

(No Model.)

2 Sheets—Sheet 1.

M. MOSKOWITZ.

MEANS FOR GENERATING ELECTRICITY FROM CAR WHEELS.

No. 564,334.

Patented July 21, 1896.

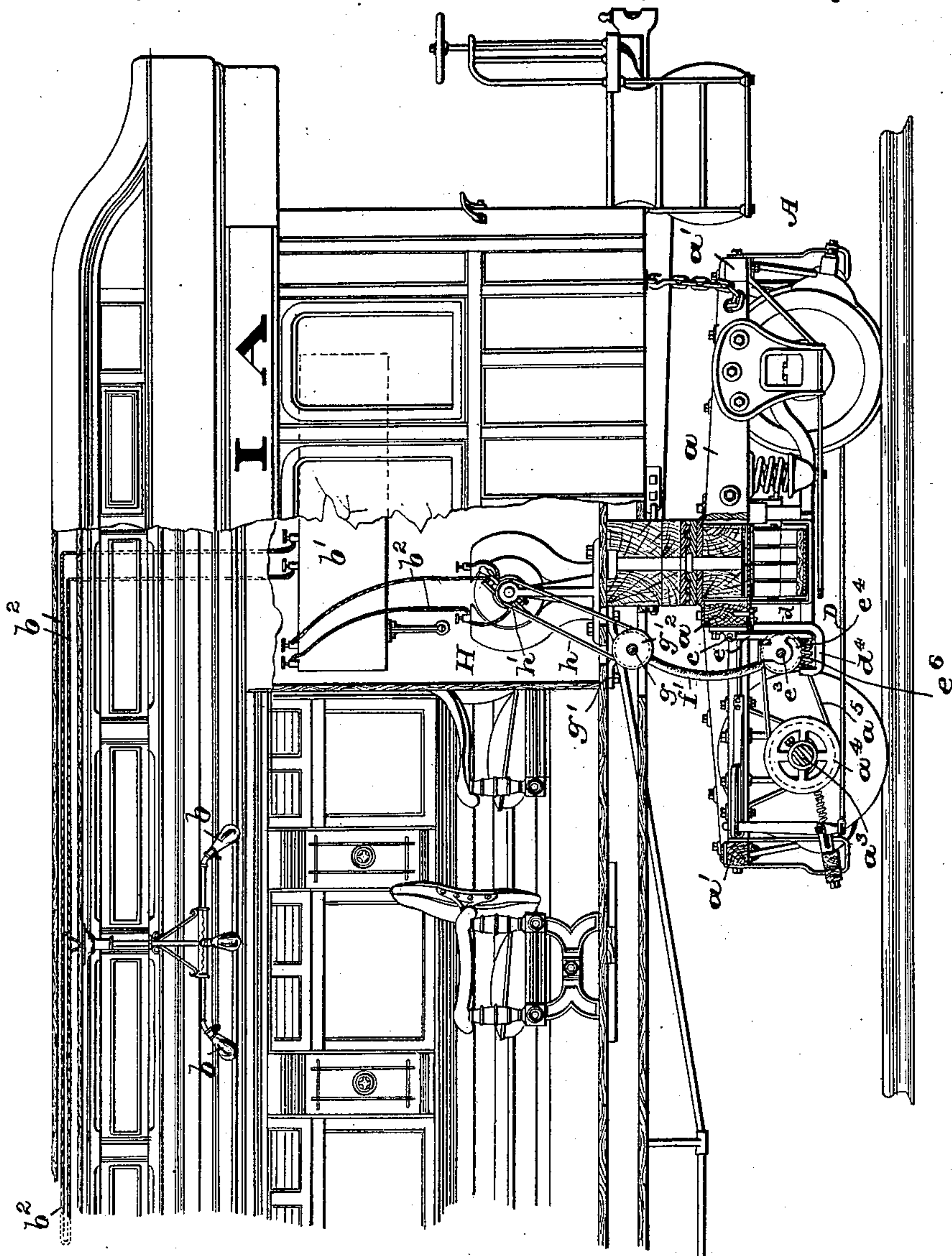


FIG. 1

WITNESSES:

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2 Sheets—Sheet 2.

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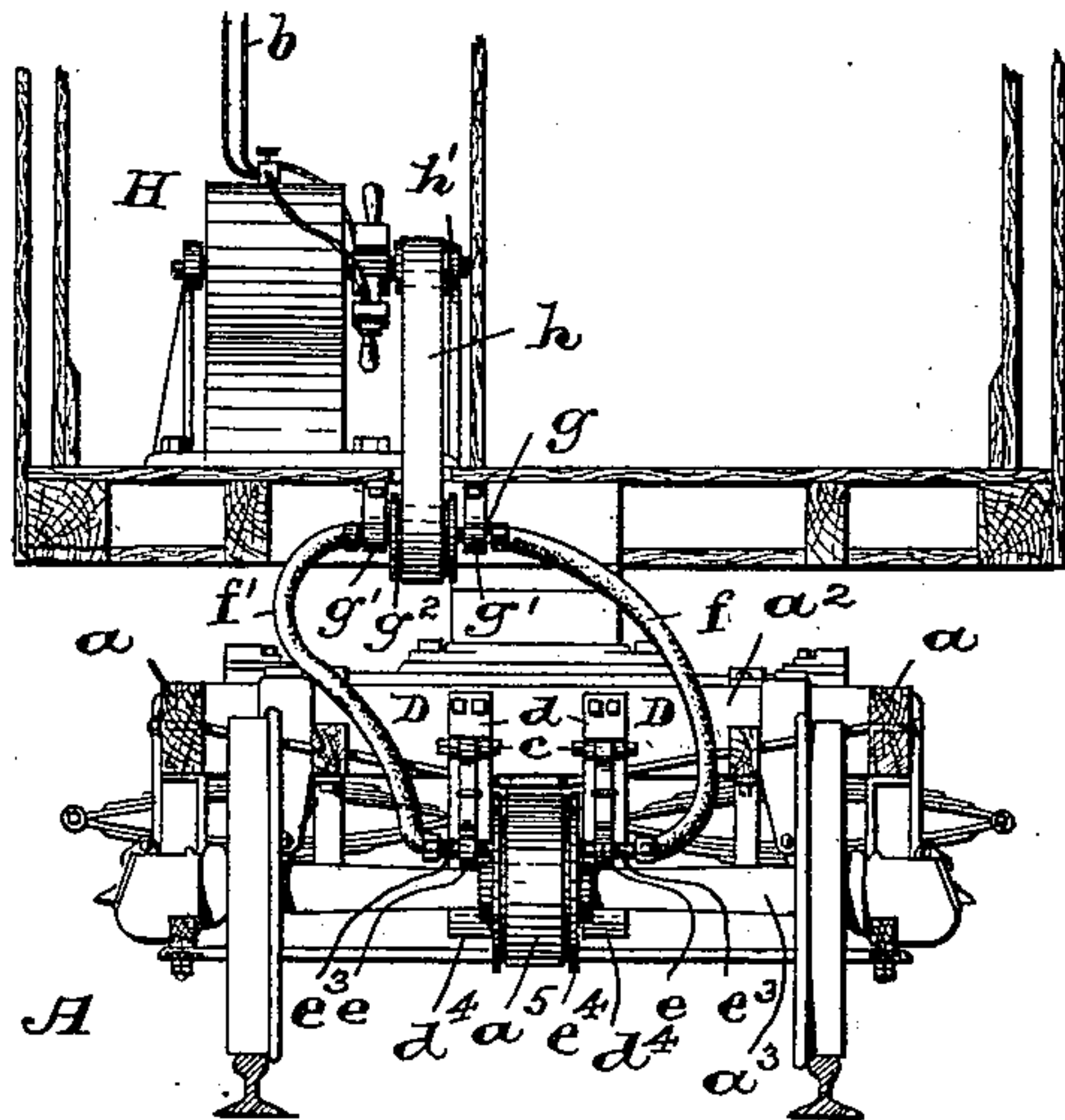


FIG. 2

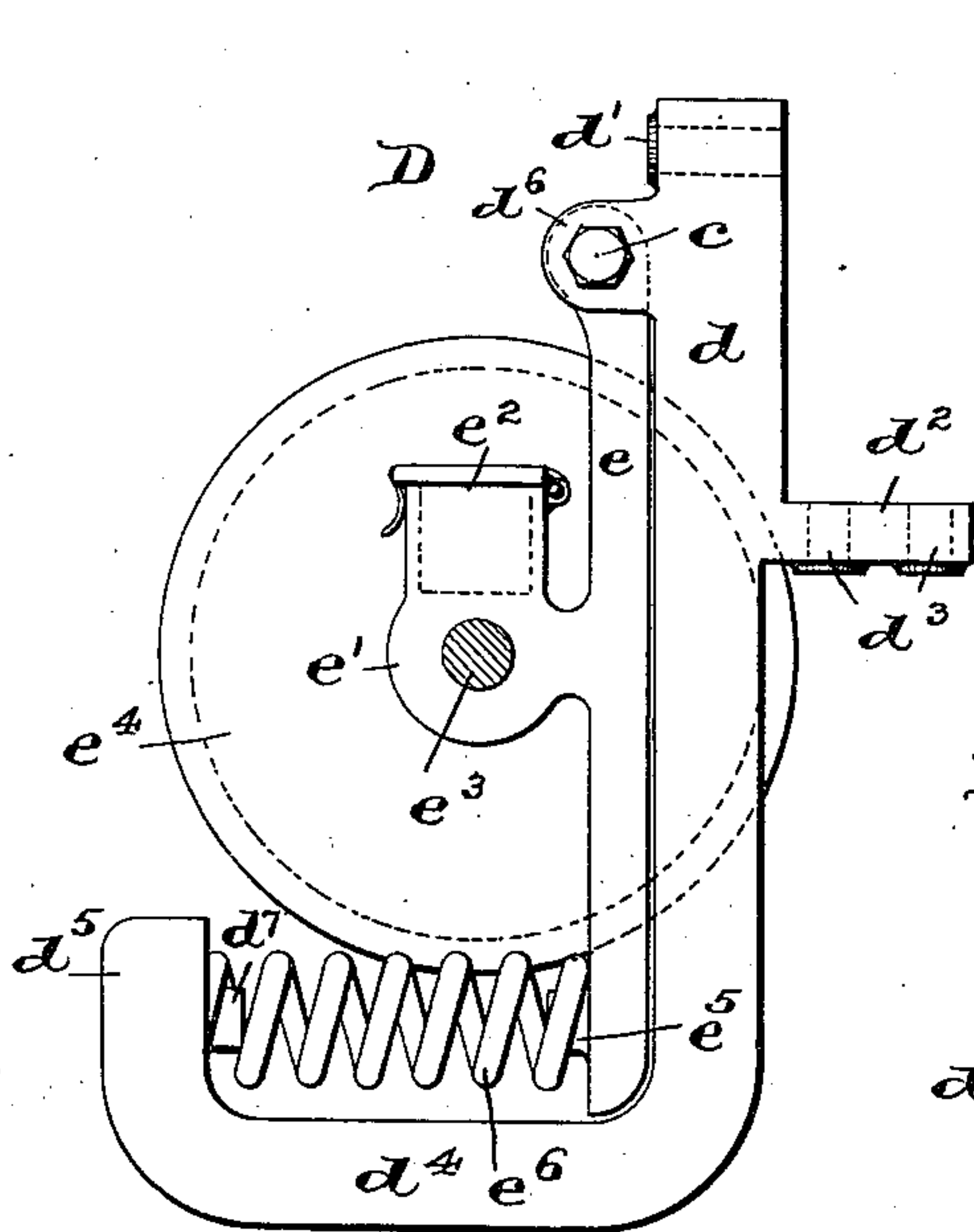


FIG. 3

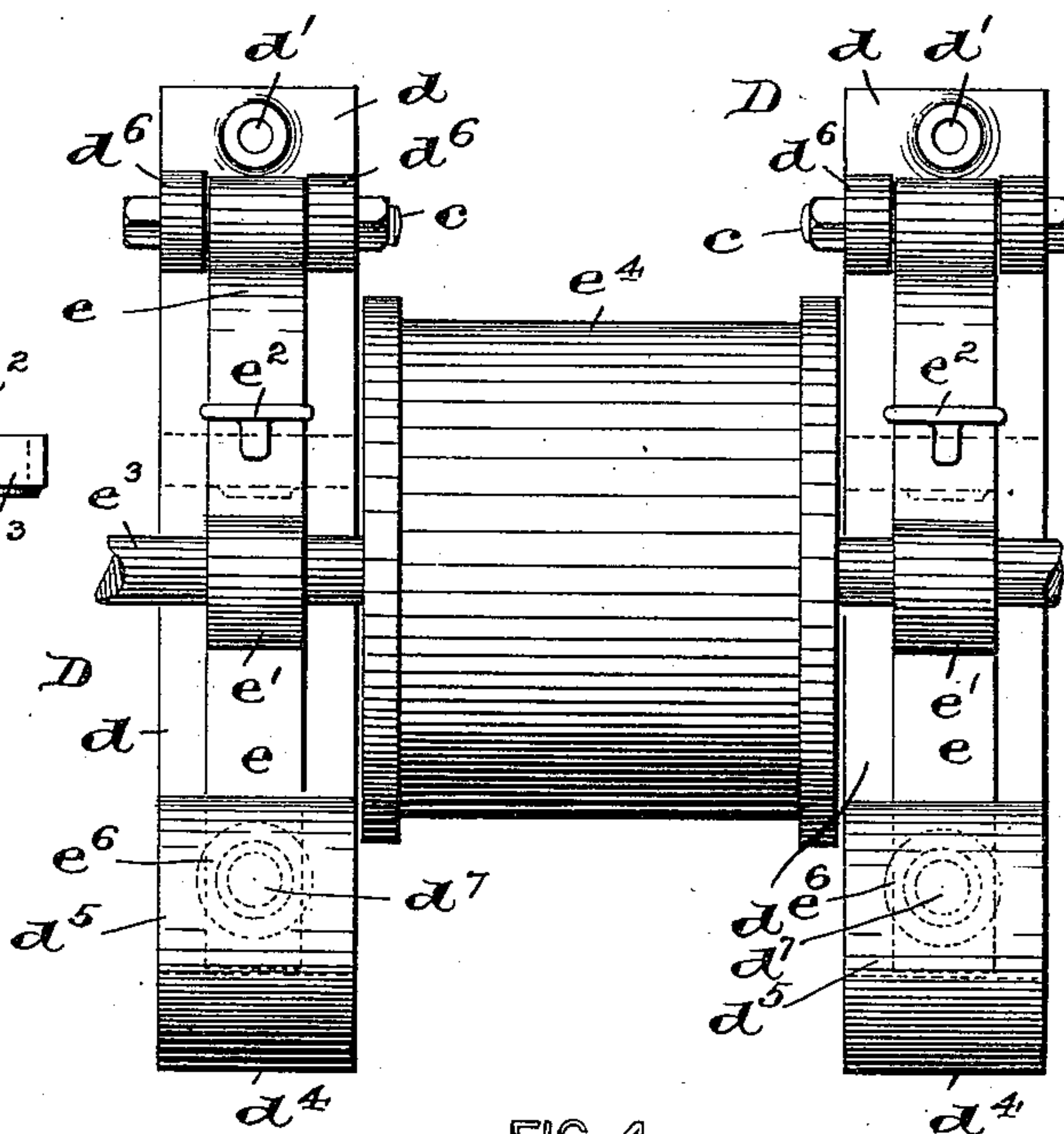


FIG. 4

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UNITED STATES PATENT OFFICE.

MORRIS MOSKOWITZ, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE NATIONAL ELECTRIC CAR LIGHTING COMPANY, OF WEST VIRGINIA.

MEANS FOR GENERATING ELECTRICITY FROM CAR-WHEELS.

SPECIFICATION forming part of Letters Patent No. 564,334, dated July 21, 1896.

Application filed March 14, 1896. Serial No. 583,166. (No model.)

To all whom it may concern:

Be it known that I, MORRIS MOSKOWITZ, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Means for Generating Electricity from Car-Wheel Axles; 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My present invention has reference to novel improvements in means for operatively connecting a dynamo within a railway-car or mounted upon the car-wheel truck with a car-wheel axle to drive said dynamo; and the invention has for its primary object to provide a mechanical means adapted to be secured in position on a car-wheel axle which is automatically adjustable in reference to the varying positions of the car-wheel axle, and also the car-body, said changes of position being due to the variations in the road-bed and the varying loads in the body of the car.

The invention therefore consists, broadly, in the arrangement of an automatically-adjustable pulley operated from the car-wheel axle and a shaft connected at its opposite and free ends with flexible shafts which are adapted to drive a dynamo in either direction irrespective of the forward or backward movements of the car.

The invention consists, furthermore, in such details of construction and novel arrangements and combinations of parts as will be hereinafter fully set forth, and finally embodied in the clauses of the claim.

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

Figure 1 is a sectional view of part of a railway-car and its truck, the same being partly represented in section, and said view also illustrating, in side elevation, one form of dynamo and the mechanism connecting the car-wheel axle with the dynamo for operating the latter. Fig. 2 is a vertical cross-section of a car-truck and a portion of a railway-car, with the dynamo and its driving mechanism

illustrated in elevation. Fig. 3 is a side view of one form of the adjustable bracket adapted to be secured to one of the cross-beams of the car-truck, and Fig. 4 is a front view of a pair of said brackets with a shaft rotating in bearings in said brackets and a pulley-wheel on said shaft.

Similar letters of reference are employed in said above-described views to indicate like parts.

Referring to said drawings, A indicates the car-truck; a , the equalizing-bars; a' , the cross-beams at the ends of the truck, and a^2 are other cross-beams or frame-pieces.

H is any suitable construction of dynamo which supplies electrical energy for the lamps b or other electrical translating devices within the car, and also for charging the battery b' . Of course it will be understood that said dynamo may be arranged directly upon the car-wheel truck A, but is preferably placed within the car-body, substantially as illustrated.

Secured directly to the cross-beams a^2 of the car-truck, or to any other suitable portions thereof, are a pair of brackets D, as will be seen more especially from Figs. 1 and 2. Each bracket consists, essentially, of a solid portion d , having the hole or perforation d' at or near the top, and a lip or projection d^2 , extending at a right angle, or approximately so, from said solid portion d , provided with holes d^3 , whereby said brackets can be made to embrace said cross-beams a^2 on two sides and can be firmly secured thereto by means of suitable bolts, as will be clearly evident.

At or near the top of the portion d of each bracket A are a pair of perforated lugs or ears d^6 . Pivotaly arranged on suitable pins or bolts c in said lugs or ears are certain swinging bars or plates e , each plate being provided with a suitable bearing e' and oil-cup e^2 , substantially as will be seen from an inspection of Fig. 3. Rotatively and operatively arranged in the bearings e' of said plates or bars e on the said brackets D is a shaft e^3 , provided with a suitable pulley-wheel e^4 , as clearly illustrated in Fig. 4. Said pulley-wheel e^4 is in alinement with a suitable pulley a^4 on the car-wheel axle a^3 , and a^5 is any well-known form of belt arranged over

the peripheral surfaces of said pulley-wheels e^4 and a^4 , for the purpose of driving said wheel e^4 from the power derived from the car-wheel axle.

5 As will be seen from Fig. 3, I have provided the upwardly-extending portions d^5 and the swinging plates or bars e of each bracket D with suitable teats d^7 and e^5 , respectively, and upon these I have arranged the ends of a
10 coiled spring e^6 , substantially as and for the purposes set forth. When the belt a^5 is first placed over the two pulleys a^4 and e^4 , then said springs e^6 are compressed and the arms e made to incline forwardly; but after the belt
15 is in its proper place, then the coils of said springs tend to resume their normal inoperative positions, and the result will be that the belt a^5 will always be taut, irrespective of the vibratory action of the car-wheel axle caused
20 by the inequalities in the road-bed.

From an inspection of Fig. 2 it will be seen that I have operatively connected the right-hand end of the shaft e^3 with a flexible shaft f , made up of right-hand coils, and the left-
25 hand end of said shaft I have operatively connected with a flexible shaft f' , made up of left-hand coils. The opposite ends of said two flexible shafts f and f' are operatively connected to the two ends of a shaft g , which
30 is capable of a rotation in suitable bearings g' , secured to the bottom of the car-body, as clearly shown. Between said bearings g' is a pulley-wheel g^2 , over which runs a belt h , which passes over a pulley h' on the armature-shaft of a suitable dynamo H within the car-
35 body.

From the above description it will be seen that no matter what changes or variations in the distance between the frame-pieces of the
40 truck and the longitudinal axis of the car-wheel axle take place, owing to the difference in weight in the car-body at different times and the variations of position of the car-wheel axle in relation to the truck, all parts of the operating mechanism will at all times be opera-
45 tively connected and the dynamo will therefore be in constant operation to deliver electrical current by the wires b^2 to the battery b' and the lamps b while the car is in transit.

50 I will now state the main purposes of the arrangement of the right-handed and left-handed shafts f and f' for connecting the shaft e^3 with the shaft g . Owing to the flexibility of these shafts, they compensate for the vary-
55 ing heights of the car-body, but, owing to the wound construction of a flexible shaft, it would be impossible to operate the dynamo in both directions when the car moves forwardly or backwardly without unwinding the coils
60 of the flexible shaft and rendering it practically useless when but one flexible shaft is used. To overcome this objection, I make use of a right-handed shaft f , which takes up the load when the car moves forward and oper-
65 ates the shaft g , for the purposes stated, while the left-handed shaft f' , which is also operatively attached to both said shaft e^3 and the

shaft g , will turn without doing any work, and all danger of uncoiling itself is obviated. On the other hand, when the direction of tran-
70 sit of the car is reversed, then the left-handed shaft f' will take up the load to operate the shaft g , while the right-handed shaft f will turn without doing any work and without any danger of uncoiling itself, as will be clearly
75 understood.

The operation of the several parts is practical and very simple, and a noiselessly-operating mechanism has been provided for driv-
80 ing a dynamo from a rotating car-wheel axle.

Of course it will be understood that I may use in connection with the dynamo and its circuits any of the well-known forms of pole-changers, acting automatically or otherwise, whereby the current can be made to travel in
85 either direction, according to the direction of the travel of the car.

Having thus described my invention, what I claim is—

1. In a means for generating electricity
90 from a car-wheel axle, the combination, with a shaft e^3 and a pulley-wheel thereon, arranged in bearings on the car-wheel truck, means for operating said pulley, flexible shafts connected with the ends of said shaft e^3 , and
95 a dynamo, with which said flexible shafts are operatively connected, substantially as and for the purposes set forth.

2. In a means for generating electricity
100 from a car-wheel axle, the combination, with a shaft e^3 and a pulley-wheel thereon, arranged in bearings on the car-wheel truck, means for operating said pulley, flexible shafts connected with the end of said shaft e^3 , a
105 shaft g , arranged in bearings secured to the car-body and having its ends operatively connected with said flexible shafts, and a dynamo operated from said shaft g , substantially as and for the purposes set forth.

3. In a means for generating electricity
110 from a car-wheel axle, the combination, with brackets, as D on the car-wheel truck, comprising in each bracket, a pivoted and spring-actuated bar or plate e having bearing por-
115 tions, a shaft e^3 in said bearing portions, and a pulley on said shaft, a pulley-wheel on the car-wheel axle, and a belt for operating said pulley on the shaft e^3 from the pulley on the car-wheel axle, flexible shafts connected with the ends of said shaft e^3 , and a dynamo oper-
120 atively connected with said flexible shafts, substantially as and for the purposes set forth.

4. In a means for generating electricity
125 from a car-wheel axle, the combination, with brackets, as D on the car-wheel truck, comprising in each bracket, a pivoted and spring-actuated bar or plate e having bearing por-
130 tions, a shaft e^3 in said bearing portions, and a pulley on said shaft, a pulley-wheel on the car-wheel axle, and a belt for operating said pulley on the shaft e^3 from the pulley on the car-wheel axle, flexible shafts connected with the ends of said shaft e^3 , a shaft g , arranged

in bearings secured to the car-body, and having its ends operatively connected with said flexible shafts, and a dynamo operated from said shaft *g*, substantially as and for the purposes set forth.

5. In a means for generating electricity from a car-wheel axle, in combination, brackets, as *D*, each comprising therein, a body portion *d*, a bar or plate *e*, having a bearing *e'*, a shaft *e³* in said bearings *e'*, a pulley on said shaft, a spring, as *e⁶*, adapted to actuate said bar or plate *e*, and means for operating said pulley from the car-wheel axle, substantially as and for the purposes set forth.

6. In a means for generating electricity from a car-wheel axle, in combination, brackets, as *D*, each comprising therein, a body portion *d*, a bar or plate *e*, having a bearing *e'*, a shaft *e³* in said bearings *e'*, a pulley on said shaft, a spring, as *e⁶*, adapted to actuate said bar or plate *e*, means for operating said pulley from the car-wheel axle, a dynamo within the car, and flexible shafts operatively connected with the ends of said shaft *e³* and with said dynamo, substantially as and for the purposes set forth.

7. The herein-described bracket *D*, consisting, essentially, of a body portion *d*, a bar or plate *e* pivotally secured on said body

portion *d*, a bearing *e'* on said bar or plate, portions *d⁴* and *d⁵* on said body portion *d*, and a spring between said portion *d⁵* and said bar or plate *e*, substantially as and for the purposes set forth.

8. In a means for generating electricity from a car-wheel axle, in combination, with the car-wheel axle, and a pulley *a⁴* thereon, a pair of brackets *D* on the car-track, comprising in each bracket, a body portion *d*, a bar or plate pivotally secured thereto, a bearing *e'* on each bar or plate, portions *d⁴* and *d⁵* on each body portion *d*, springs *e⁶*, a shaft *e³* in said bearings *e'*, a pulley-wheel *e⁴* on said shaft *e³*, a belt *a⁵* running over said pulleys *a⁴* and *e⁴*, flexible shafts *f* and *f'* connected with the ends of said shaft *e³*, a shaft *g*, in bearings attached to the car-body, having its ends operatively connected with said flexible shafts *f* and *f'*, and a dynamo driven from said shaft *g*, all arranged, substantially as and for the purposes set forth.

In testimony that I claim the invention set forth above I have hereunto set my hand this 9th day of March, 1896.

MORRIS MOSKOWITZ.

Witnesses:

FREDK. C. FRAENTZEL,
WM. H. CAMFIELD, JR.