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C. F. DRUMM, JR

FINAL DRIVE FOR RAILWAY MOTOR CARS

Filed Sept. 1, 1921

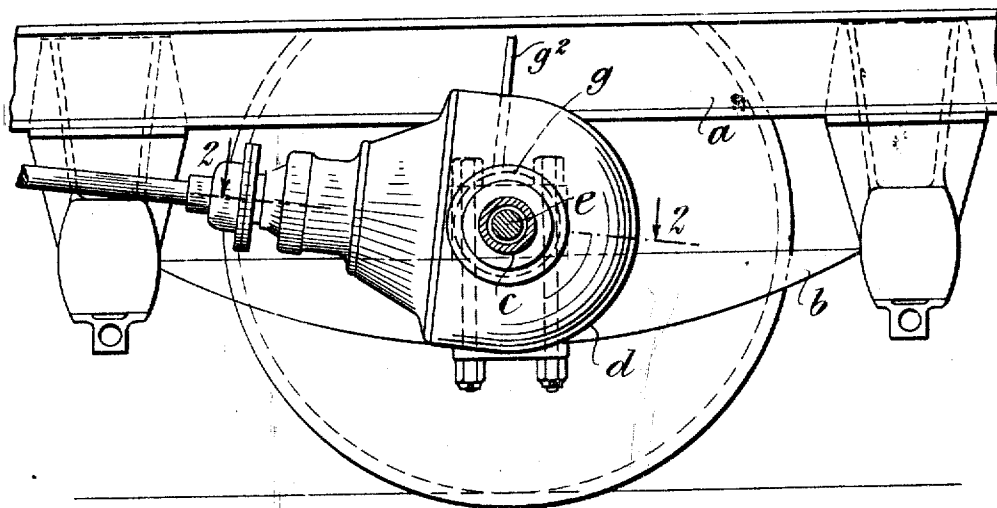


Fig. 1.

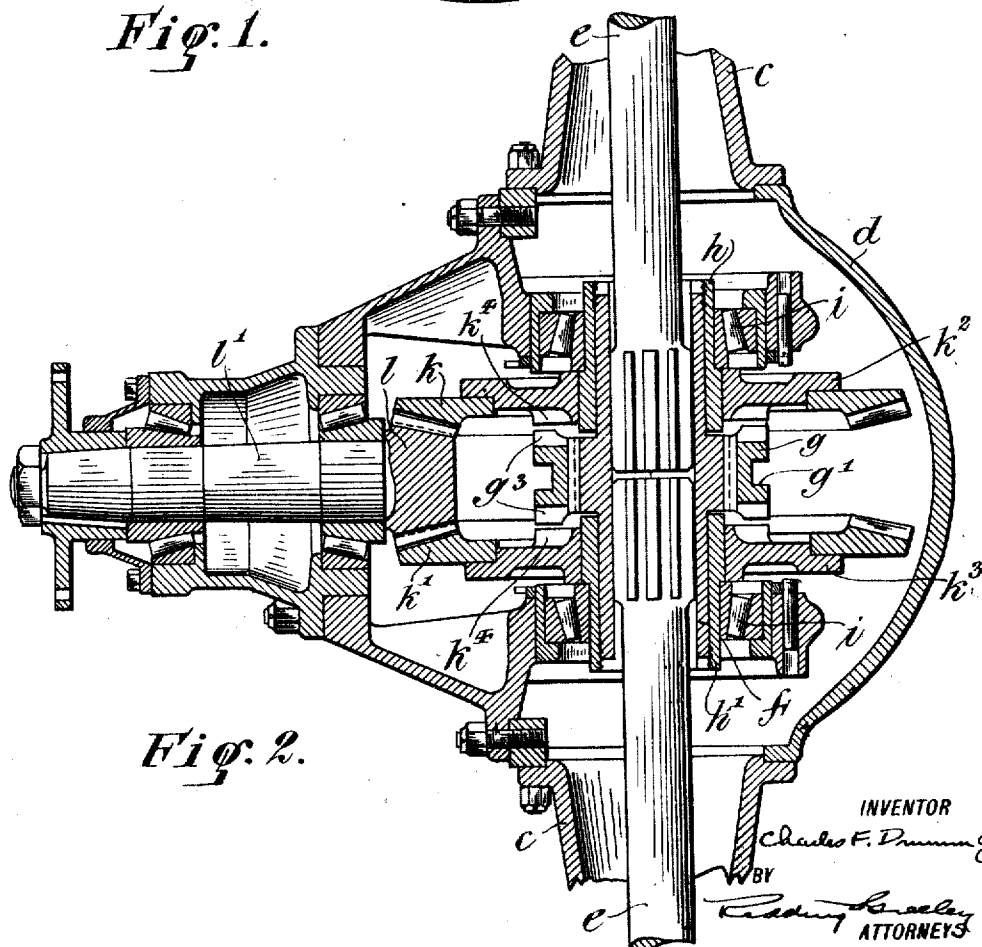


Fig. 2.

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CHARLES F. DRUMM, JR., OF NEW YORK, N. Y., ASSIGNOR TO INTERNATIONAL MOTOR COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

FINAL DRIVE FOR RAILWAY MOTOR CARS.

Application filed September 1, 1921. Serial No. 497,753.

To all whom it may concern:

Be it known that I, CHARLES F. DRUMM, JR., a citizen of the United States, residing in the borough of Queens of the city of New York, in the State of New York, have invented certain new and useful Improvements in Final Drives for Railway Motor Cars, of which the following is a specification, reference being had to the accompanying drawing, forming a part hereof.

This invention is concerned with an improved final drive for railway cars propelled by internal combustion engines and has for its principal object to provide such a drive which shall be simple and compact in construction, shall conform generally to established practise in the motor vehicle art and shall permit of a direct and positive drive of the live axle section and a convenient and positive reversal thereof.

In accordance with the invention the live axle sections are not interconnected through a differential as they are in road vehicles but, instead, are positively interconnected and driven from the propeller shaft through suitable intermediate gearing and a clutch device which is operable to reverse the direction of rotation of the axle sections without necessitating the reversal of the direction of rotation of the propeller shaft.

The details of the invention will appear as the description proceeds with reference to the embodiment thereof illustrated, by way of example, in the appended drawing, wherein—

Figure 1 is a view in side elevation of a fragment of the chassis of a motor propelled railway car showing the relation of the improved final drive thereto, one of the live axle sections and its tube being shown in section.

Figure 2 is a view in section of the improved final drive taken on the plane indicated by the line 2—2 of Figure 1 and looking in the direction of the arrows.

The frame α of the car may be supported through suitable springs, one of which is indicated at b , on dead axle tubes c to which may be bolted a housing d for the improved final drive. It will be understood that such details may be modified, although the invention does contemplate to a marked degree the continuance of accepted practise on motor propelled road vehicles. In the type of drive illustrated full floating axle sections e are shown, these sections extending

into the housing d and having their inner ends spaced as will be understood. Instead of interposing a differential between these axle sections, they are positively interconnected, as by means of a sleeve f splined thereto. Of course, the same effect so far as the drive is concerned might be secured by a one-piece axle. The sleeve f has feathered thereon centrally thereof a sliding clutch collar g which may be grooved exteriorly at g' to receive a shifter fork g^2 which may extend up into the body of the car for convenience. The sleeve f may also carry at opposite sides of the clutch collar g bushings h, h' which carry suitable bearings, indicated as roller bearings i , for the support of the mechanism within the housing d . On the bushings h, h' are journaled final drive gears k, k' , respectively, with which meshes a final drive pinion l carried on the propeller shaft or its extension l' . The gears k, k' whether or not formed integral with their supporting hubs k^2, k^3 , respectively, have formed on their proximate faces clutch teeth k^4 for engagement by the teeth g^3 of the dog clutch g .

When the clutch g is moved to its intermediate position its teeth g^3 are out of mesh with the teeth k^4 of both the final drive gears k, k' , so that these gears will revolve freely on their respective bushings h, h' when the propeller shaft is in motion. For propulsion of the vehicle in one direction the dog g may be slid to bring its teeth g^3 in mesh with one of the sets of teeth, say k^4 , of one of the gears, say the gear k' . Propelling effort will then be transmitted from the gear k' through the dog clutch g to the sleeve f and both of the shaft sections e . The other gear k meanwhile being meshed with the pinion l will revolve idly on its bushing h . To secure reverse travel of the vehicle, it is unnecessary to reverse the direction of rotation of the propeller shaft l' since when the dog clutch g is slid to engage the teeth k^4 of the other gear k , that gear will thereupon drive the shaft sections e in the reverse direction, while the remaining gear k' revolves idly on its bushing h' . The control of the clutch g is at once simple and effective being obtained through manipulation of the fork g^2 . When in neutral position it serves to disconnect the driving axle sections e from the propeller shaft l' . All of the parts

within the housing are relatively compact and easily assembled and disassembled.

Changes in details of construction and arrangement of parts falling within the skill of the mechanic may be made without departing from the invention, so long as the advantages are retained in means which fall within the scope of the appended claim.

I claim as my invention:

10 In a final drive for railway motor cars, a motor vehicle construction comprising, in combination, a dead axle forming a housing and supporting the car body, live axle sections on each of which a wheel is mounted, a sleeve keyed to the proximate ends of the live axle sections to connect them to rotate

together, bushings rigidly secured to the sleeve, bearings on said bushings, complementary bearings carried with the dead axle, a pair of opposed bevel gears journaled on the bushings, a propeller shaft journaled on the dead axle, a bevel pinion on the end of the propeller shaft and in constant mesh with the opposed bevel gears, a clutch element slidable on the sleeve, co-operating clutch elements on the opposed bevel gears and means to cause the slidable clutch element to selectively engage one of said co-operating clutch elements.

This specification signed this 30th day of August, A. D. 1921.

CHARLES F. DRUMM, JR.

Certificate of Correction.

It is hereby verified that the State of Incorporation of the assignee in Letters Patent No. 1,487,447, granted March 18, 1924, upon the application of Charles F. Drumm, jr., of New York, N. Y., for an improvement in "Final Drives for Railway Motor Cars," was erroneously given as "New York" whereas said State should have been given as *Delaware*, as shown by the records of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office

Signed and sealed this 6th day of May, A. D. 1924.

[SEAL.]

KARL FENNING,
Acting Commissioner of Patents.