(No Model.)

2 Sheets—Sheet 1.

E. A. SPERRY.

MOTOR TRUCK.

No. 535,303. Patented Mar. 5, 1895.

Fig 1

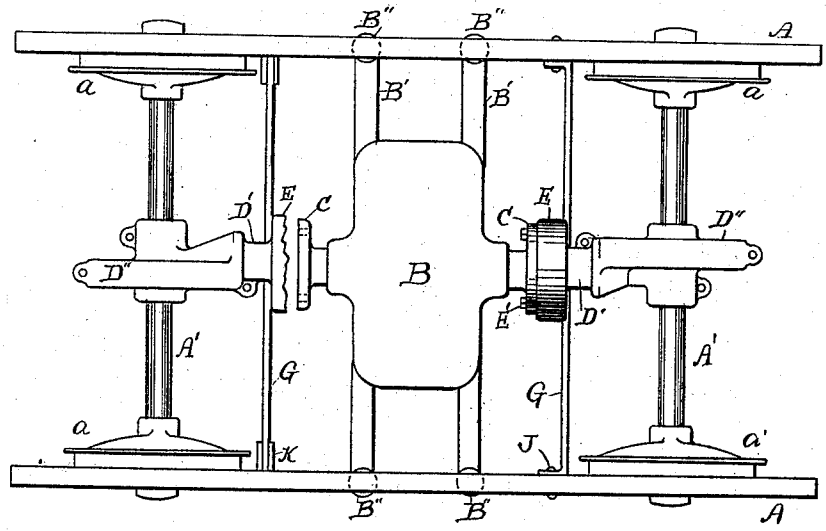

Fig. 2.

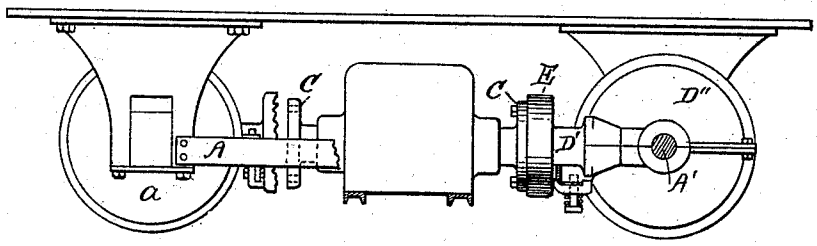

Fig. 4.

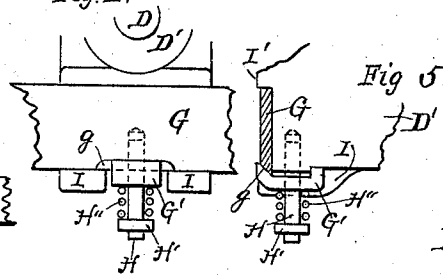

Fig. 6.

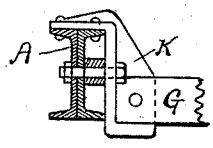

Fig 5.

Witnesses

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(No Model.) 2 Sheets—Sheet 2.

E. A. SPERRY.

MOTOR TRUCK.

No. 535,303. Patented Mar. 5, 1895.

Fig. 3.

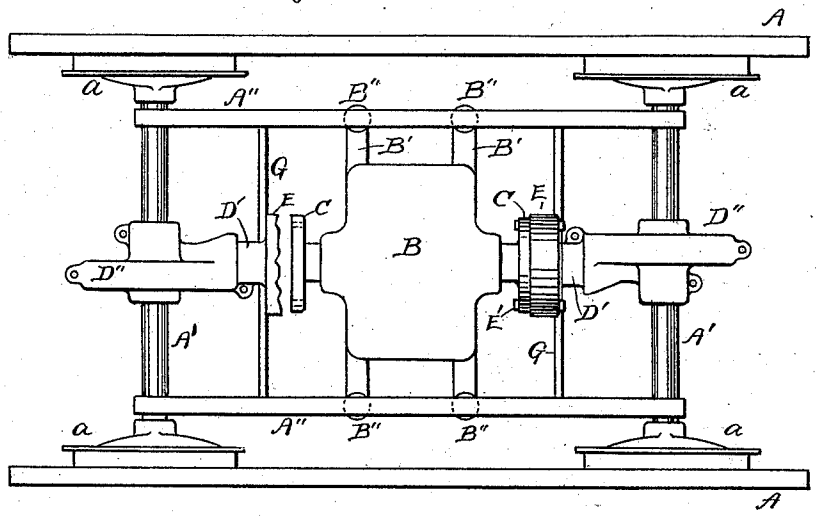


Fig. 7.

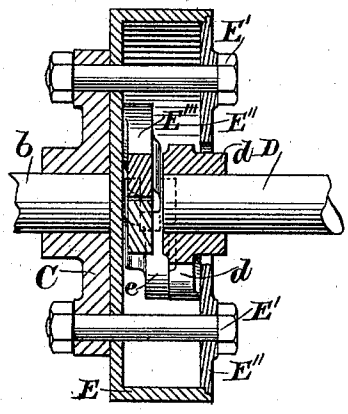
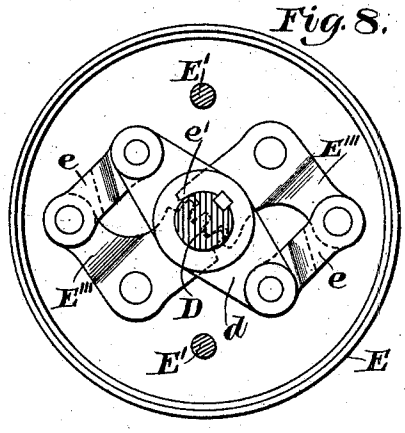


Fig. 8.



Witnesses

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UNITED STATES PATENT OFFICE.

ELMER A. SPERRY, OF CLEVELAND, OHIO, ASSIGNOR TO THE SPERRY ELECTRIC RAILWAY COMPANY, OF OHIO.

MOTOR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 535,303, dated March 5, 1895.

Application filed June 5, 1893. Serial No. 476,612. (No model.)

To all whom it may concern:

Be it known that I, ELMER A. SPERRY, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Motor-Trucks, of which the following is a specification.

My invention relates to power-transmitting devices for railway trucks, and it consists in an arrangement of mechanism whereby the motor, or parts thereof, may be more easily removed from the truck; whereby the different parts of the power-transmitting mechanism are supported under conditions and fulfilling requirements hereinafter more specifically pointed out, and also whereby the devices may be manufactured more cheaply than heretofore. These objects are attained by devices illustrated in the accompanying drawings, in which—

Figure 1 is a plan view. Fig. 2 is a side elevation partially in section. Fig. 3 is a varied form of mounting. Figs. 4, 5, 6, 7 and 8 are details.

Similar letters of reference indicate like parts throughout.

Referring to Fig. 1 the motor B is supported upon the cross-pieces B′, flexibly suspended from the longitudinal bars A of the truck frame. Elastic cushions B″ are provided at the points of suspension, but it is obvious that any other method of flexible connection between motor and truck may be employed. In Fig. 3 a modification is shown, the cross-pieces B′ upon which the motor is supported being flexibly suspended from a supplementary frame comprising longitudinal bars A″ supported by the car axles A′. The armature shaft *b* of the motor thus supported is provided at each end with a disk or face-coupling C adapted to be secured by bolts E′ to the driving members E of universal joints shown in Figs. 7 and 8. The said bolts E′ also serve to hold in place the face plate E″ which incloses the working parts of the said universal joints.

Gear cases D″, preferably made in two parts sleeved upon the axle and fastened together by bolts, as shown, are provided at their inner ends with journals D′ in which shafts D, driven by the driving members of said universal joints are journaled, power being transmitted from said driven shafts to the car axles A′ by suitable gearing inclosed in said gear cases. The inner ends of said gear-cases comprising the journals D′ are supported upon cross-pieces G suitably fastened at their outer ends to the longitudinal bars A as shown in Fig. 1 or A″ as shown in Fig. 3. These cross-pieces G may be bent at right angles and secured by bolts J as shown in the right-hand portion of Fig. 1, or in any other manner which may be found expedient, but I prefer to employ seats or brackets K bolted to the longitudinal frame as shown in the left-hand portion of Fig. 1, and in detail in Fig. 6, since in this manner the necessity of bending the bars is obviated while they are securely supported at the proper altitude.

In order to take up the longitudinal play of the car axles which is often considerable, and prevent the same from being transmitted to the armature-shaft to the detriment of the motor, I provide means whereby said gear-case is free to slide to a certain extent along its supporting-bar G, and the consequent lateral movement of the shaft D, as well as vertical movement due to unevenness of the track, is taken care of by the universal joint shown in Figs. 7 and 8 permitting eccentricity of the driving and driven shafts. To attain this end a portion *g* of the lower edge of said supporting-bar G is chamfered as shown in Figs. 2, 4 and 5, and a beveled clamp G′ fitting said chamfered portion is secured to the lower side of said gear-case by bolt H and spring H″ which serve to keep the parts in place and prevent looseness and rattling attendant upon the wear thereof. Lugs I extending outwardly from the gear-case and engaging with the under side of the bar G hold the said gear-cases in place upon the bar, and prevent the upward thrust of the gear-cases which would unduly strain the clamp G′.

By the arrangement herein described, a longitudinal movement of the axles transmits without strain of any kind a corresponding lateral movement to the gear-cases and shafts journaled therein. The eccentricity thus established between the driven and driving

shafts respectively is compensated for by the bell-cranks E''', Figs. 7 and 8, pivoted upon the inner face of the driving member E of the universal joint at points diametrically opposite to each other, and having their outer arms connected by links *e* to the cross-bar *d* keyed to the said driven shaft D, while their inner arms are provided with teeth *e'* meshing with each other. I do not, however, limit myself to this form of universal joint or flexible coupling, since it is obvious that any form of such devices might be equally well employed.

The advantages of the arrangement herein set forth are obvious. The flanges C at the ends of the armature-shaft afford a strong coupling especially adapted to unite with a universal joint such as I employ, while by the removal of a few bolts the removal of the entire motor from the truck is accomplished without in any way disturbing the gearing or gear-cases. The truck therefore is complete in itself and the motor entirely independent thereof, so that a motor of any kind can be placed upon the truck and afterward connected to, or disconnected from the driving gear thereof. This is a matter of material advantage, as there is no permanent interlocking of the motor and driving gear, rendering it necessary to take down and reassemble nearly the entire working mechanism of the truck when a motor has to be removed for repairs and afterward reapplied to the truck, as is the case in constructions heretofore used.

The laterally movable gear-case with the geared shaft journaled therein, in connection with a universal joint is of material advantage in taking curves and frogs since it entirely prevents any injurious misplacement of the parts incident to displacement of the axles for instance in an endwise direction, no matter how great may be the strains of torque.

It will be seen that the slight deviation from true parallelism of the axles of the truck will also be compensated for by the method of mounting the gear-case upon the cross-bar G by the yielding clamp, and also in the coupling from the fact that the pivotal joints therein are preferably constructed loose and are not tight fitting, thus easily allowing for the variations named.

The features herein shown and not claimed form the subject matter of applications for Letters Patent now pending, dated and numbered as follows: power transmitting devices, Serial No. 464,651, filed March 6, 1893, power gearing for trucks, Serial No. 490,696, filed November 11, 1893, and power transmitting mechanism, Serial No. 498,510, filed January 30, 1894.

It will readily be understood that many alterations or modifications may be made in the details of the devices herein shown, and still admit of their fulfilling the functions described, and these fall within the scope of the present invention; and while it is designed to use the features in the conjunction with each other herein specified, yet it is obvious that some may be used without the others, and the invention extends to such use.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A motor truck comprising a frame, shafts geared to the axles and supported by said frame, but laterally movable with relation thereto, supports for a motor within said frame, and means for coupling the motive shaft of the motor to said shafts whereby the action of said motive shaft is transmitted to the axles substantially as set forth.

2. A motor truck comprising a frame, shafts geared to the axles and having bearings supported by said frame but movable with relation thereto, supports for a motor within said frame, and means for coupling the shaft of the motor to said shafts, substantially as set forth.

3. A motor-truck comprising a frame, a motor mounted thereon, a universal joint having its driving member driven by said motor, and its driven member geared to an axle, a gear-case sleeved upon said axle and having said driven member journaled therein, and means whereby said gear-case is held in substantially a fixed vertical relation to said truck but is allowed a play in other directions with relation thereto, said play being taken up by said universal joint whereby it is not transmitted to the motor, substantially as set forth.

4. In a truck for a vehicle having a motor mounted thereon, a gear-case sleeved upon an axle and supported at its inner end upon a cross-bar of said truck, a chamfered portion on the under side of said cross-piece, and a clamp bolted to the under side of said gear-case and spring-pressed against said chamfered portion, said chamfered portion being somewhat longer than said clamp, whereby said gear-case is permitted to slide back and forth upon said cross-piece, substantially as and for the purpose described.

5. In a truck for a vehicle, power-transmitting gearing mounted upon an axle of the truck, and extending to a cross-bar of the truck, in combination with a yielding joint between it and the cross-bar.

6. In a truck for a vehicle, power-transmitting gearing mounted upon an axle of the truck, and extending to a cross-bar of the truck, a sliding joint between it and the cross-bar, in combination with a clamp as G' engaging with such cross-bar.

7. In a truck for a vehicle, power-transmitting gearing mounted upon an axle of the truck, and extending to a cross-bar thereof, a sliding joint between it and the cross-bar, a clamp as G' spring-pressed against the said cross-bar, as described.

8. In a truck for a vehicle, a power-transmitting gearing mounted upon an axle of the truck, and extending to a cross-bar thereof,

a clamp spring-pressed against said cross-bar and bolted to said gearing, and a lug or lugs located on the same side of the cross-bar as the clamp, substantially for the purpose specified.

9. In a truck for a vehicle, a power-transmitting gearing mounted upon an axle of the truck, and extending to a cross-bar thereof, opposing lugs on opposite sides of such cross-bar, in combination with an independent spring-tightened clamp in opposition to one of the lugs by means of which the cross-bar is held more firmly against the lugs.

10. In a truck for a vehicle, a power-transmitting gearing mounted upon an axle of the truck, and extending to a cross-bar thereof, a recess for such cross-bar, an independent clamp for forcing the bar into the recess, and projections or lugs on opposite sides of the cross-bar from the clamp.

11. In a truck for a vehicle, a truck frame, a power-transmitting gearing mounted upon an axle of the truck, a cross-bar to which such power-transmitting gearing is attached at a suitable point with reference to the horizontal center of the truck, in combination with seats for the end of the said cross-bar attached to the truck frame, whereby the said bar may pass approximately straight from one seat to the other without upward or downward flexure, substantially for the purpose specified.

ELMER A. SPERRY.

Witnesses:
M. NIELSON,
ALBERT H. BATES.