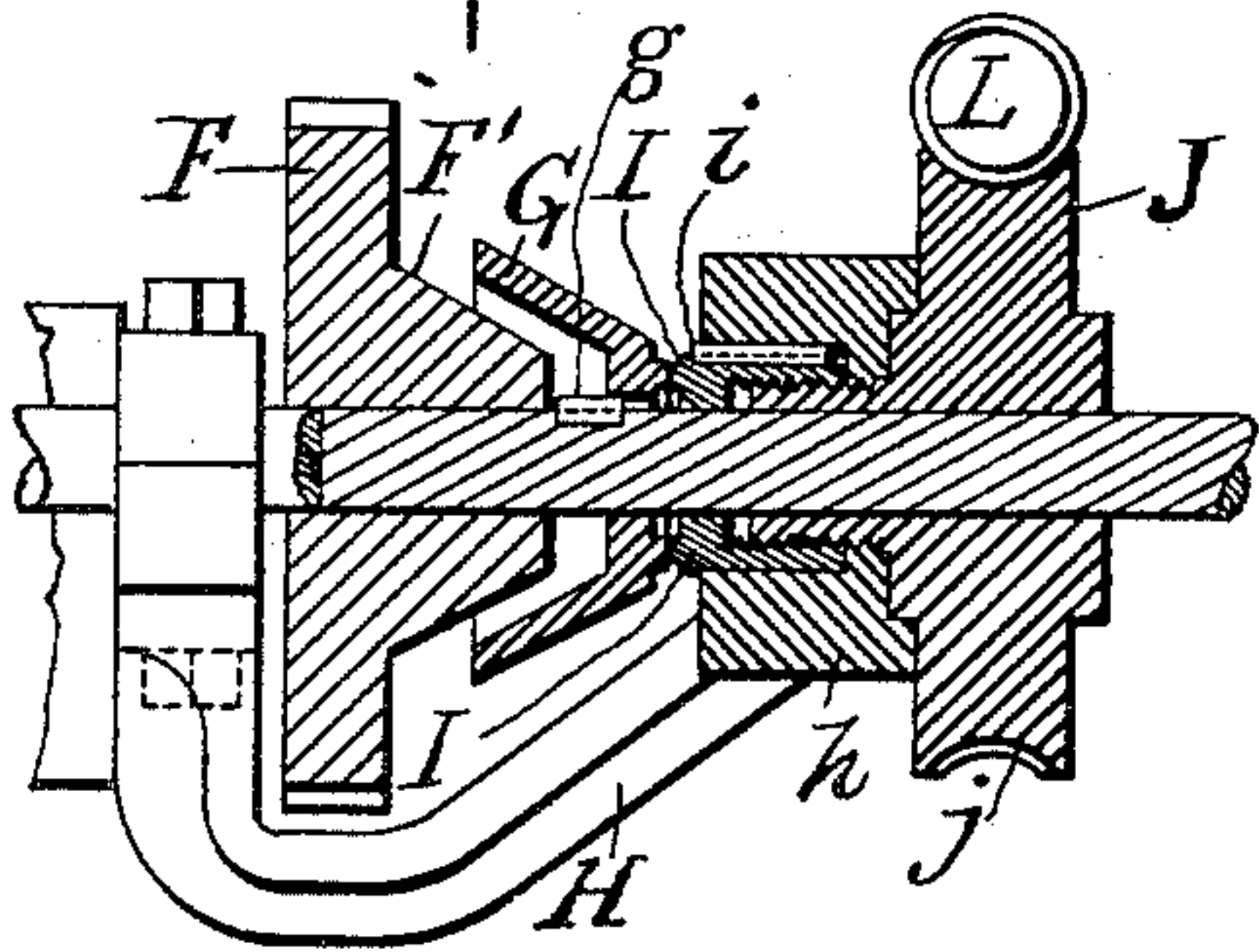
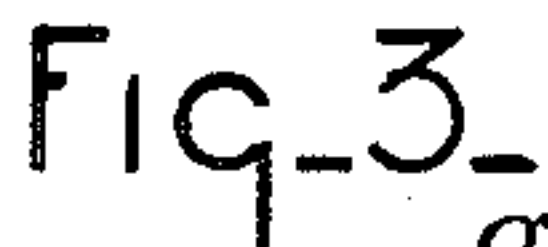
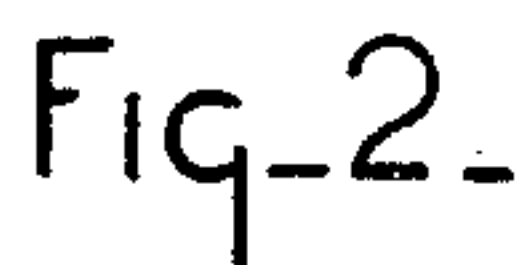


H. H. BLADES.
ELECTRIC RAILWAY CAR.

Patented Sept. 2, 1890.



INVENTOR
Harry N. Blades.
By Wm. W. Lippert & Co
Attorneys.

UNITED STATES PATENT OFFICE.

HARRY H. BLADES, OF DETROIT, MICHIGAN.

ELECTRIC-RAILWAY CAR.

SPECIFICATION forming part of Letters Patent No. 435,641, dated September 2, 1890.

Application filed January 10, 1890. Serial No. 336,470. (No model.)

To all whom it may concern:

Be it known that I, HARRY H. BLADES, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Electric-Railway Cars; and I declare the following to be a full, clear, and exact description of the invention, such as it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

It is the object of my invention to employ with electric-railway cars in which the motors run continually and in which clutches or friction-pulleys are used for throwing the car-axles into or out of gear with the motors certain mechanism operated from the platform of the car whereby a movement of a lever or levers will throw the brakes off and the friction-clutches on, or vice versa.

The invention consists in the combinations of devices and appliances, hereinafter described and claimed.

In the drawings, Figure 1 is a view of the under side of a railway-car embodying my invention. Fig. 2 is a side elevation illustrating the mechanism. Fig. 3 is a detail view illustrating the form of the clutch.

In carrying out my invention, A represents the car-axles; B, the wheels; C, the frame, and D the electric motors. These motors are supported at one end by a frame-work d , which embraces the axle, and the other end rests on suitable cushions or springs d' , attached to the frame, whereby the motors are caused to ride easily.

E is a pinion geared to the armature-shaft.

F is a pinion running loosely on the axle and provided on its side with the conical friction-surface F' .

G is a conical friction-clutch adapted to slide freely on the axle, and yet is made to revolve therewith by the feather g .

H is a bracket having on its end the bearing h , which loosely supports the spool I, which loosely embraces the axle. This spool I is prevented from revolving with the axle by the feather-and-groove engagement i .

J is a worm-gear loosely embracing the axle and provided on its hub with screw-threads

adapted to engage with the screw-thread of the spool I. The periphery of this worm-gear J is provided with the thread j .

I have above described the mechanism of one of the axles only; but it is of course obvious that this mechanism may be duplicated, as shown in Fig. 1, if desired.

K are rods extending lengthwise of the car on each side. These rods are provided with a worm L, which meshes with the thread j of the worm-gear J. Connected with the ends of the rod K by universal telescope-joints k are the rods K' , which extend to a point underneath the platform. They are here provided with beveled gears k' .

M is a vertical rod provided on its upper end with the hand-wheel m , and M' is another rod in the form of a tube embracing the rod M, and also provided with a hand-wheel m' . The lower ends of these rods are provided with beveled gears $m^2 m^3$, meshing with the beveled gears k' . By providing the lower hand-wheel m' with orifices and the upper hand-wheel with a pin or key m^4 the two wheels may be keyed together in any relative position desired.

I will now describe the brake mechanism. N is a shaft supported at each end by the frame C and provided with crank-arms n . These crank-arms are connected by pitmen n' with the brake-shoes n^2 . N' is a worm-gear keyed to the shaft N, and this worm-gear meshes with a worm L' on the shaft K.

The operation of the mechanism is as follows: The car is at rest, with the motor running continuously and revolving the pinion F on the axle. The driver revolves the hand-wheels $m m'$, and through the rods K' revolves the rods K, and these through the worm-gear N' act to throw off the brakes, while the worm-gears J act through the spools I to force the conical friction-clutches against the pinion F. This friction-clutch G being keyed to the axle by the feather g will cause the axle to revolve, and thus give motion to the car. To stop the car the operator revolves the hand-wheels in the opposite direction, and by so doing releases the clutch mechanism and sets his brakes. It is of course obvious that any suitable clutch mechanism may be employed without departing from the spirit of

my invention. So, also, as above stated, either one or two motors may be employed. As will be seen, this mechanism enables the operator to throw the motor either into or out of gear with the car-axle by a single lever and at the same time to operate the brakes with the same lever. Of course where two motors are employed on the same car the two levers or hand-wheels are necessary; but by keying them together, as shown, they may be operated as one lever. It is, however, obvious that the two sets of mechanism would not always maintain the same relative position with respect to each other, and by making the engagement between the two hand-wheels adjustable they may be at any time readjusted so that the operation of the hand-wheels will make them act simultaneously.

k represents universal joints for connecting rods K and K' with the sleeve k^2 , of which the rods K' have a telescopic connection, whereby the play in the rods due to the oscillation of the car may be taken up.

Another advantage is that where secondary batteries are used to furnish the current for the motor my device will promote the longevity of the cells by obviating the necessity of stopping the motor in order to stop the car, thus saving the enormous current drawn from the batteries when both motor and car are started at once.

Another advantage is that the worm-gear used forms a perfect lock, so that the car cannot be started or stopped except at the proper place at the hand-wheels.

What I claim is—

1. In a railway-car, the combination, with an electric motor for operating the car, clutch mechanism for throwing the motor into or out of gear with the car-axle, and brake mechanism for operating the car-wheel brakes, of a rod for simultaneously operating said brake and clutch mechanisms, substantially as described.

2. In a railway-car, the combination, with an electric motor for operating the car, clutch mechanism for throwing the motor into or out of gear with the car-axle, and brake mechanism for operating the brakes, of a rod provided with two worms, a worm-gear connected with said clutch mechanism, and a worm-gear connected with said brake mechanism, whereby the brake and clutch mechanism are operated simultaneously by the rod, substantially as described.

3. In a railway-car, the combination, with an electric motor for operating the car, clutch mechanism for throwing the motor into or out of gear with the axle, and brake mechanism for operating the brakes, of a rod for simultaneously operating said brake and clutch mechanism, said rod connected with both ends of the car, whereby the mechanism may be operated from either end, substantially as described.

4. In a railway-car, the combination of the car-wheel axle, an electric motor geared to

said axle for propelling the car, a clutch mechanism for throwing the electric motor into and out of gear with the axle, a worm and worm-gear for operating the clutch, and a vertically-projecting rod on the car for actuating the worm and gear, substantially as described.

5. In a railway-car, the combination of the car-wheel axle, an electric motor geared to said axle for propelling the car, a clutch mechanism which throws the electric motor into and out of gear with the car-axle, a worm-gear mounted on the car-axle and connected with a part of the clutch mechanism, a rod having a worm engaging the worm-gear, and a vertically-arranged rod or shaft arranged at the end of the car and connected with the worm-carrying rod to operate the clutch, substantially as described.

6. In a railway-car, the combination, with an electric motor and suitable clutch mechanism for throwing the same into or out of gear with the axle, of a rod provided with a worm and gear for operating said clutch mechanism, said rod connected with both ends of the car, whereby the mechanism may be operated from either end of the car, substantially as described.

7. In a railway-car, the combination, with an electric motor geared to the car-wheel axle and suitable clutch mechanism for throwing the same into or out of gear with the axle, of a revolving rod provided with a suitable worm, a worm-gear connected with said clutch mechanism for operating the same, into which said worm meshes, and mechanism for revolving the rod, whereby the revolution of the rod in one direction throws the motor in and a reverse revolution throws the motor out of gear, substantially as described.

8. In a railway-car, the combination, with an electric motor and suitable clutch mechanism for throwing the same into and out of gear with the axle, of the revolving rod K for operating said clutch mechanism, said rod connected with the rod K' by universal and telescope joints, and the rod K' , engaged with the operating-shaft, substantially as described.

9. In a railway-car, the combination, with the car-wheels, of a series of car-wheel brakes, a worm-gear connected with the brakes, a rod having a worm engaging the worm-gear, and a vertically-arranged rod at the car-platform for simultaneously applying the brakes to the car-wheels, substantially as described.

10. In a railway-car, the combination, with two electric motors and clutch mechanism for throwing them individually into or out of gear with the axles, of rods connected with each set of clutch mechanism for operating the same, said rods extending to the platform, and mechanism on the platform for operating them simultaneously, substantially as described.

11. In a railway-car, the combination, with two electric motors and clutch mechanism

for throwing them individually into or out
of gear with the axles, of rods connected with
each set of clutch mechanism for operating
the same, said rods connected with vertical
5 operating-shafts, and mechanism for connect-
ing the operating-shafts together, substan-
tially as described.

In testimony whereof I sign this specifica-
tion in the presence of two witnesses.

HARRY H. BLADES.

Witnesses:

C. J. SHIPLEY,
M. A. REEVE.