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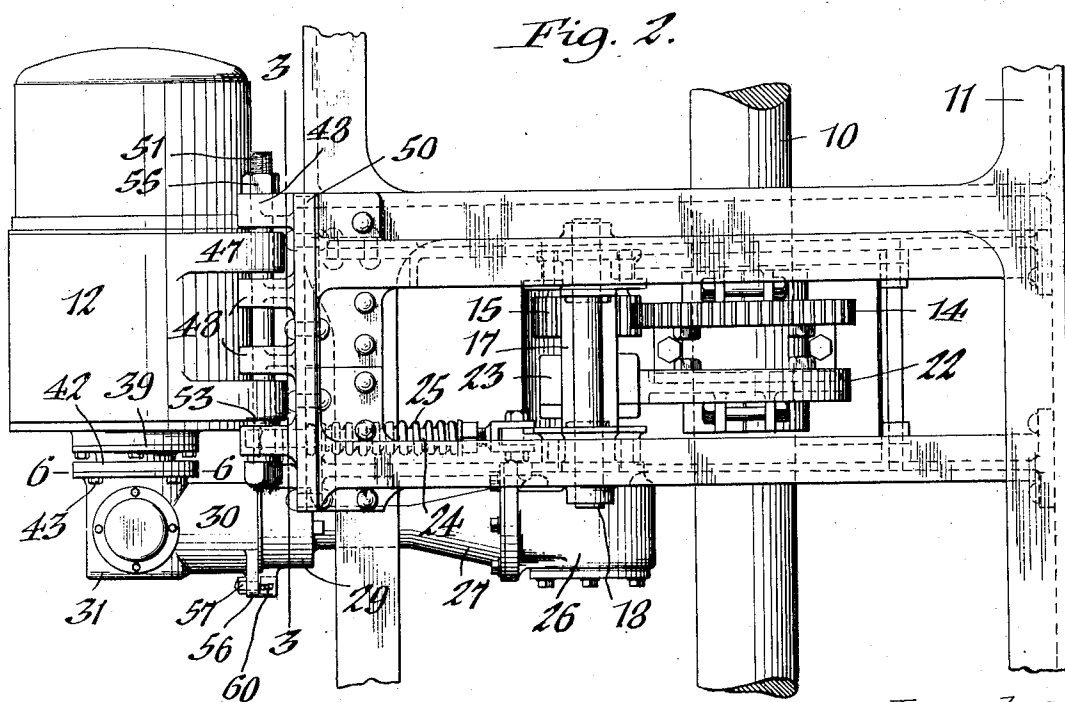
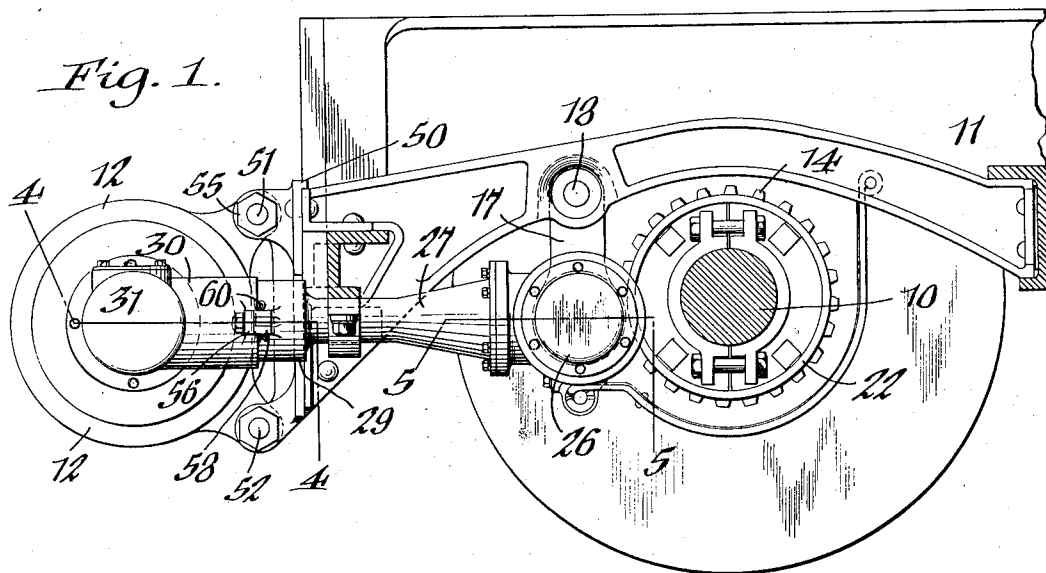
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DRIVING MECHANISM FOR RAILWAY CAR GENERATORS

Filed Nov. 9, 1927

3 Sheets-Sheet 1



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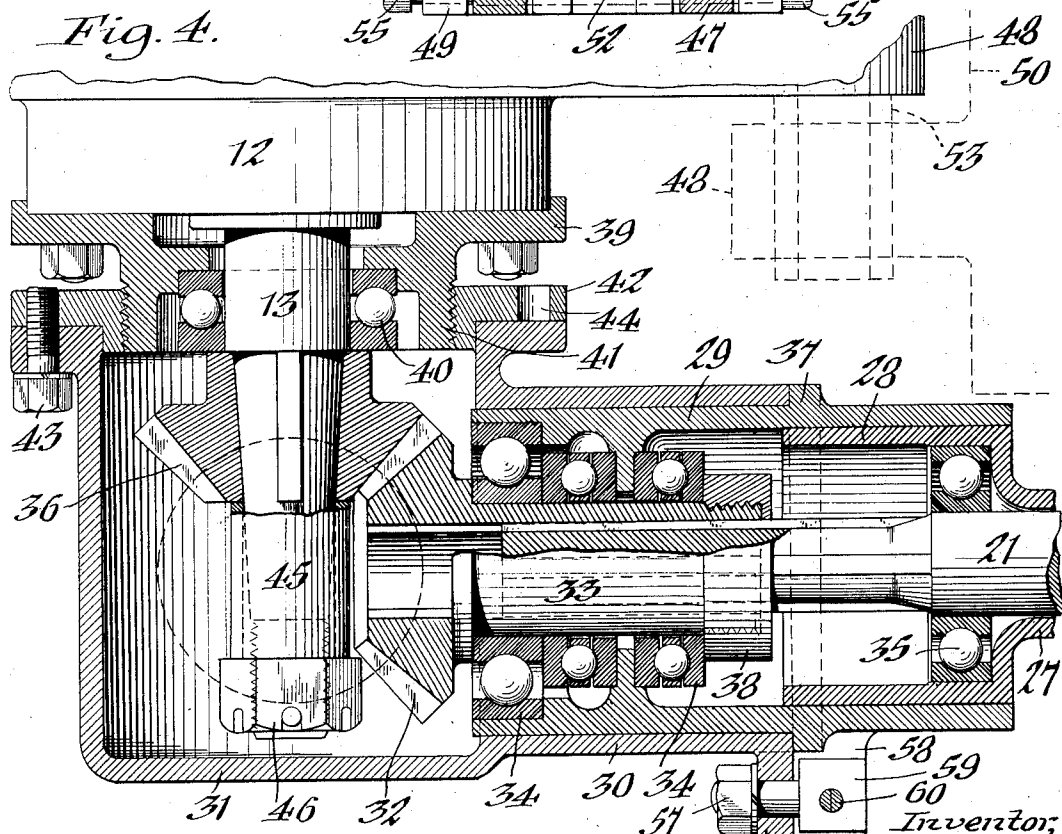
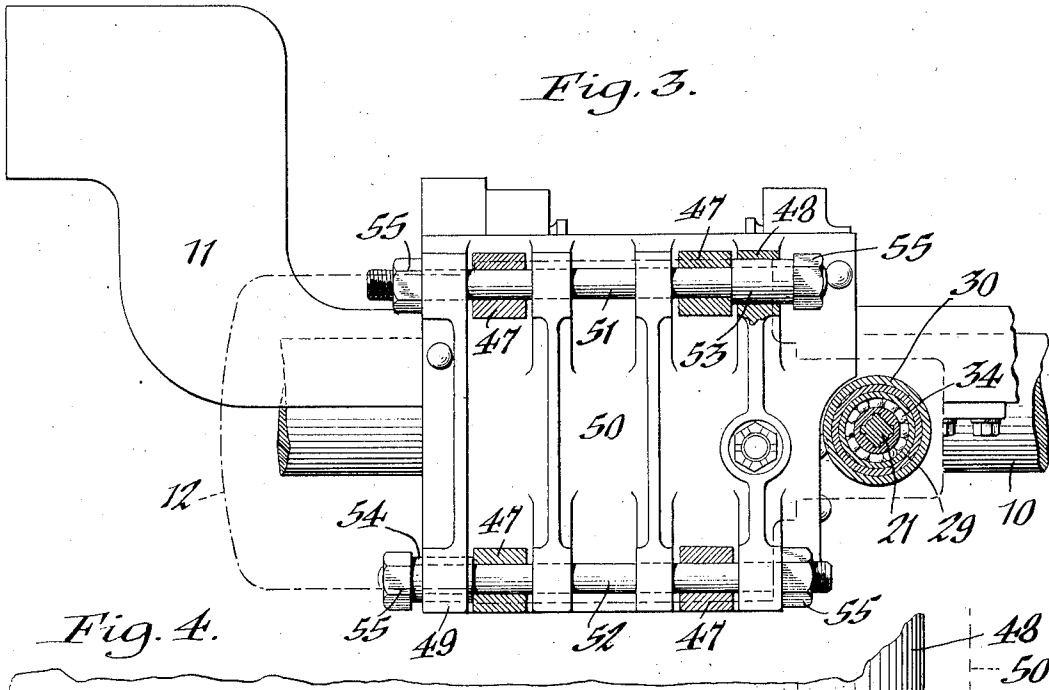
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DRIVING MECHANISM FOR RAILWAY CAR GENERATORS

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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

Fig. 5.

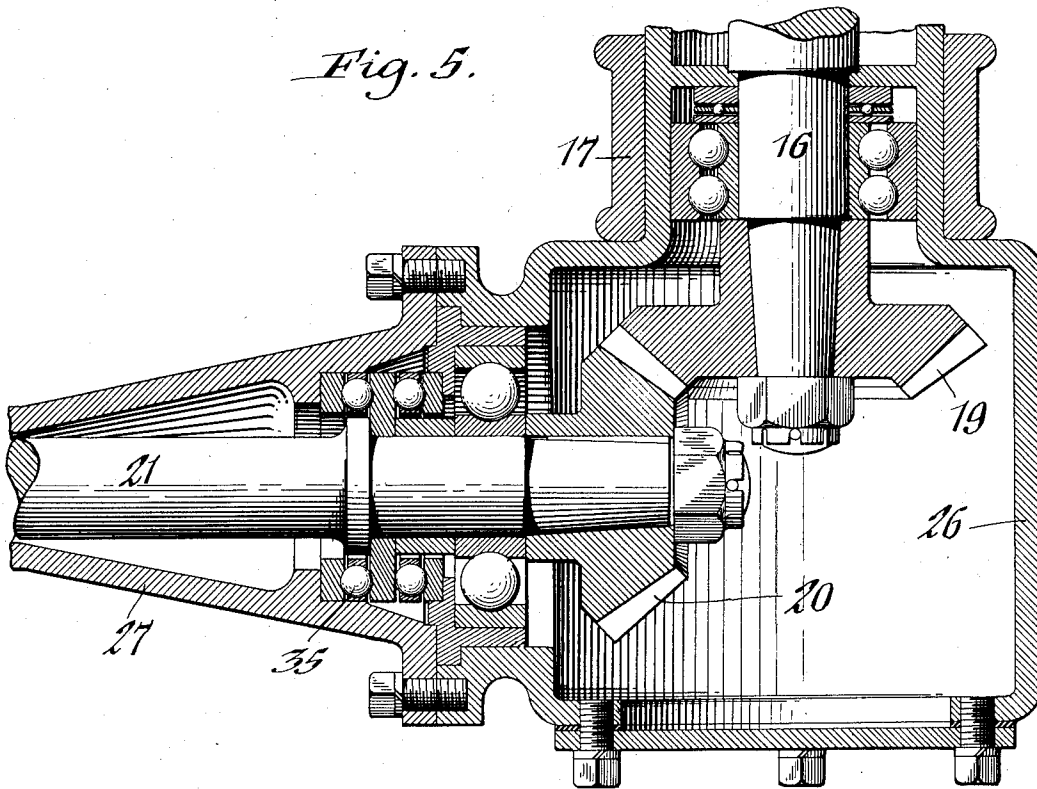
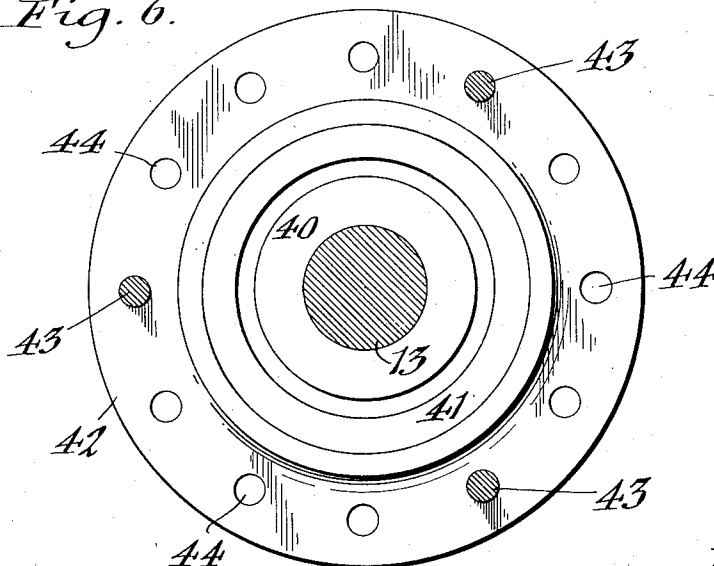


Fig. 6.



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UNITED STATES PATENT OFFICE

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DRIVING MECHANISM FOR RAILWAY-CAR GENERATORS

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This invention relates generally to the car lighting systems of railway cars and more particularly to improvements in the driving mechanism thereof.

5 One of its objects is the provision of a positive, dependable and integral mechanical drive mechanism applied to the truck frame between the car axle and the generator which has been designed to insure safety and security, and which has no parts liable to become detached and drop on to the rails.

10 Another object of the invention is to provide a mechanism of this character whose parts are so designed and organized as to provide a maximum of accessibility and permit the ready adjustment of its driving and driven elements to effectually maintain them in their proper positions regardless of the relative movements of the car-axle and the truck.

15 A still further object is the provision of a driving mechanism for the car lighting systems of railway cars and the like which is so constructed as to render the use of the customary generators applicable thereto without in any way altering their construction.

20 Other objects and features of the invention reside in the particular novel construction and arrangement of parts which will be hereinafter more fully described and particularly pointed out in the appended claims.

In the accompanying drawings:—

25 Figure 1 is a side elevation of the drive mechanism embodying my invention. Figure 2 is a top plan view thereof. Figure 3 is an enlarged transverse section on line 3—3, Figure 2. Figures 4 and 5 are enlarged horizontal sections on the correspondingly numbered lines in Figure 1. Figure 6 is an enlarged transverse section on line 6—6, Figure 2.

30 Similar characters of reference indicate corresponding parts throughout the several views.

35 Referring now to the drawings, 10 indicates the car-axle supported in the usual manner on the car truck 11, and 12 indicates the car-lighting generator of any standard type suitably fastened to the truck, prefer-

ably at one end thereof, with its shaft 13 arranged parallel with the axle. Mounted on the latter to turn therewith is a gear 14 meshing with a pinion 15 mounted on a shaft 16 journaled in a hanger 17 suspended from a fulcrum pin 18 to swing lengthwise of the car-body in response to any movements of the axle relative to the truck. At one end the driven shaft 16 has a bevel gear 19 which meshes with a similar gear 20 secured to the adjoining end of a propeller shaft 21 operatively connected to the generator-shaft 13. For the purpose of maintaining the pitch circles of the driving gear 14 and pinion 15 in their proper tangential relation, distance drums 22, 23 are applied to the car-axle and driven shaft, respectively, and are kept in rolling contact at all times by a yielding connection provided between the shaft-hanger 17 and the truck, said connection consisting of a rod 24 connected at one end to the hanger and guided at its opposite end in the truck, and a coil spring 25 applied to the rod and serving to urge the hanger toward the axle. The tension of this spring is such as to maintain a normal driving engagement between the gear and the pinion and to prevent any undue strain or shocks being transmitted to these parts, such as the shocks incident to the application of the brakes. The bevel gears 19 and 20 are preferably housed within a case 26 attached to the hanger 17.

30 Secured to and extending forwardly from the gear case 26 is a housing 27 through which the propeller shaft 21 extends, said housing terminating at its front end in a collar 28 which is telescopically fitted within a bearing sleeve 29 applied to the rearward cylindrical extension 30 of a gear case 31 attached to the adjoining end of the generator 12. Splined on the front end of the propeller shaft is a bevel gear 32 having a comparatively long hub 33 between which and the sleeve 29 are arranged a series of thrust bearings 34. This propeller shaft is journaled at its front and rear ends in suitable bearings 35 applied to its housing 27. The bevel gear 32 meshes with a similar gear 36 on the generator-shaft 13 and through the medium of these gears, the bevel gears 19, 100

20, the gear 14 and the pinion 15, a positive drive is provided between the car-axle and the generator. As the hanger 17 swings in one direction or the other in response to the fore and aft movements of the axle 10, the propeller shaft 21 is free to slide in the hub of the bevel gear 32 and the adjoining end of its housing-collar 28 is slidable in the bearing sleeve 29. An annular external shoulder 37 formed on the latter intermediate its ends abuts against the opposing rear end of the gear case extension 30 and serves to predetermine the pitch lines of the gears 32, 36.

For the purpose of holding the bevel gears 32, 36 in proper mesh, the rear end of the gear-hub 33 is externally threaded for receiving an adjusting collar 38 which bears against the rearmost bearing 34.

Mounted on that end of the generator 12 adjoining the gear case 31 is a supporting ring 39 containing a thrust bearing 40 surrounding the generator-shaft and abutting at its front end against the hub of the bevel gear 36. Projecting forwardly from this supporting ring is a threaded neck 41 upon which an attaching plate 42 is adjustably mounted and to which is secured the gear case 31 by bolts 43 or other suitable fastenings. By screwing the attaching plate 42 toward and from the generator, the propeller shaft can be readily and accurately positioned relative to the generator shaft to insure the proper meshing of the gears 32 and 36. In order to provide for the proper joining of said gear case to the attaching plate after a set adjustment of such plate has been made, the latter is preferably provided with an annular row of openings 44 with one or another of which the corresponding bolts 43 are adapted to register.

This driving mechanism is intended for adaptation to the standard types of car lighting generators now in use and the projecting end of its shaft 13 may be provided with a sleeve 45 held firmly against the gear 36 by a nut 46.

The generator 12 is mounted for lateral movement toward and from and at right angles to the propeller shaft 21 and for this purpose is provided at its top and bottom with perforated attaching lugs or ears 47, 47 which extend toward the truck-frame 11 for interposition between opposing pairs of similar perforated lugs 48, 49 formed on a supporting plate or bracket 50 riveted or otherwise secured to the end of the truck-frame. Upper and lower coupling bolts 51, 52 pass through these companion lugs and applied to one end of one of said bolts is a sleeve 53 which extends through the corresponding end lug 48 and applied to the opposite end of the other bolt is a similar sleeve 54 extending through the corresponding end lug 49. The inner ends of these sleeves bear against the opposing ends of the companion generator-

lugs 47, so that upon loosening the nuts 55 at one end of the bolts and tightening the nuts at the opposite ends thereof, the generator is accordingly moved toward or from the axis of the propeller shaft. This lateral adjustment of the generator coupled with that of the finer adjustment afforded by the screw plate 42, permits the ready and convenient setting of the generator relative to the propeller shaft and insures the proper meshing of the gears 32, 36.

Means are provided for normally retaining the bearing sleeve 29 against endwise movement relative to the gear case extension 30, so that through the medium of the thrust bearings 34 and the adjusting collar 38 the gear 32 is maintained in mesh with the generator-gear 36. In the event, however, that the generator should foul for any reason, such retaining means constitutes a safety element and is so constructed as to be automatically sheared or uncoupled to permit endwise movement of the bearing sleeve and disengagement of the gears 32, 36. To this end, the rear end of the gear case extension has a perforated lug 56 for receiving the shank of a clamping bolt 57 and the adjoining portion of the bearing sleeve 29 has a forked lug 58 in which is arranged the head 59 of the bolt. A cotter pin 60 serves to connect the bolt-head to the forked lug. By this construction and arrangement, the moment the generator fouls, the resistance produced by the bevel gears in response to the propeller shaft continuing to transmit motion to the generator results in a rearward displacement of the bearing sleeve together with its bevel gear 32, thereby shearing the cotter pin 60 and allowing said sleeve to shift a sufficient distance to disengage the gears 32, 36. Furthermore, this safety feature is located on the outside of the car where it is always visible for inspection.

This improved driving mechanism for the lighting generators of railway cars is not only simple, compact and rugged in construction, but its parts are so organized and arranged as to provide for the necessary adjustments in lining up the generator-shaft with the propeller shaft to the end of providing an integral, mechanical and positive drive between the car-axle and the generator with a maximum of safety and security. Furthermore, the design of the mechanism is such that it constitutes an integral part of the truck-frame, enabling the latter to be removed from the car when necessary without disturbing the generator-drive.

I claim as my invention:—

1. In a drive mechanism of the character described, the combination with a car-truck and its axle, of a generator rigidly mounted on said car-truck and having its shaft parallel with the axle, a driven shaft disposed alongside said axle and geared thereto, and a pro-

propeller shaft arranged lengthwise of the car-truck and geared at one end to said driven shaft and at its other end to said generator-shaft.

2. In a drive mechanism of the character described, the combination with a car-truck and its axle, of a generator mounted on said car-truck and having its shaft parallel with the axle, a driven shaft disposed between the generator and the axle and geared to the latter, a propeller shaft arranged lengthwise of the car-truck, and gearing connecting the ends of said propeller shaft with said generator-shaft and said driven shaft.

3. In a drive mechanism of the character described, the combination with a car-truck and its axle, of a generator mounted on said car-truck and having its shaft parallel with the axle, a propeller shaft arranged lengthwise of the car-truck and geared to said axle and to said generator-shaft, and means for shifting said generator laterally of the truck-frame to effect the adjustment of the pitch lines of the gears on the generator-shaft and the propeller-shaft.

4. In a drive mechanism of the character described, the combination with a car-truck, its axle and a generator having attaching lugs thereon, of a propeller shaft arranged lengthwise of the car-truck and geared at one end to the axle and at its other end to the generator-shaft, a bracket for the generator mounted on said car-truck and having attaching lugs thereon, and bolts for fastening the generator to said bracket and engaging the lugs thereof.

5. In a drive mechanism of the character described, the combination with a car-truck, its axle and a generator having attaching lugs thereon, of a propeller shaft arranged lengthwise of the car-truck and geared at one end to the axle and at its other end to the generator-shaft, a bracket for the generator mounted on said car-truck and having attaching lugs thereon, the lugs of the generator being disposed between the lugs of said bracket, and means engaging said lugs for fastening said generator to said bracket and for effecting a bodily movement of the generator toward and from the propeller shaft.

6. In a drive mechanism of the character described, the combination with a car-truck, its axle and a generator having perforated attaching lugs at its top and bottom, of a propeller shaft arranged lengthwise of the car-truck and geared at one end to the axle and at its other end to the generator-shaft, a bracket for the generator mounted on said car-truck and having upper and lower sets of perforated lugs for receiving the generator-lugs therebetween, upper and lower bolts engaging the corresponding sets of lugs, and sleeves applied to an end of each bolt, one of said sleeves being fitted in one of the upper set of bracket-lugs and abutting at its inner end against the adjoining upper generator-lug,

and the other sleeve being fitted in the opposite end lug of the lower set of bracket-lugs and abutting at its inner end against the adjoining lower generator-lug.

7. In a drive mechanism of the character described, the combination with a car-truck and its axle, of a generator mounted on said car-truck and having its shaft parallel with the axle, a propeller shaft arranged lengthwise of the car-truck and geared at one end to the axle and at its other end to the generator-shaft, and means interposed between the generator and the adjoining end of said propeller shaft for effecting a relative lateral movement of said last-named parts to adjust the pitch line of their gears.

8. In a drive mechanism of the character described, the combination with a car-truck and its axle, of a generator laterally adjustable on said car-truck and having its shaft parallel with the axle, a propeller shaft arranged lengthwise of the car-truck and geared at one end to the axle, gearing at the other end of said propeller shaft for driving said generator-shaft, a housing for said gearing, and an adjustable member interposed between said generator and said gear-housing for effecting a relative lateral adjustment of the generator relative to the propeller shaft.

9. In a drive mechanism of the character described, the combination with a car-truck and its axle, of a generator laterally adjustable on said car-truck and having its shaft parallel with the axle, a supporting ring attached to the generator about its shaft, an attaching plate adjustably mounted on said ring for movement axially of the generator-shaft, a propeller shaft arranged lengthwise of the car-truck and geared at one end to the axle and at its other end to the generator-shaft, and a housing for said propeller-shaft and its gearing, that end of the housing adjoining the generator being detachably connected to said adjustable attaching plate.

10. In a drive mechanism of the character described, the combination with a car-truck and its axle, of a generator mounted on said car-truck and having its shaft arranged parallel with the axle, a propeller shaft arranged lengthwise of the car-truck and geared at one end to the axle and at its other end to the generator, gear-casings arranged at opposite ends of said propeller shaft, one of said casings including a housing for the latter and terminating at its free end in a collar, and a bearing sleeve interposed between and engaging said housing-collar and the adjoining end of the other gear casing.

11. In a drive mechanism of the character described, the combination with a car-truck and its axle, of a generator mounted on said car-truck and having its shaft parallel with the axle, a gear on said generator-shaft, a propeller shaft arranged lengthwise of the

car-truck and geared at one end to said axle, a gear on the other end of the propeller-shaft meshing with said generator-gear, a casing applied to the generator and enclosing said last-named gears, a bearing sleeve for the propeller shaft applied to said casing, a housing for said propeller shaft slidingly connected at one end to said bearing sleeve, and a frangible connection between the bearing sleeve and said gear-casing.

12. In a drive mechanism of the character described, the combination with a car-truck and its axle, of a generator mounted on said car-truck and having its shaft parallel with the axle, a driven shaft geared to said axle and mounted for movement toward and from the same, a gear on said generator shaft, a propeller shaft arranged lengthwise of the car-truck and geared at one end to said driven shaft and at its other end to the generator shaft, a casing applied to the generator and enclosing its gear and the companion propeller shaft gear, a housing for said propeller shaft connected to said driven shaft to move therewith toward and from the axle, a bearing sleeve for the propeller shaft joining said gear casing with said propeller shaft housing, the latter being telescopically connected to the former and the propeller shaft being splined on its shaft, means on the bearing sleeve for holding said last-named gear against endwise movement relative thereto, stop means for preventing movement of the bearing sleeve relative to said gear casing in one direction, and a frangible connection between said parts for normally holding such sleeve against relative movement in the opposite direction.

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13. In a drive mechanism of the character described, the combination with a car-truck and its axle, of a generator mounted on said car-truck and having its shaft parallel with the axle, a driven shaft geared to said axle and mounted for movement toward and from the same, a gear on said generator shaft, a propeller shaft arranged lengthwise of the car-truck and geared at one end to said driven shaft and at its other end to the generator shaft, a casing applied to the generator and enclosing its gear and the companion propeller shaft gear, a housing for said propeller shaft connected to said driven shaft to move therewith toward and from the axle, a bearing sleeve for the propeller shaft joining said gear casing with said propeller shaft housing, the latter being telescopically connected to the former and the propeller shaft gear being splined on its shaft, means on the bearing sleeve for holding said last-named gear against endwise movement relative thereto and a frangible connection between said sleeve and said gear casing.

14. In a drive mechanism of the character described, the combination with a car-truck and its axle, of a generator mounted on said car-truck and having its shaft parallel with the axle, a driven shaft geared to said axle and mounted for movement toward and from the same, a gear on said generator shaft, a propeller shaft arranged lengthwise of the car-truck and geared at one end to said driven