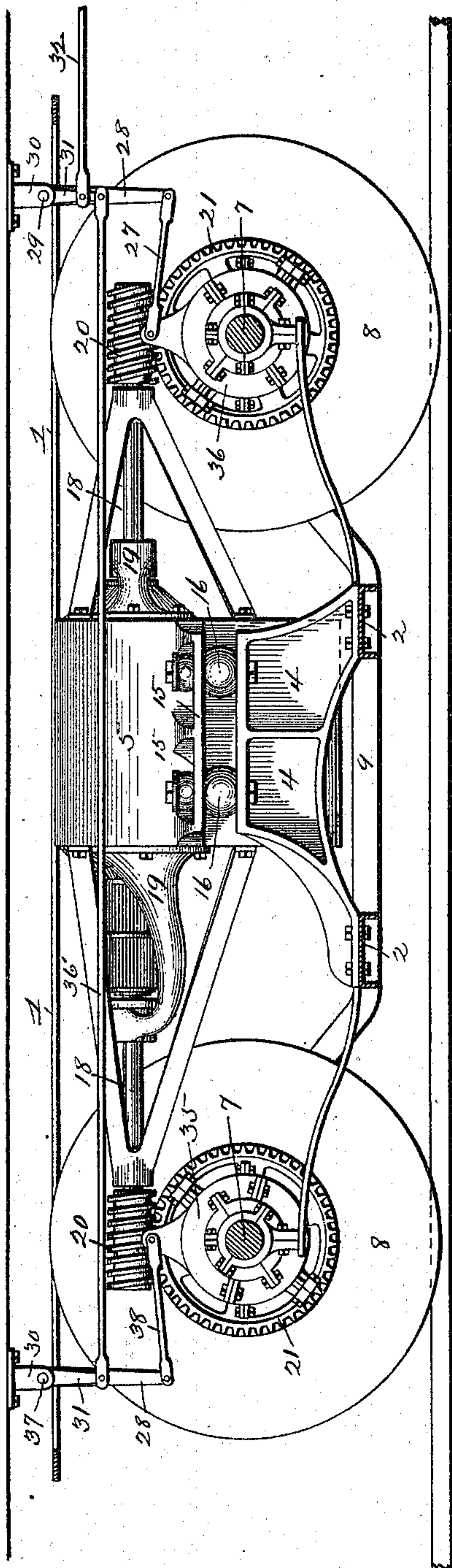


(No Model.)

J. F. McLAUGHLIN.
ELECTRIC LOCOMOTIVE.

No. 573,905.

Patented Dec. 29, 1896.



Witnesses:

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UNITED STATES PATENT OFFICE.

JAMES F. McLAUGHLIN, OF PHILADELPHIA, PENNSYLVANIA.

ELECTRIC LOCOMOTIVE.

SPECIFICATION forming part of Letters Patent No. 573,905, dated December 29, 1896.

Application filed March 21, 1890. Serial No. 344,782. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. McLAUGHLIN, a citizen of the United States, and a resident of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Electric Locomotives, of which the following is a specification.

This invention has reference to improvements in electric locomotives, being more especially directed to the driving-gear between the motor and axles, and its object is to provide a means whereby the speed of the car may be adjusted to different degrees with a minimum amount of intermediate gearing between the armature-shaft and the drive-wheel axles.

The invention consists, essentially, in employing worm-gear of different speeds or pitch between the armature-shaft and the drive-wheel axle in conjunction with clutches connected to operate in opposite directions, that is, when one clutch is in engagement the other is off, so that the two sets of gearing cannot be simultaneously put into operation.

My invention is fully illustrated in the accompanying drawing, which is a longitudinal section of an electric-motor-car truck embodying the invention.

Referring to the drawing, there is shown a truck-body consisting, essentially, of a frame 1 and cross-bars 2, the latter being preferably of heavy angle-iron hung at a distance below the frame 1 and supported by the latter in the usual manner. Heavy longitudinal girders 4 are secured to and supported by the cross-bars 2 and serve to support the motor 5 and other parts.

The axles 7 of the drive-wheels 8 of the motor-car are journaled in the usual manner in axle-boxes of the usual construction, but which are not shown in the drawing. One of the side bars 9, which in car-trucks of this form serve to support the axle-boxes, is indicated in the drawing.

The motor 5, which is of any ordinary or improved construction and therefore is not described in detail, is supported by flanges 15, bolted to the girders 4, with heavy cushions 16 interposed between the said flanges and girders to relieve the motor from the effects of sudden jars or jolts without, how-

ever, allowing the motor to move sufficiently independently of the truck to disarrange the gearing. As will be seen, the motor is so placed on the truck that its armature extends longitudinally in relation thereto between and above the axles 7, while the armature-shaft 18 projects at each end beyond its bearings 19 and there carries a worm 20, which meshes with a worm gear-wheel 21, mounted on the axle 7, but free to turn thereon.

The gear-wheel 21 constitutes one member of a friction-clutch, such, for instance, as that forming the subject-matter of my Letters Patent No. 424,341, granted March 25, 1890, the other member of the friction-clutch being connected directly to the axle 7. The shifting mechanism 35 of one clutch is connected by a link 38 to an arm 28, depending from a rock-shaft 37, journaled in brackets 30 on the car-body, and the shifting mechanism 36 of the other clutch is connected by a link 27 to an arm 28, fast at its upper end on a rock-shaft 29, journaled in brackets 30 on the car-body. The two rock-shafts 29 37 have each an arm 31, and these arms are connected together for simultaneous movement by a rod 36'. The arm 31 on the rock-shaft 29 is connected by a link 32, extending to the car-platform, where suitable manipulating levers or other mechanism (not shown) is provided.

The system of links and levers connecting the two clutches is so arranged that when one clutch is in engagement, or on, the other clutch is disengaged, or off, and the two worms 20 20 are of different pitch, so that the speed with which one will drive its gear-wheel 21 will be different from the speed with which the other worm will drive its gear-wheel 21.

When the car is in operation, the motor-armature is rotated constantly, while by means of the clutches and worm-gearing the car may be run at different speeds or stopped, while the armature remains running at practically the same speed. With this construction I am enabled to run the motor at its most efficient speed and can vary the speed of the car or even stop the same without the necessity of stopping the motor.

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

1. In an electric locomotive the combination with an electric motor of worms of different pitch, and gearing for the same, interposed between the motor and drive-wheel
5 axles, and means for coupling the motor and axles together through either worm-gear, substantially as described.

2. In an electric locomotive, the combination with an electric motor, of worms of different pitch, one at each end of the armature-
10 shaft, worm-gears meshing with the worms and loosely mounted on the drive-wheel axles, and clutches on the said axles for coupling the worm-gears thereto, substantially as de-
15 scribed.

3. In an electric locomotive, the combina-

tion with an electric motor, of worms of different pitch, one at each end of the armature-shaft, worm-gears meshing with the worms and loosely mounted on the drive-wheel axles, 20 and connected and oppositely - operating clutches, also mounted on the axles, for coupling the worm-gears thereto, substantially as described.

In testimony whereof I have signed my 25 name to this specification in the presence of two subscribing witnesses.

JAMES F. McLAUGHLIN.

Witnesses:

HERBERT P. KEO,
II. F. REARDON.