(No Model.)

C. W. HUNT.

DRIVING MECHANISM FOR CARS.

No. 484,914. Patented Oct. 25, 1892.

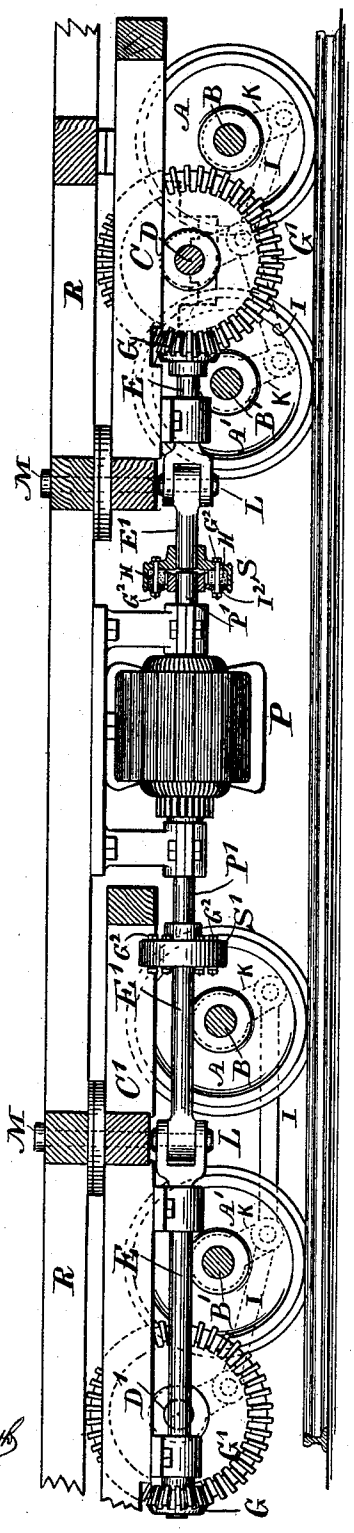

Fig. 1.

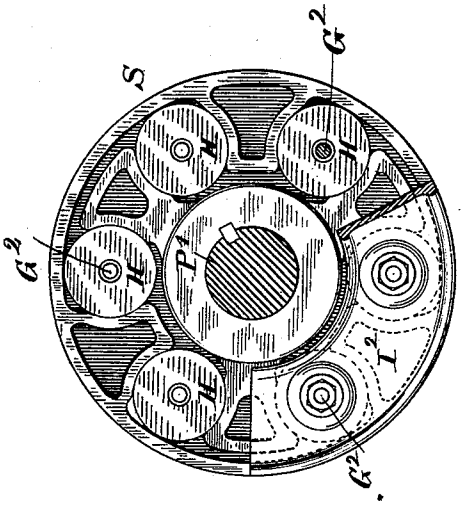

Fig. 2.

Witnesses
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per Lemuel W. Serrell
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UNITED STATES PATENT OFFICE.

CHARLES W. HUNT, OF WEST NEW BRIGHTON, NEW YORK.

DRIVING MECHANISM FOR CARS.

SPECIFICATION forming part of Letters Patent No. 484,914, dated October 25, 1892.

Application filed October 6, 1891. Serial No. 407,836. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. HUNT, a citizen of the United States, residing at West New Brighton, in the county of Richmond and State of New York, have invented an Improvement in Driving Mechanism for Cars, of which the following is a specification.

In Letters Patent No. 447,114, granted to me February 24, 1891, a car-truck is represented in which there is a longitudinal driving-shaft passing across the axles and geared to the driving-wheels, there being a universal joint in the shaft in line, or nearly so, with the king-bolt of the truck, in order that the truck may be free to move upon its king-bolt without interfering with the action of the driving-shaft, and I have also represented in that patent an electric motor and gearing.

In consequence of the rapid movement of an electric motor and the inertia of the parts there is a liability to produce a thumping action or concussion between the teeth of the gearing or between the parts of the universal joint, especially in consequence of the change of position of the driving-wheels or gearing in relation to the motor as the car travels upon the track. This condition is detrimental to the operation of the motor, and the shafts and gearing are exposed to undue strain and concussion in addition to the noise sometimes produced.

The object of the present invention is to allow an elasticity and freedom of movement between the respective parts, by which such parts are accommodated to the different conditions under which they are used and noise is lessened and undue strain and unequal wear are largely prevented, and these objects are accomplished by the introduction of an elastic coupling in the line-shafting between the motor and the parts that are driven by the same, as hereinafter set forth.

In the drawings, Figure 1 is a section longitudinally of the car and transversely of the axles; and Fig. 2 is an elevation, partially in section and in larger size, of the elastic coupling.

I have represented two trucks under one car body or platform, the truck-frame C, having wheels A A′, axles B B′, and the truck-frame C′ being similarly fitted with wheels and axles, and the cross-shafts D D′ are connected with the respective wheels A A′ in any suitable manner.

I have shown cranks K to the respective axles and connecting-rods I, and there are beveled gear-wheels G′ upon the respective cross-shafts D D′, driven by beveled pinions G upon the portions E of the line-shaft, and these portions E of the line-shafts are connected to the portions E′ by the universal joints L, which universal joints are in line, or nearly so, with the king-bolts M. These parts are substantially the same as those represented in my aforesaid patent and do not require further description.

There is a motor at P, the same being properly supported upon the car-body R. This motor P is of any suitable character. It may be a rapidly-moving steam or vapor engine or an electric motor, and between the shaft P′ and the line-shafting E′ there are elastic couplings S S′, which are constructed in such a manner as to allow for slight end movements between the respective parts of the line-shafting and also for slight momentary inequalities in the speed of rotation, and also to allow for inequalities in the teeth of the gearing and for any jar or concussion that the wheels or gearing may receive while running upon the track.

The importance of the elastic couplings and the advantage derived from their use will be apparent when it is remembered that the armature of an electric motor runs at a very rapid speed, and the inertia causes the armature and its shaft to powerfully resist any displacement or disturbing force, and where comparatively-rigid connections are made use of between the motor and the wheels the gearing and other connections are exposed to very sudden and powerful strains as the car travels upon the track.

By the introduction of elastic couplings between the motor-shaft and the line-shaft the motor-shaft is undisturbed in its regularity of rotation and the elastic couplings allow for momentary variations in the speed of the driving-wheels due to inequalities of the track, and the intervening gear-wheels are not as liable to be broken or unequally worn, and the teeth remain in contact to better advantage without concussion and noise heretofore usually arising, and the elastic couplings allow for slight

end movements in the line-shafting or for inequalities in the operations of the parts arising from the universal joints or from the movements of the trucks upon their king-bolts.

The elastic couplings S S′ may be constructed in any desired manner. I have represented them as provided with rubber springs H between the segmental flanges upon the two parts of the coupling, such rubber springs being cylindrical and the segmental flanges coming at opposite sides of the cylindrical springs, and there are covers I^2 at the ends of the springs and bolts G^2 passing through such springs and holding the covers in position, and these rubber springs are efficient to allow the required elasticity between the respective parts of the line-shafting. This elastic coupling, however, forms the subject of a separate application for Letters Patent and does not require further description, as any suitable elastic coupling may be applied in the line-shafting for the aforesaid apparatus, and it is to be understood that any desired form of universal joint may be made use of in the line-shafting and in line, or nearly so, with the king-bolts. In consequence of the end of the motor-shaft not extending into the hub carrying the end of the line-shaft there are no rigid parts in direct contact with each other and the elasticity is in all directions—that is to say, it is endwise of the shafts. It is also circumferentially or in the direction of rotation and also lateral, so that the motor and line shafts are not kept axially in line with each other, and the yielding in all directions allows for spring or inequalities in the fitting or running of the parts.

I claim as my invention—

1. The combination, with the driving-wheels upon a car, of a motor, a motor-shaft, line-shafting and connections between the same and the driving-wheels, and a coupling at the end of the driving-shaft that is elastic longitudinally, laterally, and circumferentially for connecting the driving-shaft and line-shaft, substantially as set forth.

2. The combination, with the car and driving-wheels, of an electric motor supported by the car, shafting in line with the armature-shaft and gearing between the line-shaft and the driving-wheels, and a coupling that is elastic longitudinally, laterally, and circumferentially for connecting such armature-shaft and line-shaft, substantially as set forth.

3. The combination, with the car and driving-wheels, of a motor upon the car, a shaft in line, or nearly so, with the motor-shaft, gearing connecting the line-shaft and the driving-wheels, a universal joint in the line-shaft, and a coupling that is elastic longitudinally, laterally, and circumferentially for connecting the line-shaft and the motor-shaft, substantially as set forth.

Signed by me this 30th day of September, 1891.

CHAS. W. HUNT.

Witnesses:
GEO. T. PINCKNEY,
WILLIAM G. MOTT.