

(No Model.)

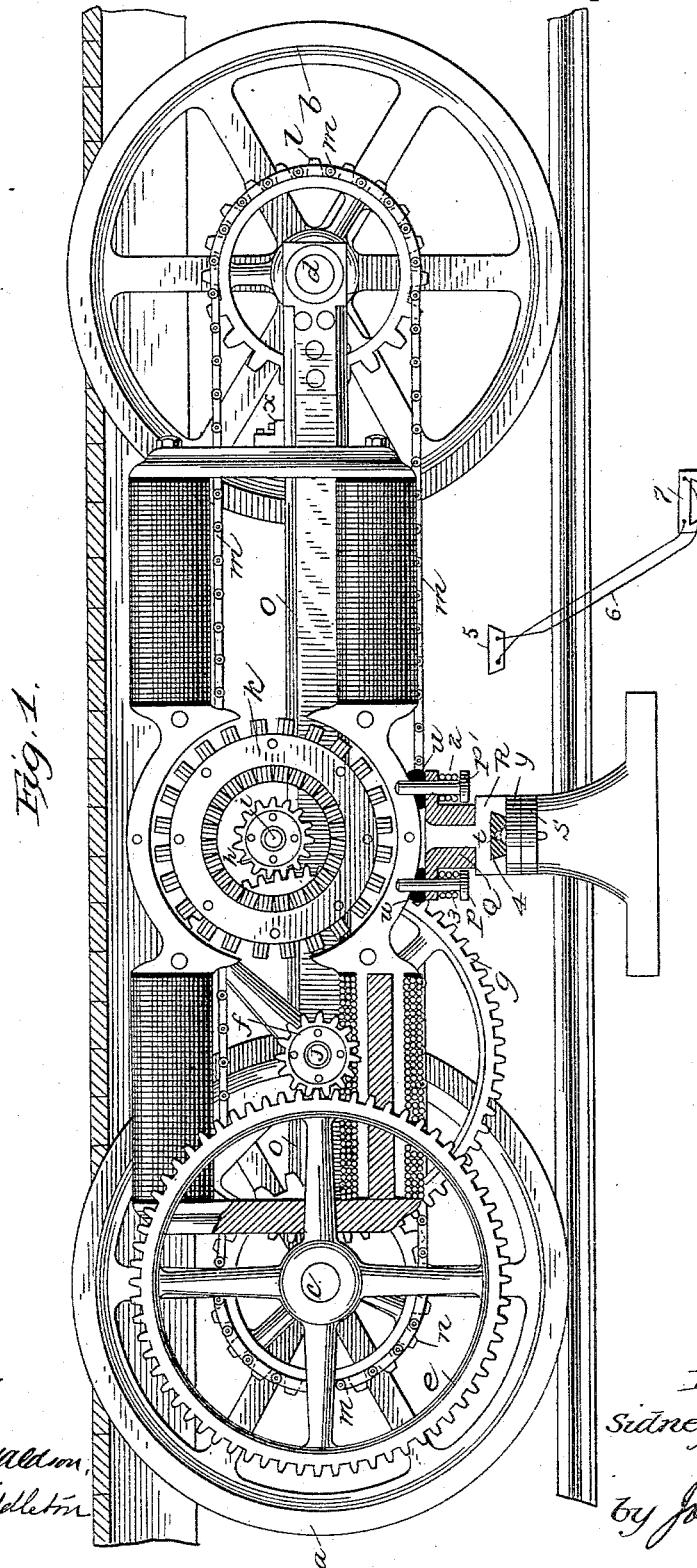
2 Sheets--Sheet 1.

S. H. SHORT.

# ELECTRIC MOTOR FOR RAILWAYS.

No. 381,650.

Patented Apr. 24, 1888.



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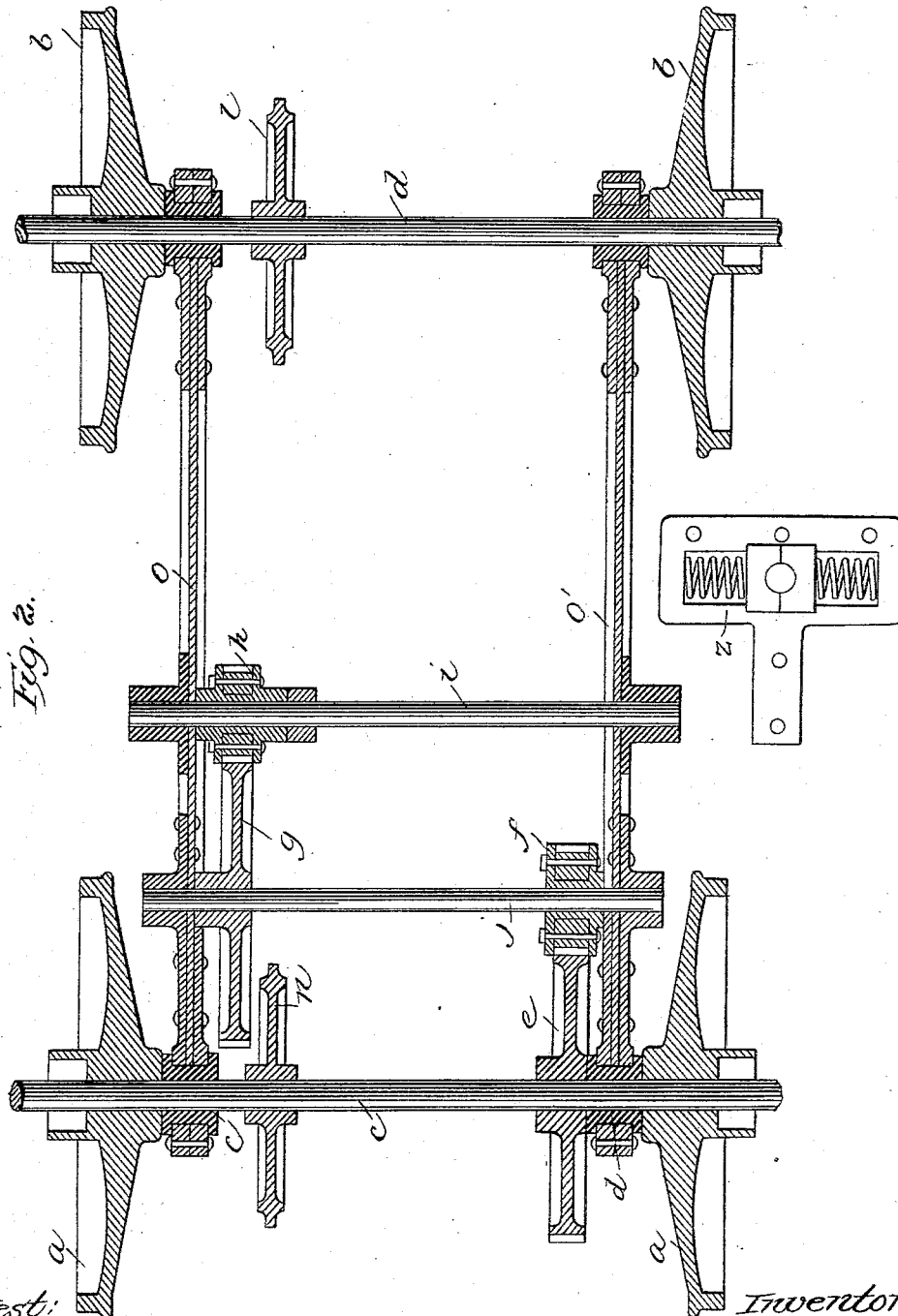


Fig. 2.

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# UNITED STATES PATENT OFFICE.

SIDNEY H. SHORT, OF DENVER, COLORADO, ASSIGNOR TO THE UNITED STATES ELECTRIC COMPANY, OF SAME PLACE.

## ELECTRIC MOTOR FOR RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 381,650, dated April 24, 1888.

Application filed September 22, 1885. Serial No. 177,859. (No model.)

*To all whom it may concern:*

Be it known that I, SIDNEY H. SHORT, of Denver, in the county of Arapahoe and State of Colorado, have invented a new and useful Improvement in Electric Motors for Railways; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to motors for electric railways.

Referring to the drawings, Figure 1 is shown partly in elevation and partly in vertical section, and Fig. 2 in horizontal section.

In Fig. 1, *a* and *b* represent the driving-wheels of the truck or tram car with their axles *c* and *d*, which carry between the wheels the necessary gears and supports for the entire machinery for driving the car. The extensions of the axles outside the driving-wheels are provided with car boxes and pedestals, on which the carriage is supported in the ordinary manner, no part of the machinery being in any way attached to the car-body, which may be entirely removed from the trucks without disarranging any portion of the machinery.

The axles of the driving-wheels support two rigid beams, *O* and *O'*, Fig. 2, one of them being shown at *O* in Fig. 1. These beams are provided at one end with a box or bearing fitted to the shaft, as shown at *C* or *d* in Fig. 1 on the drawings. The other end is provided with a pedestal with springs and boxes, as shown at *Z* in Fig. 2. One of the axles *c* carries a gear-wheel, *e*, which is keyed fast to it. A counter-shaft, *j*, which has its bearings fastened to the two beams *O* and *O'*, carries a second gear-wheel, *g*, and a pinion, *f*, which drives the gear-wheel *e*. A third shaft, *i*, which is the armature-shaft of the motor, also has its bearings attached to the beams *O* and *O'*. This shaft carries the armature of the motor (shown at *k*) and a second pinion, *h*, which drives the second gear-wheel, *g*. Through this chain of gears the power is communicated from the armature *k* of the motor to the large driving-wheel *a*. Now, in order to use the traction of the second pair of driving-wheels *b* and *b'*, the main shafts *c* and *d* each carry a sprocket-wheel, *n* and *l*, with an endless chain, *m*, stretched between them, so the power is communicated through it to the driving-wheels *b* and *b'*. Instead

of this endless chain and sprocket-wheels any sort of belt-gearing may be used.

The dynamo-frame is supported on the beams *O* and *O'* by suitable brackets, as shown at *x*. The method of attaching the current-gatherer or brush-holders is shown in Fig. 1 on the drawings. The metal piece shown in section at *Q* is bolted to the frame-work of the dynamo by means of the bolts *p* and *p'*, which have around them, between the frame of the motor and the piece *Q*, rubber cushions, as shown at *u*, and between the heads of the bolts *p* and *p'* and the piece *Q* are springs 2 and 3, which allow the car-wheels to pass over obstructions in the track without raising the current-gatherer out of the slot through which it passes to reach the conduit below the track.

Into the piece *Q* is fitted a second piece, *R*, which turns freely in *Q* in a horizontal plane in the manner shown. In the lower part of this piece *R* is a dovetailed slot, into which fits the piece *Y*, which has a dovetail fitting into the slot in *R*, and which moves freely back and forth in a line at right angles to the length of the car. To the piece *Y* is attached the brush-holder *s*, which is also pivoted in *Y*, so as to turn freely when not held therefrom by a pin, *t*. This pin *t* is inserted in vertical holes in the abutting-flanges of *Y* and *S*, these holes being arranged to register when the current-gatherer is in line with the track.

The object of this arrangement is to allow the brush holder or gatherer to accommodate itself to curves in the slot or track; or, if the car should run off the track, the piece *Y* will slip out of the piece *R*, and thereby prevent any damage being done to the brush holder or conduit.

To pull the car back onto the track, it is only necessary to slip a little block, 5, into the slot in *R* under the car, and another block, 7, over the dovetail in the piece *Y*, which was left standing in the conduit, with the double conductor 6 connecting the two, which puts the motor again in circuit, and the car is made to back onto the track, when the device 5, 6, and 7 is removed and placed in the car, where it is always carried. When the car has been backed onto the track, the pin *t* (being removed) allows the dovetail on the piece *Y* to be turned

in line with the track. Then the recess in the piece R is turned in the same direction and the current-gatherer may be put into its place and the dovetail parts interlocked by motion in line with the track. Then the dovetail connections may be one-quarter turned and the pin inserted, which holds the parts securely in place so long as the car remains on the track, but allows it to be disconnected by lateral slipping in case of accidental displacement of the car.

I claim as my invention—

1. In combination with an electric motor carried on a car, a current-gatherer pivoted on a piece, as Q, connected to the motor by bolts and interposed springs, substantially as described.

2. In combination with an electric motor carried on a car, a pivoted block, as R, a current-gatherer pivoted on a piece, as Y, and dovetail connections between the parts Y and R.

3. In combination, in an electric motor on a railway-car, a pivoted block, as R, a current-gatherer pivoted on a piece, as Y, dovetail connections between the pieces Y and R, and a pin, *t*, through the flanges of these parts, substantially as described.

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

SIDNEY H. SHORT.

Witnesses:

WM. N. BYERS,  
WM. G. EVANS.