(No Model.)

T. A. MURRAY.

APPARATUS FOR GENERATING ELECTRICITY FOR LIGHTING RAILWAY CARS.

No. 529,563. Patented Nov. 20, 1894.

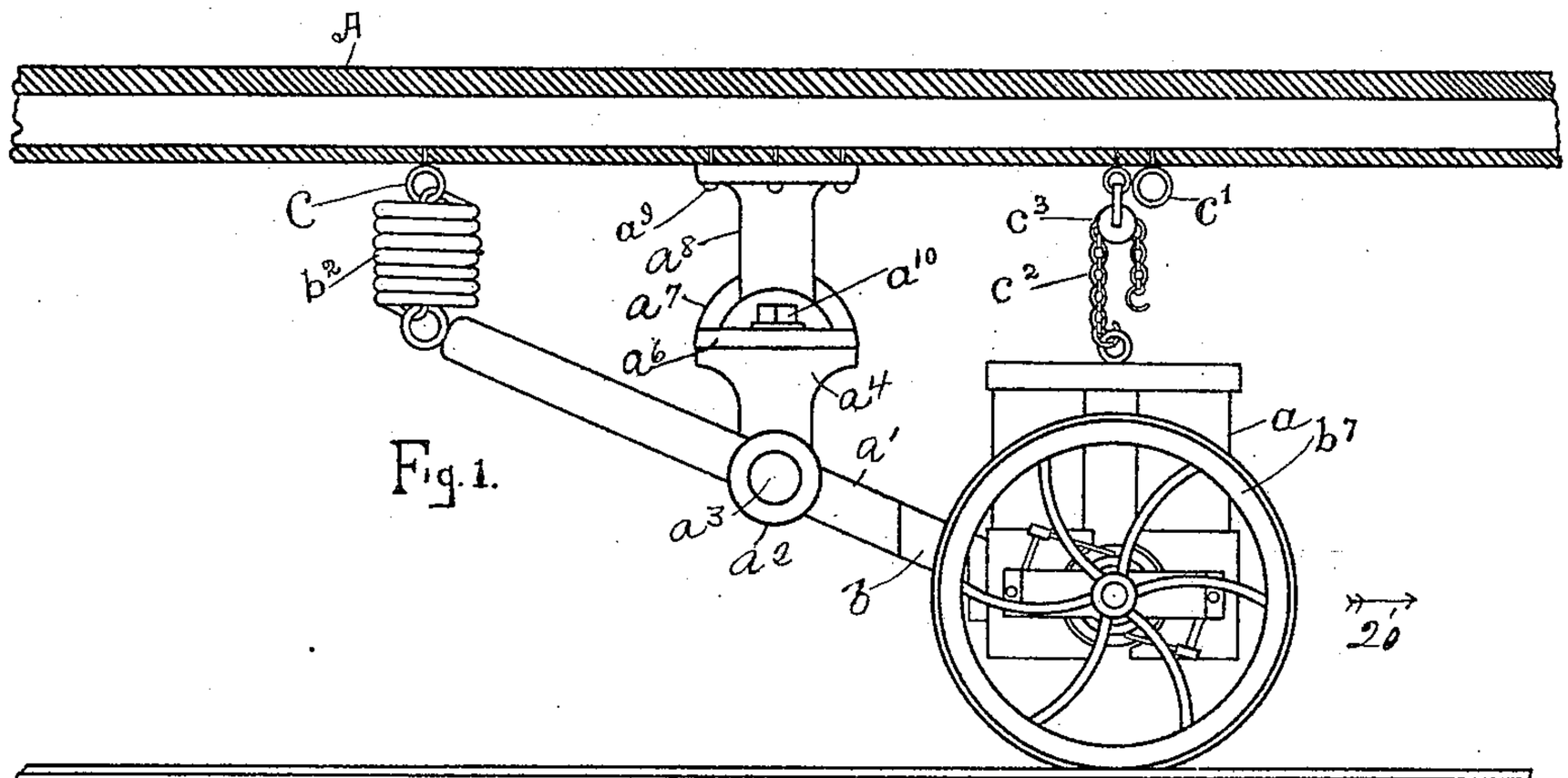

Fig. 1.

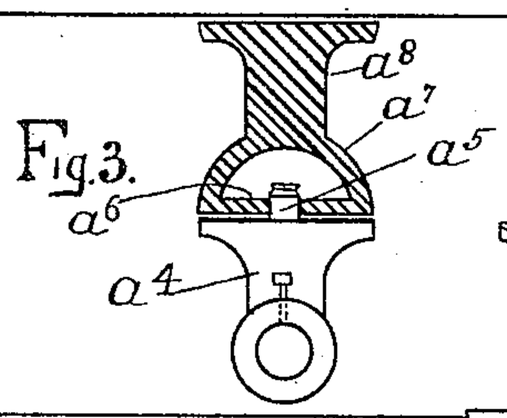

Fig. 3.

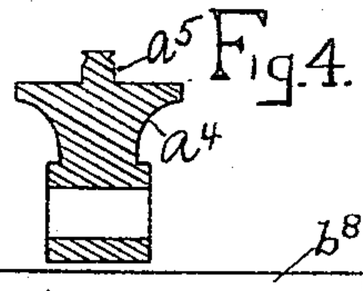

Fig. 4.

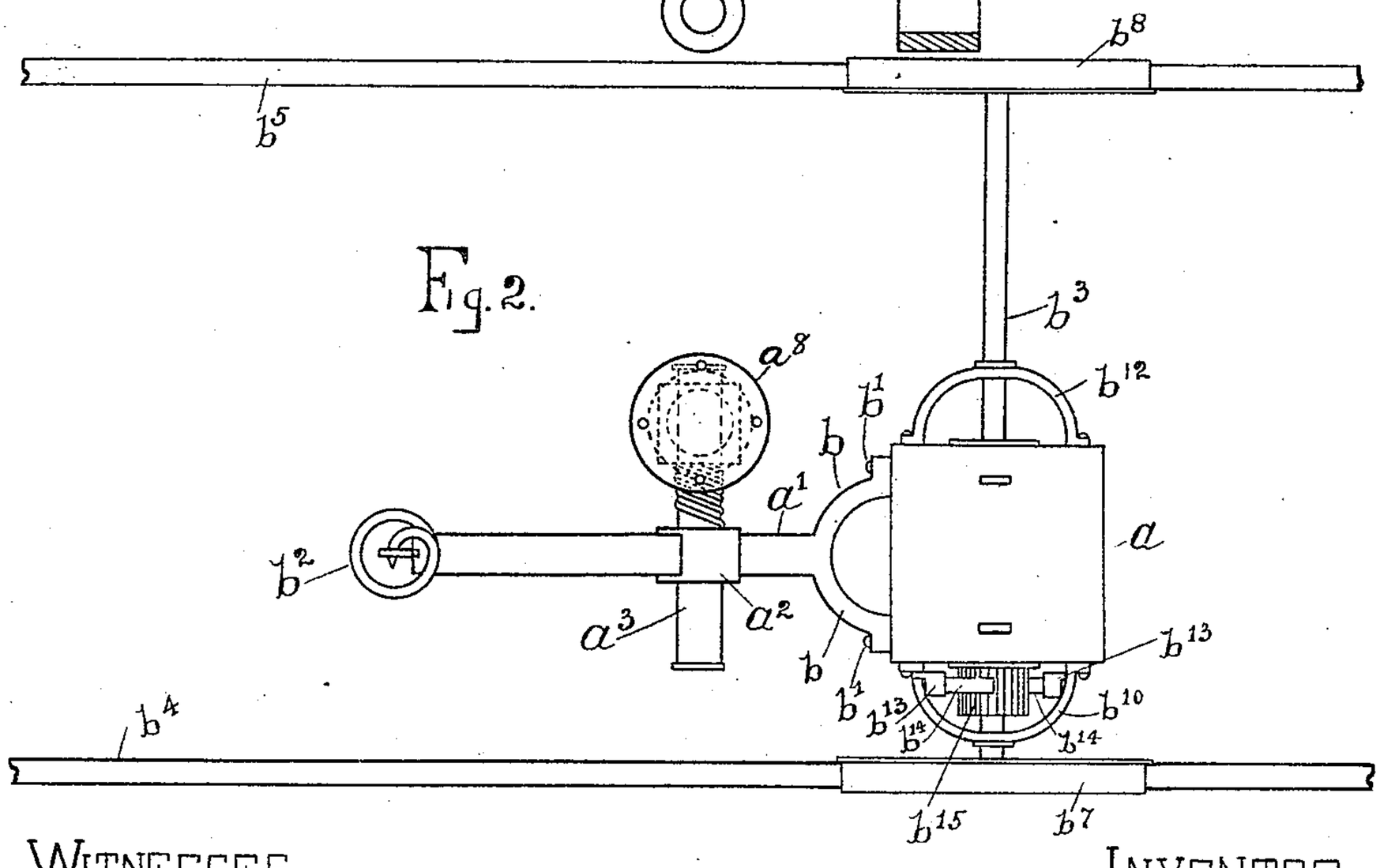

Fig. 2.

WITNESSES

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APPARATUS FOR GENERATING ELECTRICITY FOR LIGHTING RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 529,563, dated November 20, 1894.

Application filed May 3, 1894. Serial No. 509,955. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. MURRAY, residing in Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Apparatus for Generating Electricity for Lighting Railway-Cars, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to provide a simple, cheap and efficient apparatus for lighting railway cars with electricity.

Prior to this invention, I am aware that attempts have been made to light steam railway cars, by means of dynamos connected by suitable gearing to one of the car axles, and also by means of a small steam engine usually located in the baggage car.

As now commonly practiced, steam railway cars are drawn over the road with one end nearest the engine when the car is traveling in one direction, but when the car is drawn over the road in the opposite direction, that portion of the car which was nearest the engine, becomes farthest from the engine on the travel of the car in the backward direction.

In the method above referred to, in which the dynamo is connected to the car axle, the armature of the dynamo is driven in one direction when the car is moving over the road in a forward direction, and the said armature is revolved or driven in an opposite direction, when the car is moved over the road in an opposite or backward direction.

It is one of the objects of this invention to provide a construction whereby the armature shaft of the dynamo may be driven in the same direction, both when the car is traveling over the road in a forward direction, and also when it is traveling over the road in a backward direction. To accomplish this result, the armature shaft of the dynamo is independent of or disconnected from the car axles, and derives its own motion independent of the motion of the car axles, as will be described.

In accordance with this invention, the dynamo is carried by a frame pivotally supported so as to enable the dynamo carrying frame to be moved bodily in a circle about the pivot, and the said dynamo carrying frame, for the best results, is also capable of lateral movement with relation to its pivotal center so as to enable the dynamo carrying frame to be moved sidewise, as when the car is rounding a curve in the track. The armature shaft is rotated by means of wheels traveling upon the rails of the track, and I may prefer to mount the said wheels directly upon the armature shaft or extensions thereof, and for the best results, I prefer to employ two wheels engaging opposite rails of the track, but I do not desire to limit my invention in this respect, as but a single wheel engaging but one of the rails could be used. The dynamo carrying frame may be pivotally secured to the car body, but if desired it may be secured to the truck frame, and for the best results, I prefer to construct the dynamo supporting frame so that it may be movable in a substantially vertical plane, whereby the dynamo frame and its dynamo may be suspended when not in use. These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 represents a sufficient portion of a steam railway car provided with an electric generating apparatus embodying this invention, the railway car being represented in section; Fig. 2, a top or plan view of the generating apparatus shown in Fig. 1, the car body being omitted, and Figs. 3 and 4, details to be referred to.

Referring to Fig. 1, A represents the flooring of a car body, which may be of any usual or suitable construction, such as now commonly employed in steam railways, it being supported at the opposite ends on the usual car trucks not herein shown.

In order to light the car A by electricity, a dynamo a, which may be of any usual or suitable type, and either series or shunt wound, is supported by a suitable framework pivotally mounted so that the dynamo a may be moved in a circle in a substantially horizontal plane, to enable the position of the dynamo to be changed or reversed.

One form of dynamo supporting frame is herein shown, and consists of a lever a' provided with a boss or enlargement a^2, through which is extended a rod, shaft or pin a^3 supported by a revoluble bracket or arm a^4 (see Figs. 3 and 4), the said bracket or arm a^4 be-

ing provided as herein shown with a stud or projection a^5 extended up through a suitable hole in a base plate a^6 connected by arms a^7 to a bracket or arm a^8, represented as firmly secured as by bolts a^9 to the under side of the car body A. The stud or pin a^5 is adapted to turn freely in the plate a^6, but may be secured to the said plate by a nut a^{10} or in any other suitable manner, which will permit the bracket or arm a^4 to revolve, but will secure the said bracket or arm to the plate a^6. The lever a' as represented in Fig. 2, is provided at its front end with forks b, firmly secured as by bolts b' to the dynamo a, and the rear end of the lever a' may and preferably will be yieldingly secured to the car body A by a spiral spring b^2.

The dynamo a is provided with an armature, which is represented in the present instance as having its shaft b^3 extended the width of the rails b^4 b^5 comprising the track upon which the car is mounted, and the said shaft in the present instance has secured to its opposite ends, wheels b^7 b^8, which may be of any usual or desired construction and which run directly upon the rails b^4 b^5. The armature shaft b^3 may be supported by suitable brackets b^{10} b^{12} secured to the opposite ends of the dynamo, and the bracket b^{10} may have fastened to it, holders b^{13} for commutator brushes b^{14} co-operating with a commutator b^{15} of any suitable or desired construction.

In the operation of my improved apparatus, it will be seen that when the car body A is moving over the railroad track in the direction indicated by arrow 20, Fig. 1, the armature of the dynamo a will be revolved by the revolution of the wheels b^7 b^8 fast on the armature shaft b^3, and will generate current, which in practice will preferably lead to a storage battery with which the lamps in the car are connected, and which battery is not herein shown. The wheels b^7 b^8 may be kept firmly pressed in engagement with the rails of the track by means of the weight of the dynamo assisted by the spiral spring b^2, which turns the lever a' on its pivot a^3 so as to keep the said wheels in frictional contact with the rails b^4 b^5.

When the car A has reached the end of its route or its line of travel, the spring b^2 may be disconnected from the hook c and the dynamo supporting frame may be turned in a substantially horizontal plane on the stud or pin a^5 as a center, so as to reverse the position of the dynamo, the chain c^2 being disconnected from the pulley, and when in this reversed position, the spring b^2 may be connected to the hook c'. In this case, it will be seen that when the car is traveling over the road on its return trip in the direction opposite to that indicated by arrow 20, the armature of the dynamo will be rotated in the same direction as the movement of the car, which is of great advantage practically as it avoids injury to the commutator and commutator brushes and prolongs the efficiency of the apparatus, and also avoids discharging the storage battery.

When the car is not in use, the dynamo and its supporting frame if desired may be lifted up away from the rails and suspended by means of the chain c^2 passed about the pulley c^3 secured to the under side of the car body, but instead of this particular manner of lifting the dynamo, any other suitable means may be employed, and when it is proposed to elevate the dynamo, the spring b^2 will preferably be disconnected from its operating hook. The pivot pin a^3 upon which the lever or supporting frame a' rocks in a substantially vertical plane, is preferably made substantially long as represented in Fig. 2, to permit of lateral movement upon it of the supporting frame, so as to enable the wheels b^7 b^8 to keep the track when rounding curves.

I have herein represented the dynamo supporting frame as a lever pivoted to rock in a substantially vertical plane and also to move in a horizontal plane, but I do not desire to limit myself to the precise construction shown, nor to the securing of the pivot for said dynamo supporting frame to the car body, as it would be possible to pivotally connect the dynamo supporting frame to the frame of the ordinary car truck.

It will be seen, that the apparatus is simple, and each car may be provided with its own apparatus, but if desired, the dynamo under a single car may be made of sufficient capacity to light all the cars of the train, but I prefer to equip each car with its own current generating apparatus, which can be made substantially small, compact, light and inexpensive.

I have herein shown the wheels b^7 b^8 as mounted directly on the armature shaft, but I do not desire to limit my invention in this respect, for it may be found advantageous to mount the wheels on an independent shaft and to gear the dynamo shaft to the independent shaft.

By means of the dynamo frame having a substantially vertical movement, the said frame may be elevated and the dynamo supported above the track during the day time, if it is not required to use the dynamo in charging the storage battery.

I claim—

1. In an apparatus for generating electricity for lighting railway cars, the combination with a dynamo or generator located below the car body, of a support for said dynamo located below and outside of the car body and mounted to swing in a substantially horizontal plane independent of the car body and its trucks, substantially as described.

2. In an apparatus for generating electricity for lighting railway cars, the combination with a dynamo or generator having its armature shaft driven from the track independent of the car axles, of a supporting frame for said dynamo located outside of the car body and mounted to swing in a substan-

tially horizontal plane between the car trucks, for the purpose specified.

3. In an apparatus for generating electricity for lighting railway cars, the combination with a dynamo or generator having its armature shaft driven from the track independent of the car axles, of a supporting frame for said dynamo located outside of the car body and pivotally mounted to swing in a substantially horizontal plane, and having a movement in a substantially vertical plane, substantially as described.

4. In an apparatus for generating electricity for lighting railway cars, the combination with a dynamo or generator having its armature shaft driven from the track independent of the car axles, of a supporting frame for said dynamo pivotally mounted beneath the car body to swing in a circle in a substantially horizontal plane and to move bodily in a lateral direction, substantially as described.

5. The combination with a railway car having the usual trucks, of a dynamo or generator located below and outside of the car, and a supporting frame to which said generator is firmly secured, the said frame being located below and outside of the car body and constructed to be turned in a substantially horizontal plane to permit the armature of the said dynamo to be rotated in the same direction, when the car is moving in opposite directions, and a driving wheel for the armature of said dynamo independent of the usual car wheels and sustained on the track by said supporting frame substantially as described.

6. The combination with a railway car having the usual trucks, of a dynamo or generator located below the car between the car trucks, and having its armature driven from the track independent of the axles of the said trucks, and a supporting frame for said dynamo located below the car body and mounted to swing in a substantially horizontal plane, for the purpose specified.

7. The combination with a railway car having the usual trucks, of a dynamo or generator located below the car between the car trucks, and having its armature driven from the track independent of the axles of the said trucks, and a supporting frame for said dynamo consisting of a lever pivoted on a shaft, stud or pin, to move in a substantially vertical plane, a bracket for said shaft or pin pivoted to a bracket or arm attached to the car body so as to permit the said lever to move in a substantially horizontal plane, substantially as described.

8. In an apparatus for generating electricity for lighting railway cars, the combination with a dynamo or generator located below the car body, of a support for said dynamo located below and separated from the car body and mounted to be turned in a substantially vertical plane for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS A. MURRAY.

Witnesses:
JAS. H. CHURCHILL,
J. MURPHY.