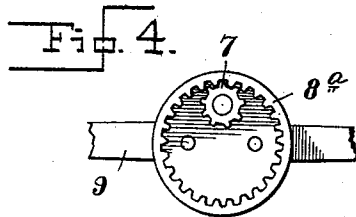
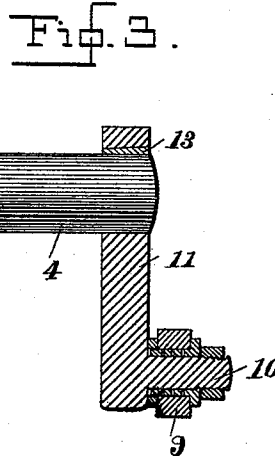
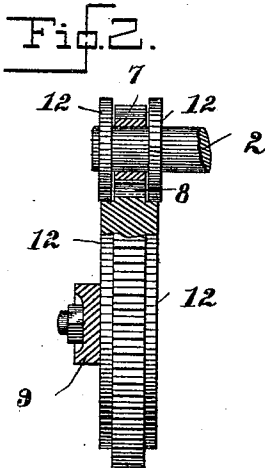
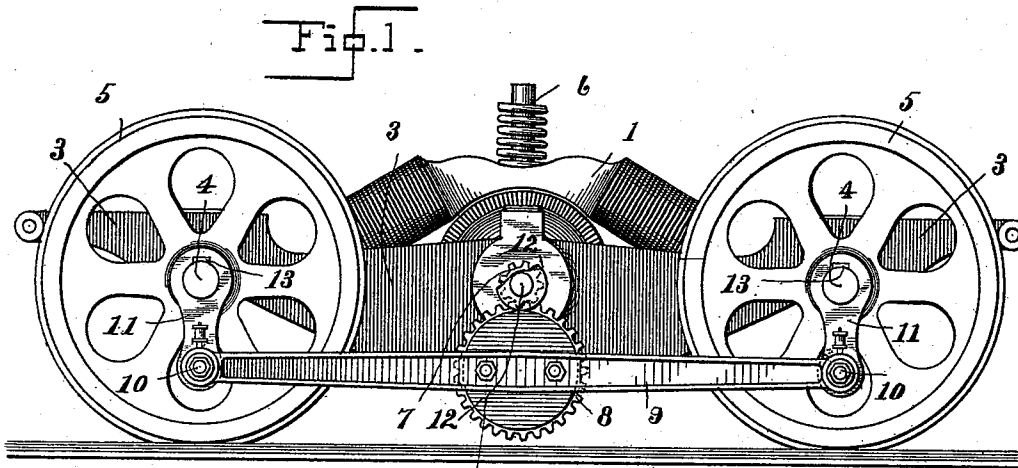


(No Model.)

J. C. HENRY.
DRIVING GEAR FOR MOTORS.

No. 494,478.

Patented Mar. 28, 1893.



Witnesses
W. A. Courtland
Edward Brandt

Inventor
John C. Henry
By *Frederick A. T. Hart*
Attys

UNITED STATES PATENT OFFICE

JOHN C. HENRY, OF NEW YORK, N. Y.

DRIVING-GEAR FOR MOTORS.

SPECIFICATION forming part of Letters Patent No. 494,478, dated March 28, 1893.

Application filed December 12, 1891. Serial No. 414,870. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. HENRY, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Driving-Gears for Motors, of which the following is a specification.

This invention relates especially to a form of driving gear applicable for transmitting power from the shaft of an electric or other motor to the driving axles of a car.

The invention enables the use of a peculiarly simple and rigid support for the motor upon the axles and its combination with the truck so as to afford a central bearing and support for the motor and the car body.

It has further in view the driving of both axles of the truck and the reduction of speed without complication of gearing.

The invention further comprises certain improvements which will be hereinafter more fully described and claimed.

In the accompanying drawings: Figure 1 is a side elevation of a motor truck to which my invention has been applied. Fig. 2 is a partly sectioned edge view of the gearing. Fig. 3 is a sectional view of the axle crank. Fig. 4 shows in elevation the preferred form of the gearing.

The form of motor and truck herein shown and described is made the subject of another application for Letters Patent and is herein only referred to sufficiently to show the applicability of the present improvements thereto.

The motor is indicated at 1, its armature shaft at 2, the beams of the truck at 3, the driven and car driving axles at 4, the wheels at 5 and the central spring bearing whereon the car body is mounted at 6. It will be seen that the armature shaft is arranged centrally between the axles and immediately under the king pin or bearing 6 for the car body, the weight of the motor and of the car body being evenly distributed over the two axles. The armature shaft 2 bears a pinion 7 which meshes with a gear wheel 8 fixed to a stiff connecting bar 9 whose ends are carried by the wrists 10 of cranks 11 on the driving axles. The rotation of the armature shaft imparts motion to the gearing 8 through pinion 7 and causes the

gear to travel around the pinion in a planetary fashion carrying with it the rigidly attached stiff connecting rod 9 and operating thereby simultaneously the cranks 11 of both the driving axles. By suitable proportioning of the circumference of the pinion and gear any desired reduction of speed may be obtained, the form of gear shown being peculiarly advantageous in obtaining a large reduction by the use of a single pair of wheels owing to the planetary action. If the gear and the pinion be of the same size a reduction of speed of one-half is made between the armature and the axle cranks and still further reductions are obtained by decreasing the size of the pinion relative to the gear.

I have found it advantageous to make use of a differential principle in driving electric cars as it lessens the wear of the gear teeth, decreases the noise and makes the construction more compact.

In the form of invention shown in Fig. 5 for the externally toothed spur gear 8 is substituted an internal gear 8^a, with the internal teeth on the rim of which, the pinion 7 engages. This form is advantageous as the gearing is still more compact and is covered and hidden from sight and may be more readily lubricated.

To prevent the bottoming of the teeth of the pinion and gear and to retain them at their proper pitch line, I prefer to add on each side of each member of the gearing smooth flanges, shoulders or collars 12 which roll on each other and maintain the axes of the two members at their proper distance asunder. These collars hold the pinion and gearing apart and co-act with the cranks 11, and stiff connecting rod 7 which tend to hold the same together and the result is the maintenance of the pinion and gear in a true and constant relation to each other.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. The combination of a motor, axles having cranks connected by a stiff rod, a gear wheel rigidly fixed to said rod, and a pinion on the motor shaft meshing with said gear, substantially as set forth.

2. In a motor truck the combination of a driving pinion located centrally between the driven axles and a gear engaging therewith and secured to a rigid connecting rod driving
5 a pair of wheels at its extremities.
3. The combination of a rigid connecting rod and a gear fixed to its center with cranks at the ends of said rod adapted to be driven thereby.
- 10 4. In combination with a motor mounted centrally on a truck its driving gear consisting of a pinion secured to the armature shaft and a rigid connecting rod on which is centrally secured a gear.
5. The combination of a motor, a pinion 15 connected to the shaft thereof, an internal gear meshing with said pinion, and a connecting rod to which said gear is fixed adapted to operate substantially as described.

JOHN C. HENRY.

Witnesses:

HARRY E. KNIGHT,
M. V. BIDGOOD.