W. A. PITT.

TRAIN LIGHTING APPARATUS.

APPLICATION FILED MAY 5, 1920.

1,374,523.

Patented Apr. 12, 1921.

3 SHEETS—SHEET 1.

FIG. 5.

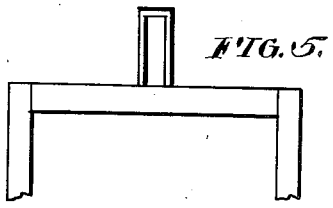


FIG. 6.

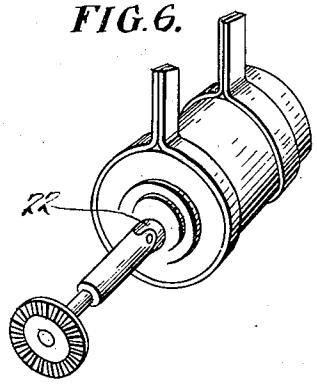


FIG. 1

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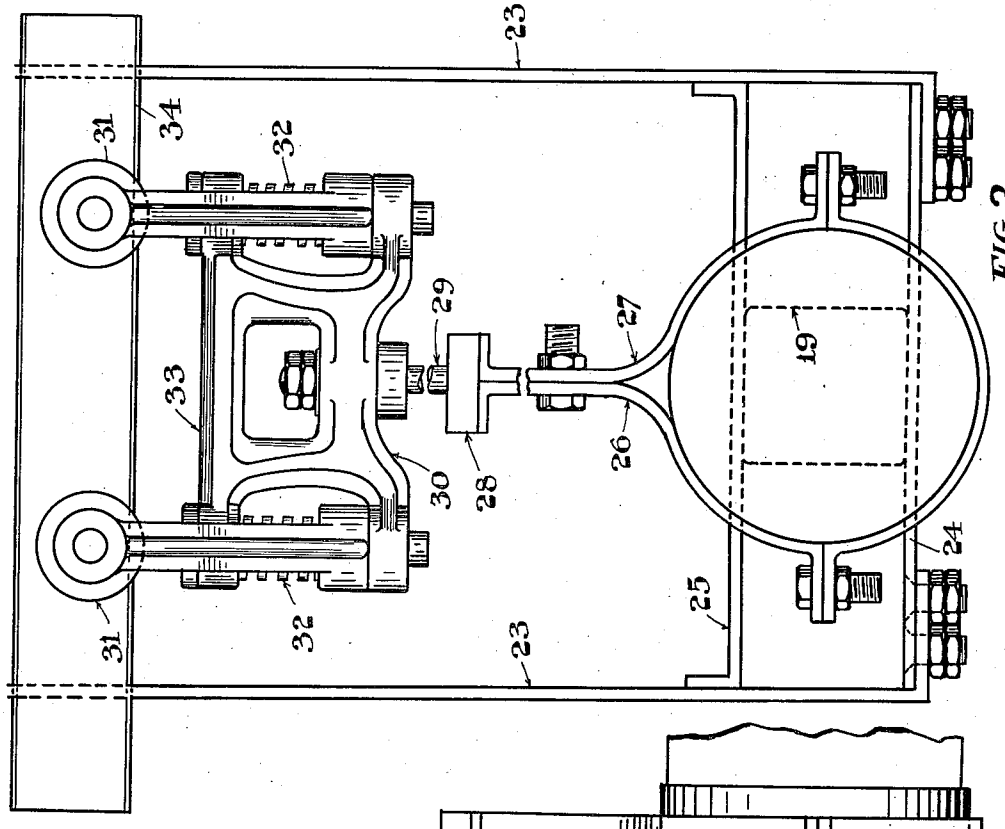


FIG. 2

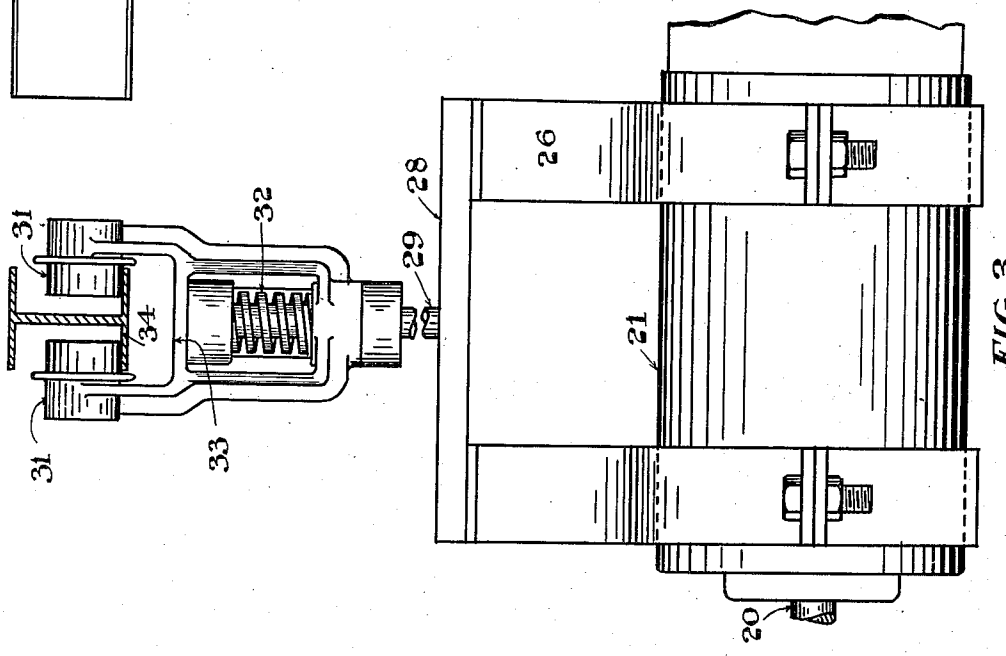


FIG. 3

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3 SHEETS—SHEET 3.

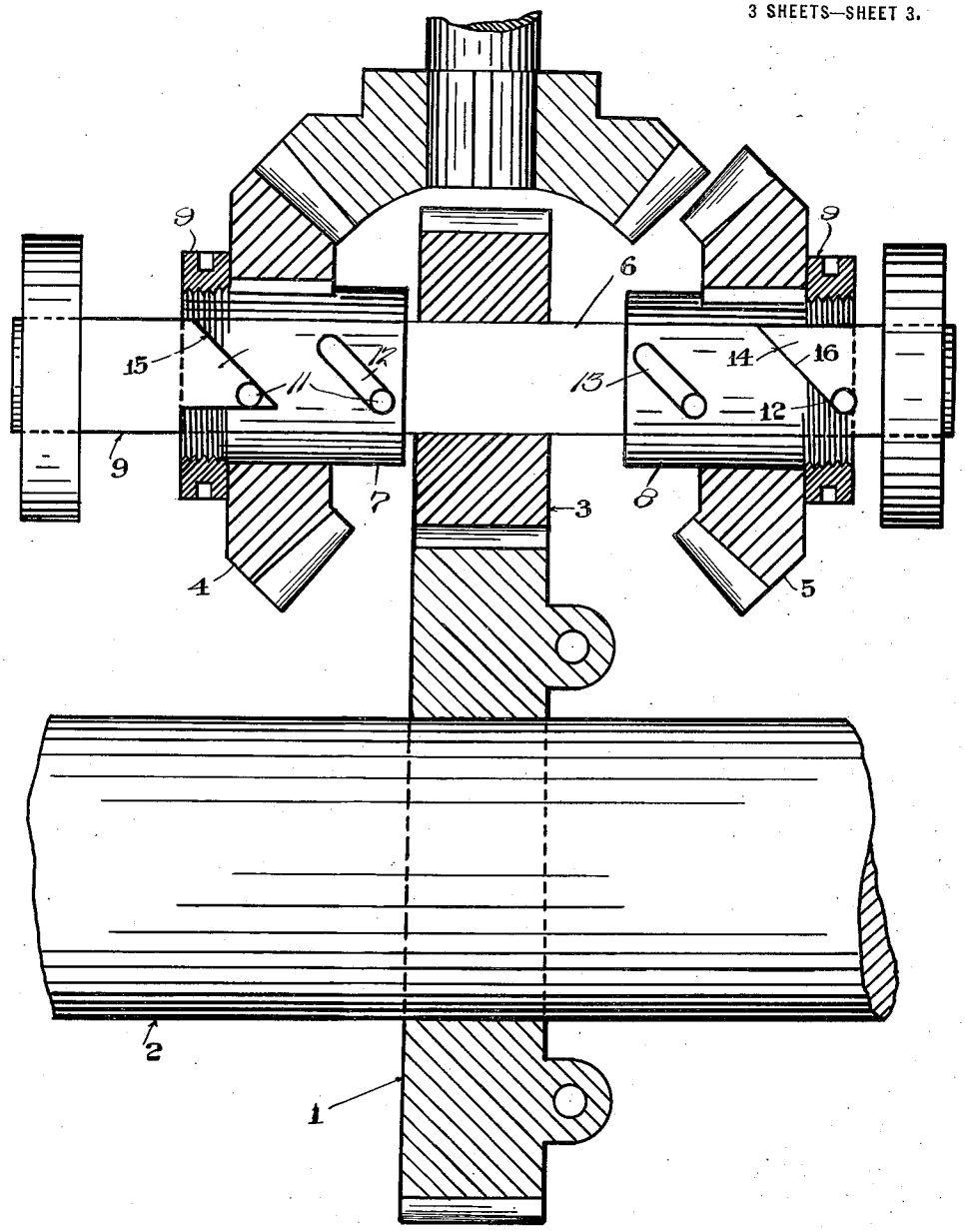


FIG. 4

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UNITED STATES PATENT OFFICE.

WILLIAM ALEXANDER PITT, OF MONTREAL, QUEBEC, CANADA.

TRAIN-LIGHTING APPARATUS.

1,374,523. Specification of Letters Patent. Patented Apr. 12, 1921.

Application filed May 5, 1920. Serial No. 379,147.

To all whom it may concern:

Be it known that I, WILLIAM ALEXANDER PITT, a subject of the King of Great Britain, and residing at 19 Rushbrooke street, in the city and district of Montreal, in the Province of Quebec, in the Dominion of Canada, have invented a new and useful Train-Lighting Apparatus, of which the following is the specification.

The invention relates to train lighting apparatus, as described in the present specification and illustrated in the accompanying drawings, that form part of the same.

The invention consists essentially in the novel means employed whereby the generating plant is supported directly from the car body and the generator constantly driven in the same direction.

The objects of the invention are to maintain efficiency in the generator, thereby avoiding fluctuations of the light in the cars; to eliminate repairs and replacements as far as possible and insure a constant delivery of power from the car axle to the machine; to remove all complications from machinery of this nature and transmit the power through standard gearing in peculiar arrangement; and generally to provide a reliable, durable and serviceable electric equipment for lighting and kindred purposes in trains operated by steam power.

In the drawings, Figure 1 is a perspective view of the generating unit showing the gear drive with the casing top removed and the suspension members.

Fig. 2 is an end elevation of the apparatus.

Fig. 3 is a side elevation of the generator and its support.

Fig. 4 is a sectional view of the drive and the reversing gear.

Fig. 5 is a plan view of a portion of the apparatus showing a connection to the car truck.

Fig. 6 is a detail of the telescopic shaft and universal joint.

Like numerals of reference indicate corresponding parts in the various figures.

Referring to the drawings, the driving gear 1 of the spur type is fixedly mounted on the car axle 2 and coacts with the spur pinion 3 in driving the beveled gear wheels 4 and 5.

The spur pinion 3 is fixedly mounted on the shaft 6, and the bevel gears 4 and 5 are fixedly mounted on the sleeves 7 and 8, each end of said sleeves, being held thereon by the nuts 9.

The sleeves 7 and 8 are adjustably mounted on the shaft 6, which is journaled in the casing 10, the travel of the said sleeves on the shaft 9 being limited by the pins 11 and 12 projecting into oblique slots 13 and 14 made in the sleeve, said sleeves moving along said shaft 6 to the extent of the length of the oblique walls 15 and 16 of said slots.

The casing 10 is swung from the axle 2 and incloses the driving gear 1, the spur pinion 3, the bevel gears 4 and 5 and the bevel gear wheel 17, which is mounted on the shaft 18 journaled in the bearing 19 at the outer end of the casing 10. The shaft 18 is telescopically arranged with the shaft 20 of the generator 21 and the universal joint 22 is introduced in the shafting in order to permit free and universal movement.

The bearing end 19, which is the reduced end of the casing 10, is supported in a rigid hanger formed of vertical straps 23 secured to the car body, a transverse strap or plate 24 forming a seat for said bearing end 19, and a transverse strap or plate 25 forming a guard plate over said bearing end.

The generator 21 is supported independently, and it will be seen by reference to the drawings that the hanger is formed of the two straps 26 and 27 embracing the generator, preferably split and extending upwardly to the bar 28, this bar being held by suspension rod 29, which is secured centrally in the carriage 30 hanging from the trolleys 31 and cushioned by the springs 32 between the lower bar of the carriage and the trolley plate 33. The trolleys 31 run on the arc-shaped I-bar track 34, which is rigidly secured to the car body, therefore both generator and gearing are supported directly from the body of the car and only connected to the truck through the train of gears which constitute the transmission of power.

The generator 21 is swung coincidently with the movements of the truck by having the rigid loop 35 secured to the truck and in engagement with the strap 26.

In the operation of the invention, as customary in axle train lighting systems on steam railroads, the rotation of the axle is the means of driving the armature of the

dynamo electric-generator, but in the present invention the transmission of power from the axle is through the driving gear 1, spur pinion 3 and one or other of the beveled gears 4 or 5 to the beveled gear 17. Presuming the train to be going in one direction, then the beveled gear 4 will coact with the beveled gear 17 and immediately a reversal of direction occurs the sleeve will turn on the shaft 9 to the extent of the oblique slots and draw the gear 4 away from the gear 17 and bring the gear 5 into coaction with the gear 17, consequently there will be no change in the direction of the dynamo shaft.

The transmission box or casing resting on the strap hanger from the car body is free to move to the extent of the vibration due to the truck movements, but all the same it is supported very firmly on the strap, though not rigidly, in other words, it finds a good seat, but as to the generator it is flexibly supported and free to swing to a reasonable extent.

The universal joint and telescopic shaft of course provide for all the movements between the generator and the gear transmission, but they are so close together that this movement is very little and of no great consequence, in fact it is only to accommodate the jarring and jolting of the truck otherwise it is a flexible unit.

It must be understood that there may be some variations in regard to the details of construction without departing from the spirit of the invention, and so long as these changes are within the scope of the claims for novelty following, the protection accorded shall not be invalidated.

What I claim is:—

1. In a train lighting apparatus, an electric generator, a flexible support for said generator adjustably suspended from the car body, a gear wheel mounted on an axle of the car running gear, a train of gear wheels operatively connecting said axle gear with the shaft of said generator and independent supporting means for said train of gears from the car body.

2. In a train lighting apparatus, an electric generator, a flexible support for said generator automatically adjustable and suspended from the car body, a gear wheel mounted on an axle of the car running gear, a train of gears operatively connecting said axle gear and the shaft of the generator, and a strap support secured to the car body and forming a seat for said train of gears.

3. In a train lighting apparatus, an electric generator, a flexible support for said generator automatically adjustable and suspended from the car body, a gear wheel mounted on an axle of the car running gear, a train of gears operatively connecting said axle gear with the shaft of the generator, a casing inclosing said axle gear and said train of gears and swinging from the axle in the direction of said generator, and a strap support forming a seat for said casing and secured to the car body.

4. In a train lighting apparatus, an electric generator, a flexible support for said generator, a gear wheel mounted on a car axle, a train of gears from said axle gear to the generator shaft, a gear casing, and a strap support from the car body extending under said casing and having a guard plate thereabove.

5. In train lighting apparatus, an electric generator, a flexible support for said generator, a gear wheel mounted on a car axle, a gear casing swung from said axle, a gear shaft journaled in said casing, a spur gear coacting with said axle gear, sleeves having a limited turning movement governed by oblique slots and pins from the gear shaft and imparting a lateral movement to said sleeve, bevel gears, one at each end of said sleeve, a bevel gear on the generator shaft and between the aforesaid bevel gears and coacting alternately therewith, and a support forming a seat for said casing.

6. In train lighting apparatus, an electric generator, a flexible support for said generator, a spur gear mounted on a car axle, a spur pinion coacting therewith, a sleeve on either side of said pinion and having oblique slots, a bevel pinion on each sleeve, a casing for the gears, a shaft journaled in said casing and extending through said sleeves, pins projecting from said shaft into said oblique slots and engaging said sleeves, a bevel gear on the generator shaft alternately engaged by said bevel gears on the sleeves according to the direction of rotation of the axle, and a seat for said casing secured to the car body.

7. In train lighting apparatus, an electric generator, a longitudinal bar having strap hangers depending therefrom and embracing said generator, a suspension rod centrally secured to said bar, a spring-cushioned trolley supporting said rod from the car body, and means for transmitting power from the axle to said generator.

Signed at the city of Montreal, Quebec, Canada, this 29th day of April, 1920.

WILLIAM ALEXANDER PITT.