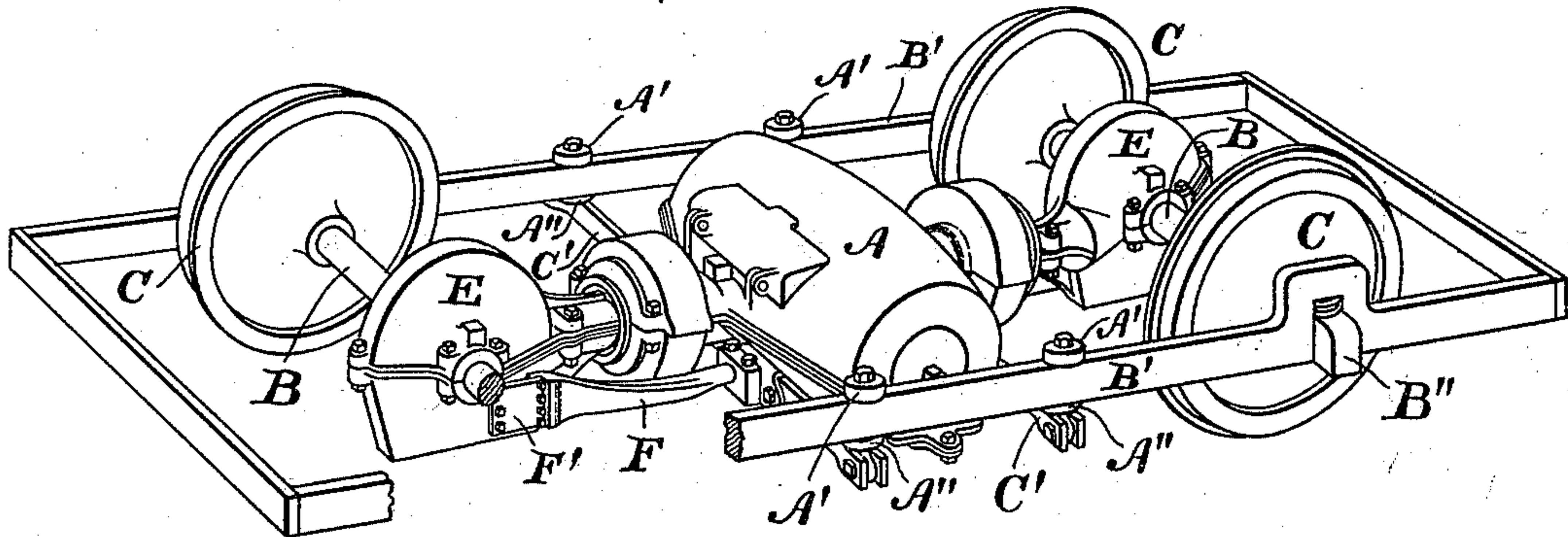


FIG. 2.

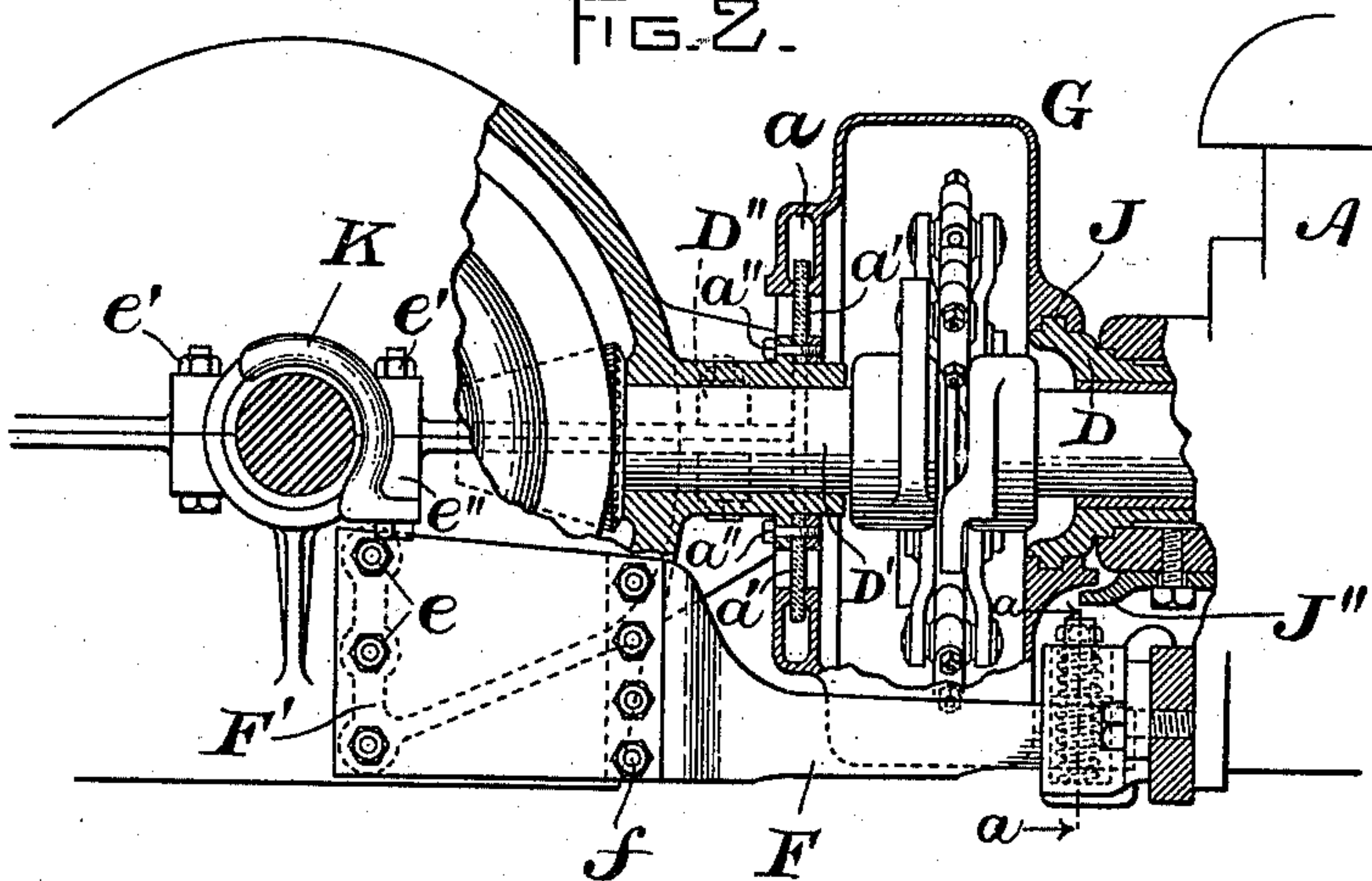


FIG. 3.

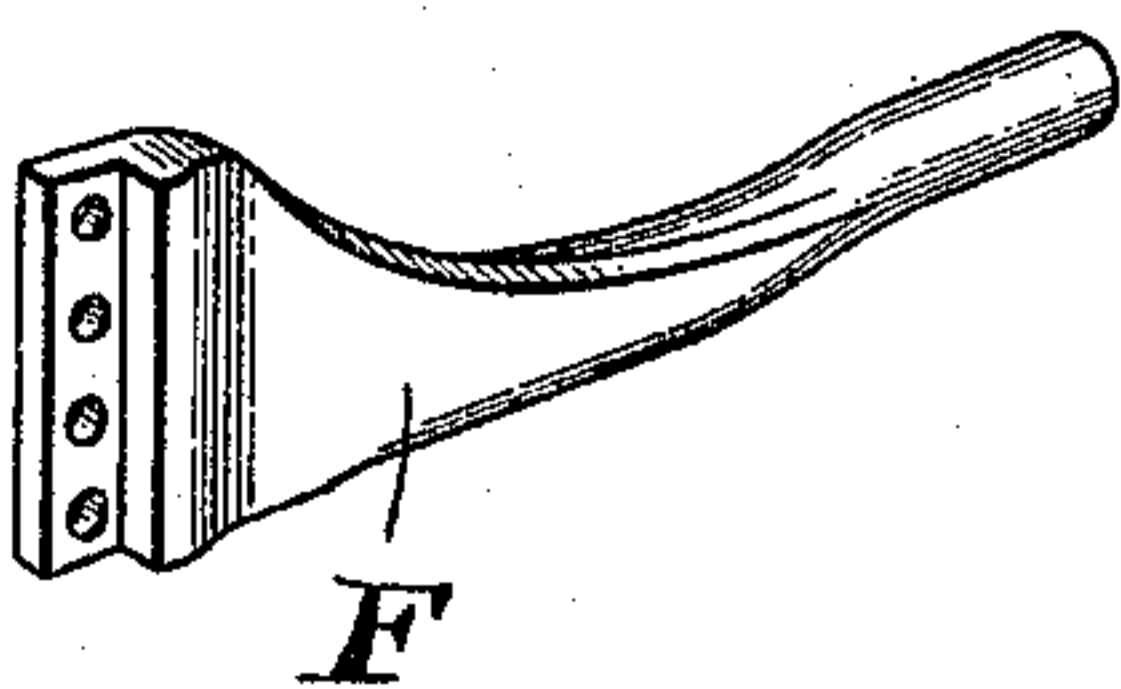


FIG. 4.

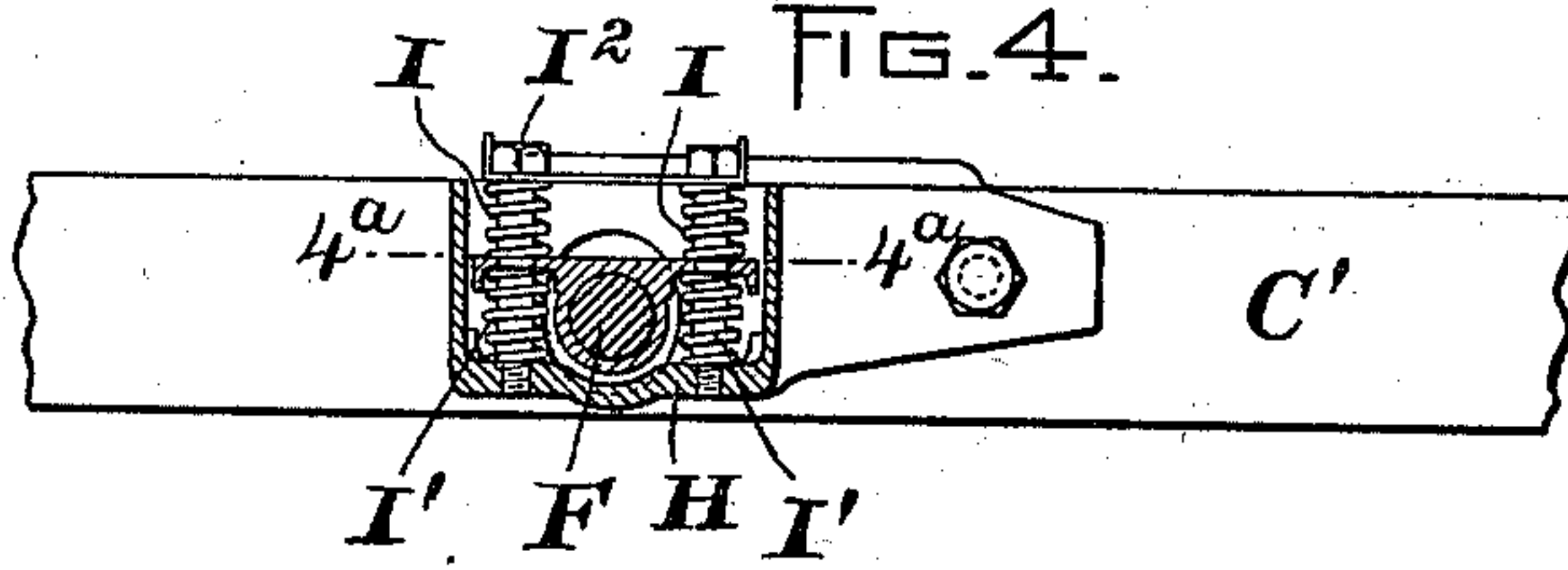


FIG. 5.

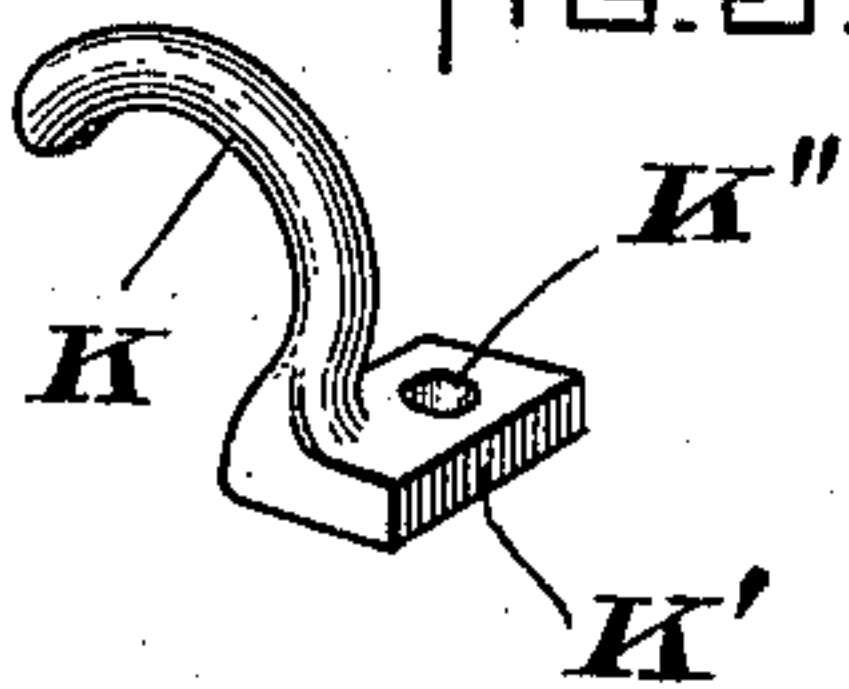
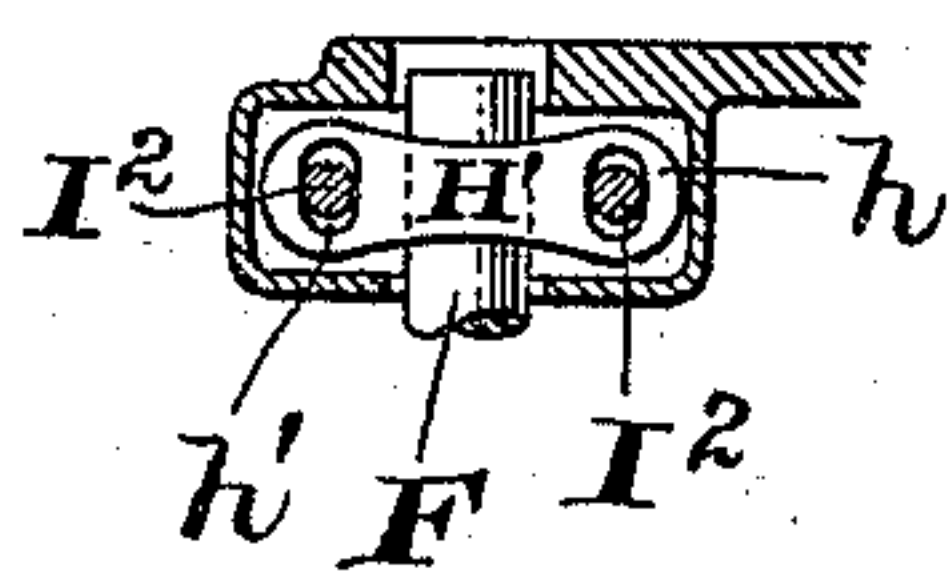


FIG. 4<sup>a</sup>.



WITNESSES.

A. H. Abell,  
A. Macdonald.

INVENTOR.

Elmer A. Sperry,  
By Geo. R. Blodgett,  
Att'y.



# UNITED STATES PATENT OFFICE.

ELMER A. SPERRY, OF CLEVELAND, OHIO, ASSIGNOR TO THE GENERAL ELECTRIC COMPANY, OF NEW YORK.

## POWER-GEARING FOR ELECTRIC CARS.

SPECIFICATION forming part of Letters Patent No. 561,354, dated June 2, 1896.

Application filed February 16, 1895. Serial No. 538,662. (No model.)

*To all whom it may concern:*

Be it known that I, ELMER A. SPERRY, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga, State of Ohio, have invented certain new and useful Improvements in Power-Gearing for Electric Cars, of which the following is a specification.

My invention relates to improvements in power-gearing for motor-trucks, and relates to the method of support and of inclosing such gearing, especially where the motor is allowed freedom and independence of movement.

My invention is fully described and illustrated in the following specification and accompanying drawings, the novel features thereof being specified in the claims annexed to the said specification.

Figure 1 is a perspective view of a truck with portions removed, showing one form of carrying out my said invention. Fig. 2 is a side elevation, partially in section. Fig. 3 is an isometrical view of a portion. Figs. 4, 4<sup>a</sup>, and 5 are details.

Like letters of reference indicate similar parts throughout the several views.

A motor A is supported from the axles B B through the truck-frame B', which is either resilient in and of itself or may have springs inserted from the axle-boxes B'' or may support additional elastic mediums A' A', &c., which are located above the axle, and A'', located below the axle, for the purpose of supporting the motor A with more or less freedom of motion independent of the axles B B, so that the jar and vibration thereof will not be transmitted to such motor, and, furthermore, so that the weight and momentum of the motor A will not be added directly to that of the axles B for increasing the hammering or striking force or action of the wheels C C upon the track or road-bed. Cross-bars C', receiving their support suitably from the truck-frame, may be employed to support the motor A and the other connected parts, as hereinafter pointed out. The shaft of the motor, journaled at D, Fig. 2, is preferably connected to both axles, but may for the purpose of this invention be connected to only one by power-transmitting devices of any suitable nature, which are preferably mounted with inclosing housings, and may consist

in part of the shaft D', moving or rotating within the journal D'', driving gearing which is mounted within the housing E, which in turn is suitably supported by axle B and by the extension F, running to any stationary portion of the truck or motor. This extension passes under the side of the housing G and attaches to the housing E by bolts e.

The extension F may be of any suitable form, but is preferably arranged so as to yield in a plane at right angles to the axle B, and for this purpose may be constructed with the spring portion F' extending to the support or secured to the rigid portion F by rivets, bolts, or any suitable attachment, as f. This spring-plate F' is of such large vertical dimension as to be practically rigid in a vertical line or in a plane at a substantial angle to the axle B or at right angles thereto.

The farther end of the extension F may be supported in any of the well-known methods, one suitable form being shown in Figs. 2 and 4, wherein the stationary housing H may be suitably supported, as by the motor A or motor-bar C', inclosing a journal-block H', which grasps the end of the extension F, but permits same to slide freely in and out thereof. The block has lateral ears h, containing elongated slots h', through which pass the upright bolts I<sup>2</sup>, with springs I I' above and below the ears h, so as to virtually allow of universal movement and at the same time afford resilient support for the extension F.

The housing G may be supported in any well-known manner, or it may or may not be present so far as that part of the invention which extends to the method of support of the housing E is concerned. A preferred form of support, however, is shown in Fig. 2, where by the tongue-and-groove connection indicated at J it is made to securely grasp a projection of the journal D. An extending lip or segment J' is made to cooperate with an extension J'', so as to retain the lower half of the housing G when the support from the upper half is withdrawn. The segment J' is, however, of a comparatively small circumferential dimension, and by rotating the lower half slightly in one direction or the other it readily becomes free and detached.

To provide for the relative movement between the portions of housing E indicated



by journal D'', the well-known sliding joint, consisting of recess *a* and the slide *a'*, which is preferably of felt or felt-like material and flexible, is provided. The recess may be in either element and the clamp *a''* upon the other. The arrangement shown is, however, the preferred form, the attachment here shown being upon the inner portion, the recess being formed in the outer. A hook (shown in position in Fig. 2 and in detail in Fig. 5) is also provided for holding the lower half of housing E in position upon the axle when the support of the upper half is withdrawn by its removal or the removal of the bolts *e'*. The hook K rests down upon the axle, the lower projection K' running under any suitable portion of the housing—as, for instance, the ear *e''*—the bolt *e'* running through a slot, incision, or hole K'' in hook K. The distance from the upper portion of the foot or projection K' of the hook K and the portion which rests upon the axle B is such that when the head of the bolt *e'*, passing through the foot K', is tightened it not only secures the hook K rigidly to the housing E, but lifts it off the axle, as shown in Fig. 2, so that no friction or other contact exists between the said hook and the axle B.

It will readily be understood that a hinge may be employed in lieu of the spring; also the spring may run back and have more than one line or row of retaining-bolts in it, or one or both ends may be clamped between solid metal disposed on either side thereof, and it is obvious that the constructions shown and described admit of modification as to detail and arrangement without departing from the spirit of my invention. For instance, the spring F' may constitute a portion of the extension F simply thinned down to the requisite dimension, and the extension F may consist of a part of the housing E, and although it is designed to use all these features in connection with one another, yet it is obvious that some may be used without the others, and the invention extends to such use.

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

1. In a motor-car, an axle, a motor supported therefrom, means between the motor and the axle allowing for more or less relative movement between the two, a power-gearing connecting the motor and the said axle, a yielding coupling forming a part of such gearing, a halved casing inclosing the coupling mounted upon the motor, in combination with means for supporting either half while the other half is removed.

2. In a motor-car, an axle, a motor supported therefrom, means between the motor and the axle allowing for more or less relative movement between the two, a power-gearing connecting the motor and the said axle, a yielding coupling forming a part of such gearing, a halved casing inclosing the coupling mounted upon the motor, in combi-

nation with means for supporting the lower half consisting of a circular tongue and groove, and cooperating abutments for holding the tongue and groove in mesh extending around a portion only of the circumference.

3. The combination with a halved mechanism engaging an axle, of a bolt for clamping the halves, and a device secured by said bolt in position to engage with the axle, but out of contact therewith so long as the parts are secured together, but on loosening or removing the bolt, the said device, through its engaging parts, serves to support one of the said halves.

4. In a motor-car, an axle, a motor supported therefrom, means between the motor and the axle allowing for more or less relative movement between the two, a power-gearing from the motor to the axle consisting in part of a moving element, a journaled frame for such element mounted upon such axle, an extension from such journaled part running toward the motor, a suitable support for such extension, in combination with a resilient medium forming a part of such extension.

5. In a motor-car, an axle, a motor supported therefrom, means between the motor and the axle allowing for more or less relative movement between the two, a power-gearing from the motor to the axle consisting in part of a moving element, a journaled frame for such element mounted upon the axle, an extension from such journaled part running toward the motor, a suitable support for such extension, mounted to move with the motor, in combination with a resilient medium forming a part of such extension.

6. In a motor-car, an axle, a motor supported therefrom, means between the motor and the axle allowing for more or less relative movement between the two, a power-gearing from the motor to the axle consisting in part of a moving element, a journaled frame for such element mounted upon the axle, an extension from such journaled part running toward the motor, and a suitable support for such extension, a portion of such extension flexible in one plane but being unyielding in another.

7. In a motor-car, an axle, a motor supported therefrom, means between the motor and the axle allowing for more or less relative movement between the two, a power-gearing from the motor to the axle consisting in part of a moving element, a journaled frame for such element mounted upon the axle, an extension from such journaled part running toward the motor, a suitable support for such extension, a resilient part of such extension of large dimension at right angles to the axle, and of small dimension parallel to such axle, in combination with a universal support for the farther end of such extension.

8. In a motor-car, an axle, a motor supported therefrom, means between the motor and the axle allowing for more or less relative movement between the two, a power-gearing from



the motor to the axle consisting in part of a moving element, a journaled frame for such element mounted upon the axle, an extension from such journaled part running toward the motor, a suitable support for such extension, a resilient part of such extension of large dimension at right angles to the axle, and of small dimension parallel to such axle, in combination with a resilient support for the farther end of such extension.

9. In a motor-car, an axle, a motor supported therefrom, means between the motor and the

axle allowing for more or less relative movement between the two, a power-gearing from the motor to the axle consisting in part of a moving element, a halved journal-frame for such moving part mounted upon the axle, in combination with means for retaining either of the halves in place on the axle upon removal of the other.

ELMER A. SPERRY.

Witnesses:

J. B. MCGIRR,

A. R. APPLEMAN, Jr.