W. I. THOMSON.

GENERATOR MOUNTING AND DRIVE FOR RAILWAY CARS.

APPLICATION FILED SEPT. 10, 1914.

1,154,671.

Patented Sept. 28, 1915.

3 SHEETS—SHEET 1.

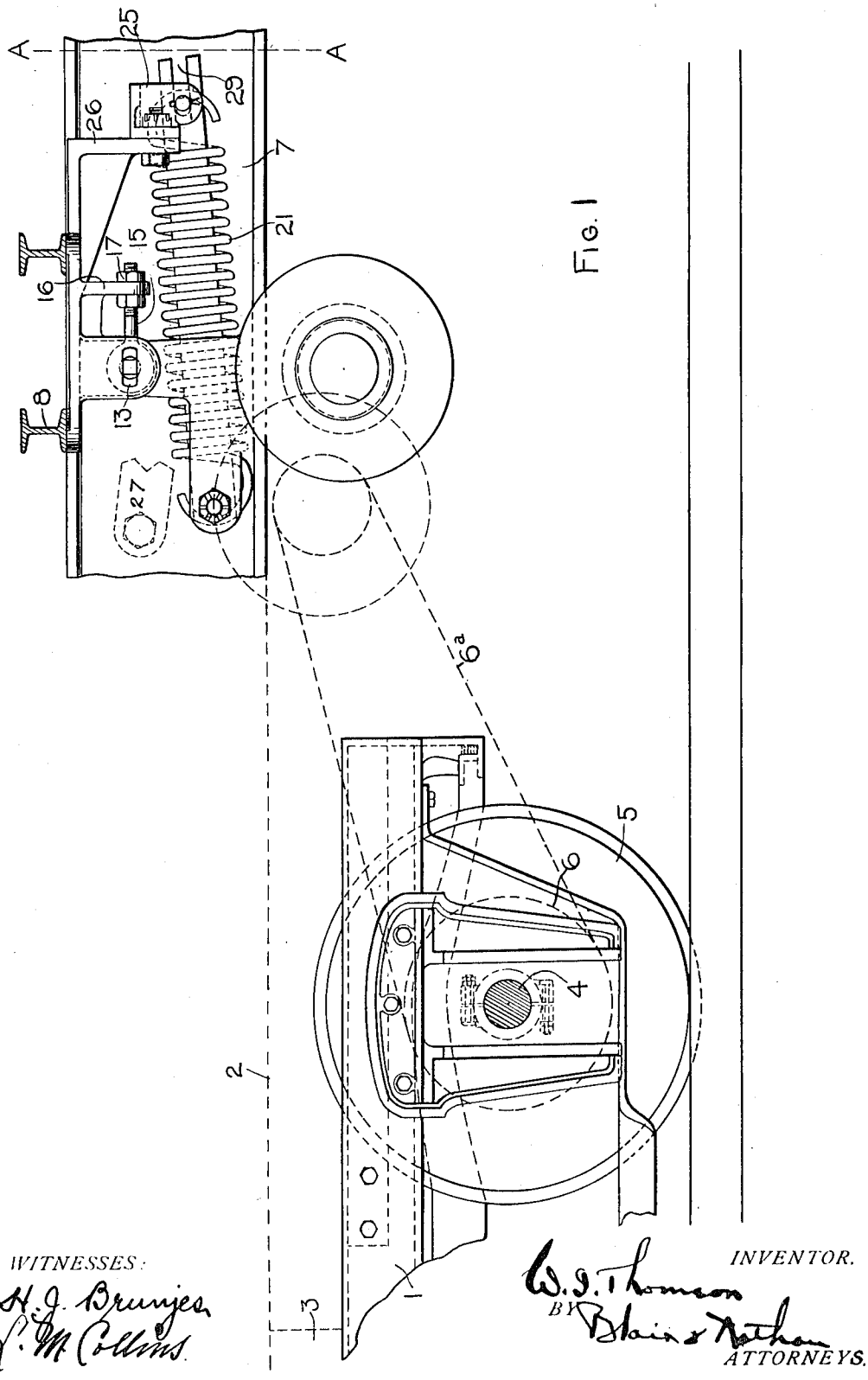

FIG. 1

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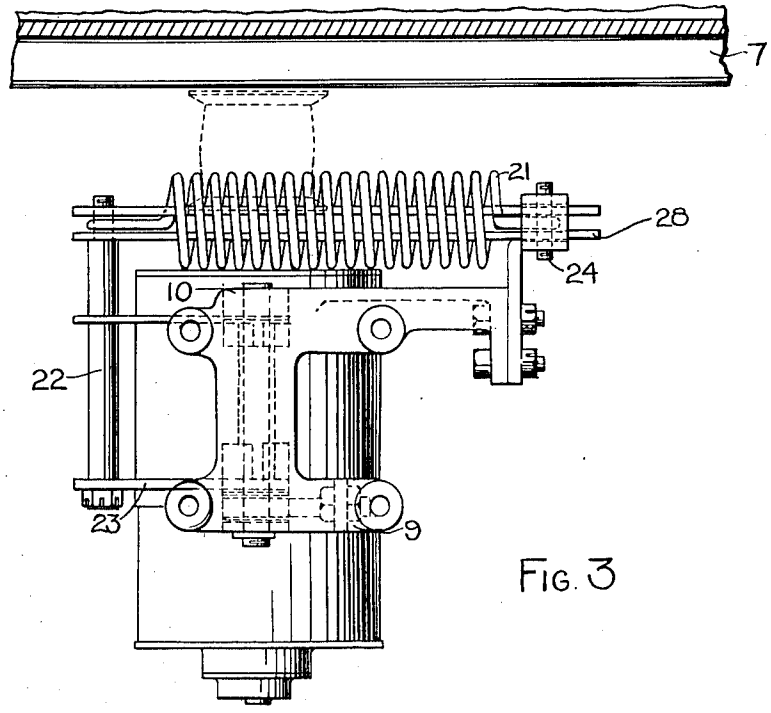

FIG. 3

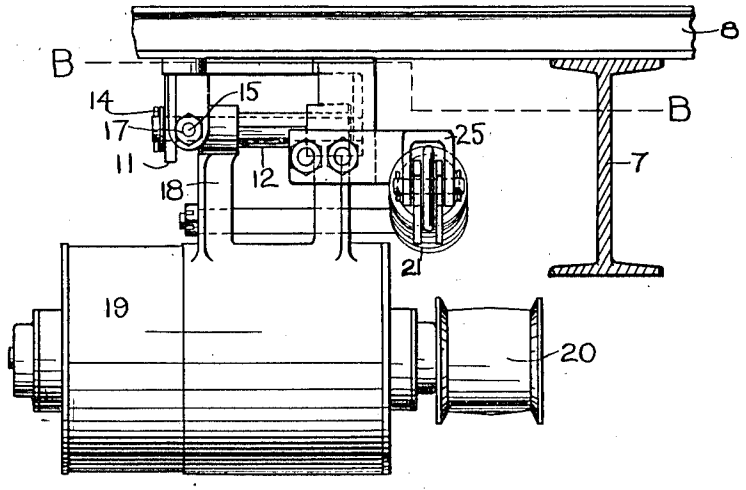

FIG. 2

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3 SHEETS—SHEET 3.

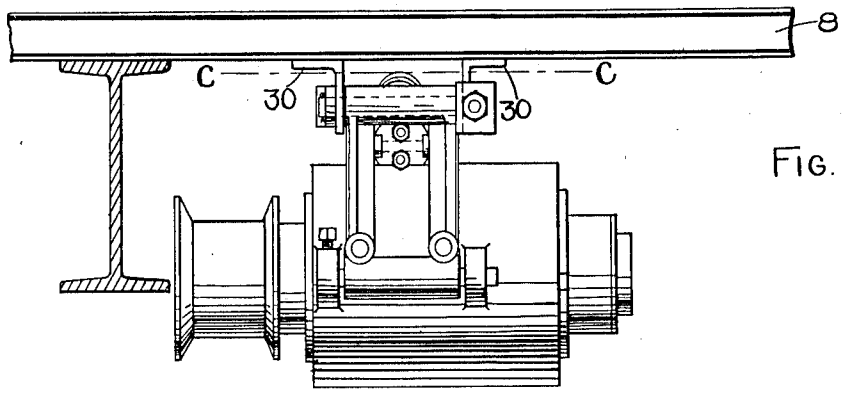

FIG. 4

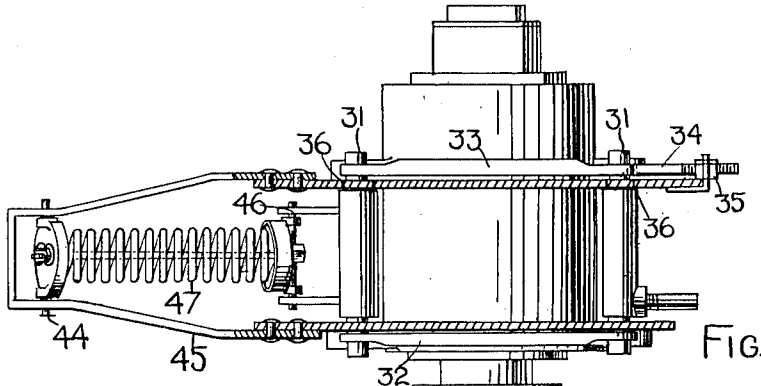

FIG. 5

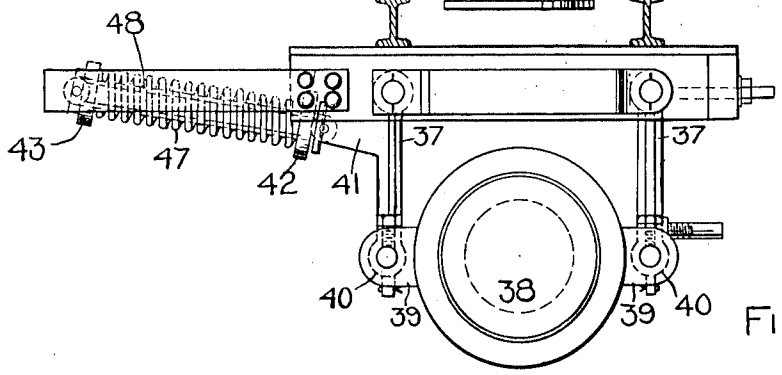

FIG. 6

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UNITED STATES PATENT OFFICE.

WILLIAM I. THOMSON, OF NEWARK, NEW JERSEY, ASSIGNOR TO SAFETY CAR HEATING & LIGHTING COMPANY, A CORPORATION OF NEW JERSEY.

GENERATOR MOUNTING AND DRIVE FOR RAILWAY-CARS.

1,154,671. Specification of Letters Patent. Patented Sept. 28, 1915.

Application filed September 10, 1914. Serial No. 860,971.

To all whom it may concern:

Be it known that I, WILLIAM I. THOMSON, a citizen of the United States, and residing at Newark, in the county of Essex and State of New Jersey, have invented a new and Improved Generator Mounting and Drive for Railway-Cars, of which the following specification is a full disclosure.

This invention relates to mounting and driving apparatus for electric generators used in connection with railway cars.

One of the objects thereof is to provide a simple and reliable mounting for electric generators in position to be driven from an axle or other moving part of a railway car.

Another object is to provide in apparatus of the above type a retracting device in which a spring is efficiently used to give uniform results.

Another object is to provide apparatus of the above type in which the effects of careless installation are reduced to a minimum.

Another object is to provide practical and compact means for mounting a generator on a car body to be driven from an axle of a truck thereof.

Other objects will be in part obvious from the annexed drawings and in part indicated in connection therewith by the following analysis of this invention.

This invention accordingly consists in the features of construction, combinations of parts, and in the unique relations of the members and in the relative proportioning and disposition thereof; all as more completely outlined herein.

To enable others skilled in the art so fully to comprehend the underlying features thereof that they may embody the same by the numerous modifications in structure and relation contemplated by this invention, drawings depicting a preferred form have been annexed as a part of this disclosure, and in such drawings, like characters of reference, denote corresponding parts throughout all the views of which:—

Figure 1 is a semi-diagrammatic side elevation of a generator driven from the axle of a truck. Fig. 2 is a sectional elevation taken on the line A—A of Fig. 1. Fig. 3 is a sectional plan taken on the line B—B of Fig. 2. Fig. 4 is a sectional elevation similar to Fig. 2 showing a slightly different form of suspension. Fig. 5 is a sectional plan taken along the line C—C of Fig. 4. Fig. 6 is a side elevation of the parts shown in Fig. 4.

Referring now to Fig. 1 of the drawings, there is shown at 1 a car truck of a well-known type having mounted thereon the car body 2 by means of the ordinary pivotal connection 3 in such manner as to permit the truck to swing angularly with respect to the body as the car rounds curves. Truck 1 comprises the axle 4 having mounted thereon the wheels 5 and a pulley 6. The car body 2 comprises a longitudinal or center sill 7, preferably of I cross section, and is provided with cross sills 8 for supporting the car floor. Bolted to these sills is a bracket casting 9 having depending lugs 10 and 11. A supporting pin 12 passes loosely through the lug 10 and the other being squared, fits within a slot 13 in the lug 11 being held in place by a cotter-pin 14. This square end gives a firm surface bearing on the lug 11 and permits the angular swinging of the pin with respect to the car body by means of an eye bolt 15 which embraces the pin and the shank of which passes through the fixed lug 16 and is held by the nuts 17. Supported upon pin 12 by means of the arms 18 is a generator 19 provided with a flanged driving pulley 20. It may here be noted that by the mounting of the generator as above described the parts are compactly disposed and give ample clearance above the road bed without interference with the center sill 7 which is positioned at one side of the generator support.

The generator as above mounted is driven from the pulley 6 as by means of belt 6^a, the flanged pulley 20 holding the belt in position for a maximum swing of the car truck. It is also to be noted that by means of the adjustment through the eye bolt 15 the axis of the generator may be so placed with respect to the remaining parts that the maximum swing of the truck in either direction during all conditions of use is equalized and hence there is a minimum tendency for the belt to become displaced.

The generator as above noted swings upon the supporting pin or rod 12 and normally occupies a position swung forwardly from that shown in full lines in Fig. 1 of the drawings. From the operative position indicated in dotted lines it will be seen that

the weight acts as a factor in tending to maintain the belt in the desired taut condition. The effect of the weight, however, is auxiliary to that of a spring 21 which is stretched between a pin 24 secured within a bracket 25 which is bolted to the depending lug 26 of the supporting casting 9. This spring tends to swing the generator in a direction away from the car truck and is so positioned with respect to the axis of pin 12 that its effect varies as the generator swings downward toward its lowermost position and increases due to the increase of its effective arm. This will be understood by considering the position of the arm 23 indicated in dotted lines at 27 on Fig. 1 of the drawings in which extreme position the spring has small effect as it pulls almost through the axis about which the generator swings. The various parts are so proportioned that the total retractive effect of the weight of the generator and of the spring 21 is substantially constant for all operative positions of the generator and hence when the position of the latter changes as upon the truck swinging in rounding curves or for other reason, there is no material alteration in the belt tension.

In order that the desired range of resiliency of the spring may be employed, it is provided with a distorting device comprising a pair of parallel links 28 which pass through the spring from end to end and have at one end the pin 22 in a suitable bearing and at the opposite end the pin 24 resting in slots 29 formed in the ends of these links. Prior to installation of the apparatus, as for example at the factory, the spring is stretched by means of this device to a pre-determined degree and when the apparatus is mounted the pins are merely placed in position and the generator swung forwardly to permit the belt to be mounted upon the pulleys. This action is permitted by the pin 24 traveling in the slots 29 and the spring thereafter exercises its full functions. This arrangement insures that the desired range of resiliency of the spring will be utilized as the preliminary stretching to the proper amount may be done at the factory and also materially reduces the labor of installation as it lessens the amount which the spring has to be stretched by hand to place it in condition for use.

The action of the above described apparatus will be substantially clear from the description of its construction as above and it is to be noted that the parts are disposed with extreme compactness and yet are positioned for most effective action. It may also be noted that the term "distorted" is used throughout this description and the following claims in a broad sense to denote any action by which the spring is made to depart from its normal, free and unrestrained condition, thus comprehending the stretching of a tension spring, compression of a compression spring or other forceful action by which the shape or condition of the spring is changed.

In Figs. 4, 5 and 6 of the drawings there is shown a different form of suspension embodying certain of the features of this invention. In this case, there are secured to the cross sills 8 a pair of angle brackets 30 having a pair of supporting pins 31 connected by the links 32 and 33, the latter of which is provided with a shank 34 by which the pins may be simultaneously swung in a horizontal angular direction and locked in position by the nuts 35. This action is permitted by means of the slots 36 indicated in dotted lines in Fig. 5 of the drawings. From pins 31 there is suspended by means of the parallel plates 37 a generator 38 having on its casing lugs 39 in which are positioned pins 40. One of these plates 37 is provided with angularly disposed arms 41 upon which is mounted a cap 42 and a similar cap 43 is mounted by means of a pin 44 in the extension frame 45 riveted to the angle plates 30. Between cap 43 and cap 42, which also has pivotal connection at 46 with its supporting arms, there is compressed a spring 47 which urges the generator in the direction indicated by the arrow in Fig. 6 of the drawings, and which by reason of its position and inclination exercises a variable retractive force similar to that exercised by 21 hereinbefore described. That is, the total effect of the weight and the spring is substantially constant for all operative positions, of the generator. This compression spring, moreover, is partially distorted by means of the rods 48 which pass through the spring and are secured in position outside the ends of the caps. These rods hold the spring compressed to the desired extent before the generator is swung up in position to receive the belt and upon such swinging action taking place permit the spring to be further compressed to any desired extent as they pass freely through one of the caps. The action of this apparatus, except as above specified is substantially the same as that first set forth. It will thus be seen that there is provided apparatus in which the several objects of this invention are achieved.

As many changes might be made in the above construction, and as many apparently different embodiments might be made of this invention without departing from the scope thereof, it is intended that all features herein described or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Having thus revealed this invention, I claim as new and desire to secure the following combinations of elements, or equiva-

lents thereof, by Letters Patent of the United States:—

1. In car-lighting apparatus, in combination, a unitary device comprising a distorted spring and means limiting the return of said spring toward undistorted condition and adapted to permit further distortion thereof.

2. In car-lighting apparatus, in combination, a unitary device comprising a distorted spring and means limiting the return of said spring toward undistorted condition and adapted to permit further distortion thereof, said means comprising a member extending lengthwise of the spring.

3. In car-lighting apparatus, in combination, a unitary device comprising a distorted coiled spring and means comprising a member extending through said spring limiting the return of said spring toward undistorted condition and adapted to permit further distortion thereof.

4. In car-lighting apparatus, in combination, a coiled spring, a pair of members between which said spring is stretched and a member extending longitudinally of said spring connected with one of said first members and having a slotted connection with the other of said first members, limiting the extent of contraction of said spring.

5. In car-lighting apparatus, in combination, a car truck; a generator driven from an axle of said truck; a spring urging said generator away from said axle; and means adapted to prevent the return of said spring to free undistorted condition irrespective of the position of said generator.

6. In car-lighting apparatus, in combination, a car truck; a generator driven from an axle of said truck; and a retracting device urging said generator away from said axle comprising a spring and a member mounted to hold said spring in partially distorted condition when removed from said generator.

7. In car-lighting apparatus, in combination, a car truck; a car body mounted thereon to permit swinging of the truck with respect thereto; a pair of supporting members mounted beneath and secured to the body of the car; a transverse supporting member mounted upon said first supporting members; means adapted to adjust the axis of said last member angularly with respect to the longitudinal axis of said body by movement of one end of said member in one of said first members; means adapted to lock said end in adjusted position; a generator mounted to swing from said adjustable supporting member in a direction toward and away from said truck and means adapted to drive said generator from an axle of said truck.

8. In car-lighting apparatus, in combination, a car truck; a car body mounted thereon; a generator supported from said car body and mounted to move toward and away from said truck; means adapted to drive said generator from an axle of said truck, and means comprising a spring co-acting with the weight of said generator in urging said generator in a direction away from said axle with a substantially uniform force at all operative positions of the generator.

9. In car-lighting apparatus, in combination, a car truck; a generator mounted to move toward and away from said truck; means adapted to drive said generator from an axle of said truck; a spring mounted to urge said generator away from said axle and co-acting with the weight of said generator in exerting a substantially constant force upon said driving means in all operative positions of said generator, and means adapted to prevent the return of said spring to undistorted condition irrespective of the position of said generator.

10. In car-lighting apparatus, in combination, a car truck; a generator; a support having pivotally connected therewith a downwardly extending arm on which said generator is mounted to swing beneath said support; means adapted to drive said generator from an axle of said truck; means upon said arm extending toward said truck with respect to the axis about which the generator swings from a point between said support and the upper portion of said dynamo, and a spring mounted between said last means and a point on the remote side of said axis and tending to swing said generator away from said axle whereby the effective arm through which said spring acts to swing said generator decreases as the generator swings toward the truck.

11. In car lighting apparatus, in combination, a pair of supporting devices secured to the floor frame of the car, a supporting rod mounted in said devices and having movement in a horizontal plane in one of the same, means adapted to adjust the position of said rod in said last device and lock it in adjusted position, a generator suspended from said rod, and means adapted to drive said generator from an axle of the car.

12. In car lighting apparatus, in combination, a pair of brackets secured to and depending from the floor frame of the car, one of said brackets being slotted in a horizontal direction, a supporting rod extending transversely of the car and resting at one end in one of said brackets and at the other end in said slot, an eye-bolt embracing said rod, means adapted to adjust the position of said eye-bolt to vary the position of said rod in said slot and to lock it in adjusted position, a generator mounted upon said rod to swing with respect thereto, and means adapted to drive said generator from an axle of the car.

13. In car-lighting apparatus, in combi-

nation, a car truck; a car body mounted thereon; a supporting device secured to and extending beneath said car body; a member positioned within said supporting device; a generator suspended from said member; means adapted to drive said generator from an axle of said truck, said member being mounted to permit it to swing angularly in a lateral direction, and means adapted to swing said member to adjust its position and lock it in adjusted position.

In witness whereof, I hereunto subscribe my name, as attested by the two subscribing witnesses.

WILLIAM I. THOMSON.

Witnesses:

ROBERT S. BLAIR,

DELOS G. HAYNES.