

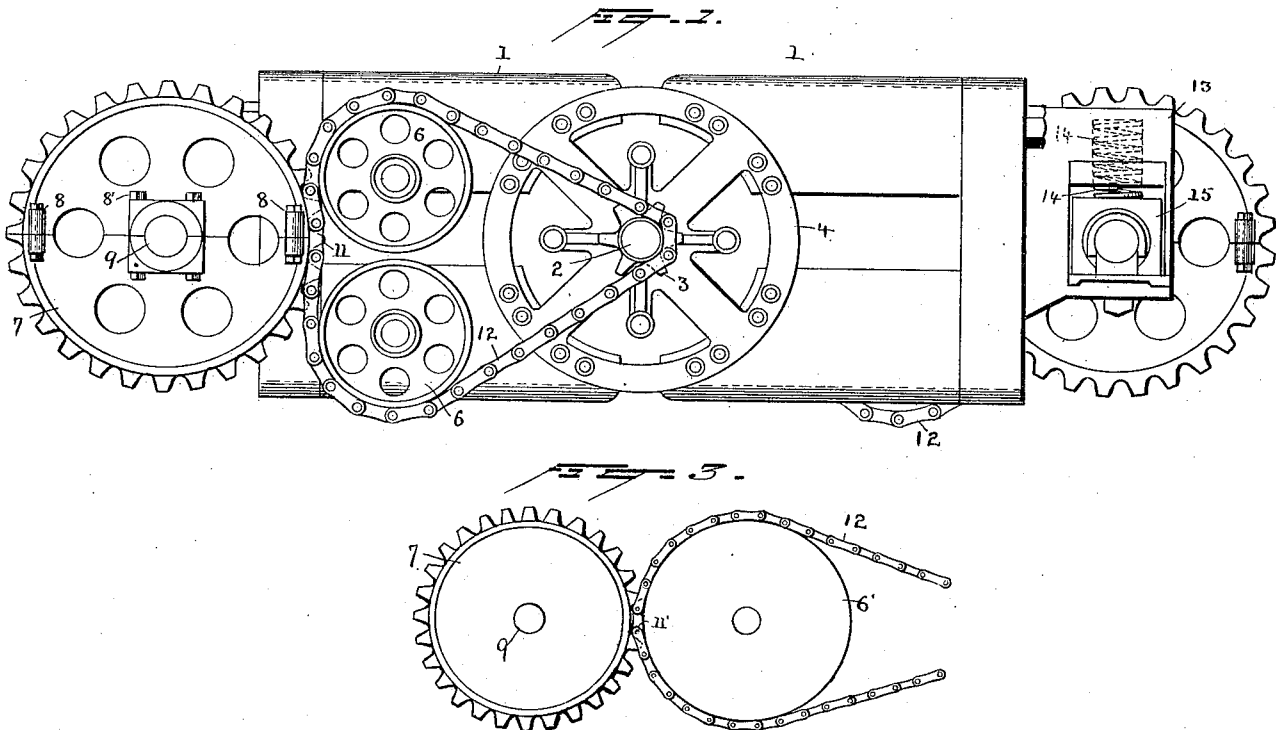
(No Model.)

3 Sheets—Sheet 1.

T. A. EDISON,
DRIVING MECHANISM FOR CARS.

No. 470,927.

Patented Mar. 15, 1892.



Witnesses
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Dr. G. Clarke

Inventor
T. A. Edison,
By his Attorneys
Hughes & Deely.

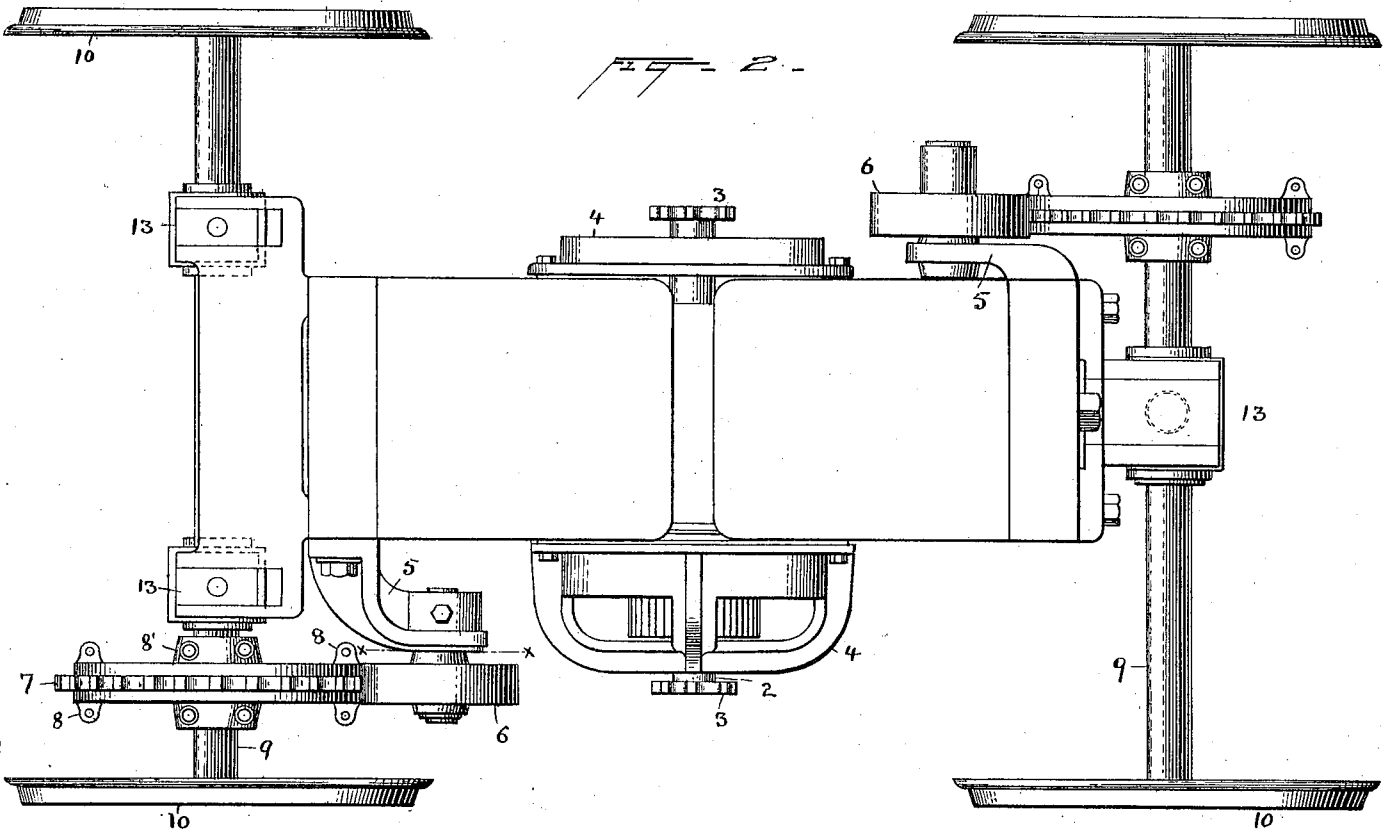
(No Model.)

3 Sheets—Sheet 2.

F. A. EDISON,
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Patented Mar. 15, 1892.



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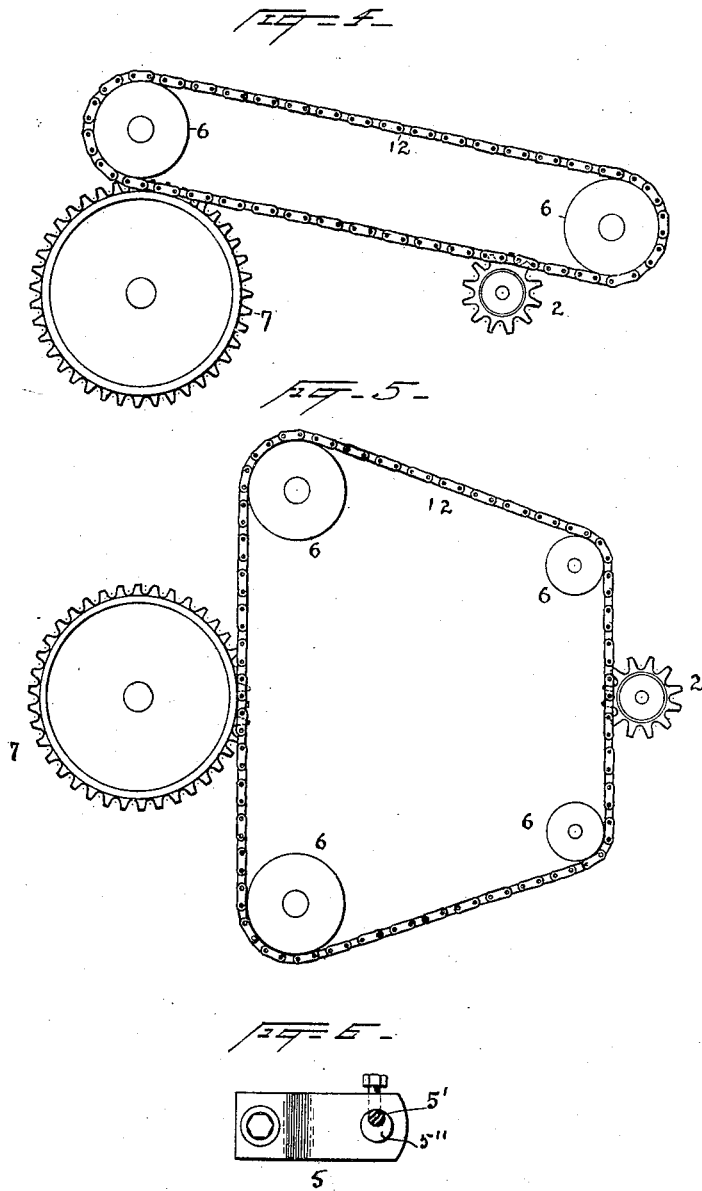
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3 Sheets—Sheet 3.

T. A. EDISON.
DRIVING MECHANISM FOR CARS.

No. 470,927.

Patented Mar. 15, 1892.



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UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF LLEWELLYN, PARK, NEW JERSEY.

DRIVING MECHANISM FOR CARS.

SPECIFICATION forming part of Letters Patent No. 470,927, dated March 15, 1892.

Application filed March 26, 1891. Serial No. 386,540. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Driving Mechanism for Cars, (Case No. 914,) of which the following is a specification.

The present invention relates to improved devices for transferring motion from an electric or other motor to the axle of a car or to any suitable driven shaft; and the invention consists in the devices and combinations for the purpose indicated, as hereinafter set forth and claimed.

In the accompanying drawings, which illustrate the improvement, Figure 1 is a side view of a motor and driving mechanism. Fig. 2 is a plan view of the same mounted on a car-truck. Fig. 3 is a view of a modification. Figs. 4 and 5 illustrate modified arrangements of the sprocket-gearing. Fig. 6 is a section on line *xx* of Fig. 2.

1 1 are the field-magnets of the motor, between the poles of which an armature having a driving-shaft 2 revolves. On said shaft, at each end, is a sprocket-wheel 3. The shaft is journaled in suitable end plates or frames 4. Projecting from the field-magnet at each end and on opposite sides are brackets 5, carrying idle-pulleys 6. Said brackets are supported upon or project from the yoke-pieces of the motor. One or more of the pulley-spindles are eccentric on their shanks, which are supported in the brackets, so that by turning said spindle slightly in one direction or the other the pulleys can be raised or lowered, to tighten or loosen the chain. This is shown in Fig. 6, in which 5' is the spindle mounted eccentrically on the shank 5. Suitable set-screws are provided for locking the spindle and pulleys in the position in which they are set. In line with each pair of these idle-pulleys is a sprocket-wheel 7, preferably made in two halves, secured together by bolts 8 and mounted on shaft 9. The rims of these wheels are somewhat broader than the width of the sprocket-teeth, thus strengthening the wheel. This sprocket-wheel is entirely outside of the sprocket-chain; but one edge of the wheel engages therewith. In Fig. 2 the shaft is a car-axle having wheels 10. The

idle-pulleys and the sprocket-wheel 7 are so located that the periphery of the latter wheel extends slightly into the space between the adjacent peripheries of the two idle-pulleys, as shown at 11 in Fig. 1. 12 is a chain-belt, which is driven by the wheel 3, and which passes over the two idle-pulleys and is in engagement with a few teeth of the sprocket-wheel 7, as shown. This arrangement forms a sprocket-gearing between the motor-shaft and car-axle, and power is transmitted by a single reduction from the motor-shaft to both car-axes, and the connection is such that the axles can have a slight independent movement to allow the car to turn a curve properly without causing the gearing to slip or otherwise work imperfectly. This is not true of ordinary belt connections or of sprocket-gearing when the chain passes around the sprocket-wheels on the axles. In the latter case any tightening or loosening of the chains causes increased friction, failure of the links to fit over the teeth resulting in severe jerks to the machinery, &c.

The chain arranged according to my invention can be much shorter than in old arrangements in which the chain passes around the driven sprocket-wheel, and as the motor pulls on the chain it tends to straighten it between the bearing-surface of the two idle-pulleys, thereby holding it firmly against the driven wheel. The friction of the chain on the sprocket, since it engages with a few teeth only, is also largely reduced, whereby an important advantage is gained. Instead of two idle-pulleys, one may be used, as shown in Fig. 3. In this case only one tooth of the sprocket will engage the flexible member of the gear at a time.

When applying the arrangement above described to electric cars, I prefer to place duplicate driving chains and wheels on opposite sides of the motor and at opposite ends thereof. This is indicated in Fig. 2, in which figure, however, the chains are omitted. The motor is supported on the car-axes by means of boxes or brackets 13, there being springs 14 between said bracket and blocks 15 bearing on the axle and supporting the weight.

Two slightly-different arrangements of my sprocket-gearing are shown in Figs. 4 and 5. In the former figure the chain 12 passes over

two idle-pulleys 6. The driving spur-wheel 2, as well as the driven spur-wheel 7, is outside of the chain. In the latter figure four idle-pulleys are employed and both of the spur-gears are outside of the chain.

Having thus described the invention, what I claim is—

1. The combination of an electric motor, an armature having a driving-shaft, a sprocket-wheel thereon, one or more idle-pulleys supported by the field-magnet of the motor, a sprocket-chain passing around said wheel and idle-pulleys, and a driven sprocket-wheel outside of the chain and in engagement therewith, substantially as described.

2. The combination of an electric motor, an armature having a driving-shaft, a sprocket-wheel thereon, an idle-pulley or idle-pulleys supported by the field-magnet at each end and on each side, a chain for each sprocket-wheel and idle-pulley or pair of idle-pulleys, and other sprocket-wheels outside of the chains, but in engagement therewith, substantially as described.

3. The combination of an electric motor supported at each end and on a car-axle, a sprocket-wheel on the motor-shaft, an idle-pulley or idle-pulleys in line with said sprocket-wheel, a chain passing around the wheel and idle pulley or pulleys between the motor-shaft and an axle of the car, and a sprocket-wheel on one of the car-axles and in engagement with the chain, whereby motion is transmitted from the motor-shaft to the car-axle, substantially as described.

4. The combination of an electric motor, a wheel on the motor-shaft, a bracket or brackets projecting from the field-magnet, a pulley or pulleys supported by said bracket or brack-

ets in line with the wheel, and a sprocket-chain extending around said pulley and engaging with a driven wheel, substantially as described.

5. The combination, with a motor supported on the axles of a vehicle, of a sprocket-gearing between the motor-shaft and each of the car-axles, said gearing comprising a sprocket driving-wheel and chain, and a driven sprocket-wheel directly on one of the axles of the vehicle and outside of the chain, but in engagement therewith, substantially as described.

6. The combination, with a motor supported on the axles of a vehicle, of sprocket-gearing between the motor-shaft and one of the car-axles, said gearing comprising a sprocket driving-wheel and chain and a driven sprocket-wheel directly on one of the axles of the vehicle and outside of the chain, but in engagement therewith, and one or more idle-pulleys over which the sprocket-chain passes, substantially as described.

7. The combination, with a motor supported on the axles of a vehicle, of sprocket spur-gearing between one end of the motor-shaft and one of the axles and between the opposite end of the motor-shaft and the other axle, each of said gearings comprising a sprocket driving-wheel and chain, and a driven sprocket-wheel directly on one of the axles of the vehicle and outside of the chain, but in engagement therewith, substantially as described.

This specification signed and witnessed this 4th day of March, 1891.

THOS. A. EDISON.

Witnesses:

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JOHN F. RANDOLPH.