

(No Model.)

R. M. HUNTER.  
ELECTRIC RAILWAY.

No. 445,674.

Patented Feb. 3, 1891.

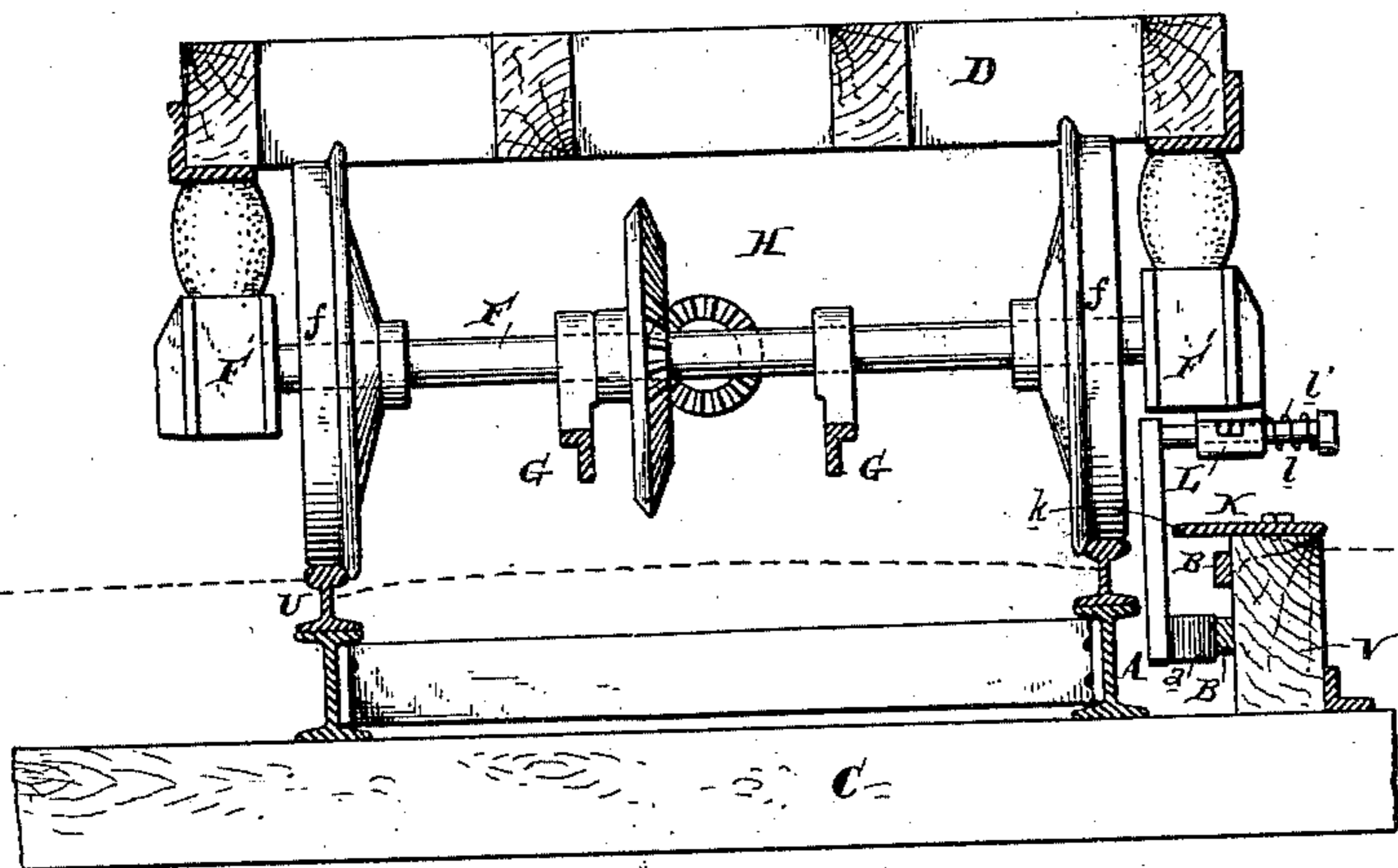


FIG. 1.

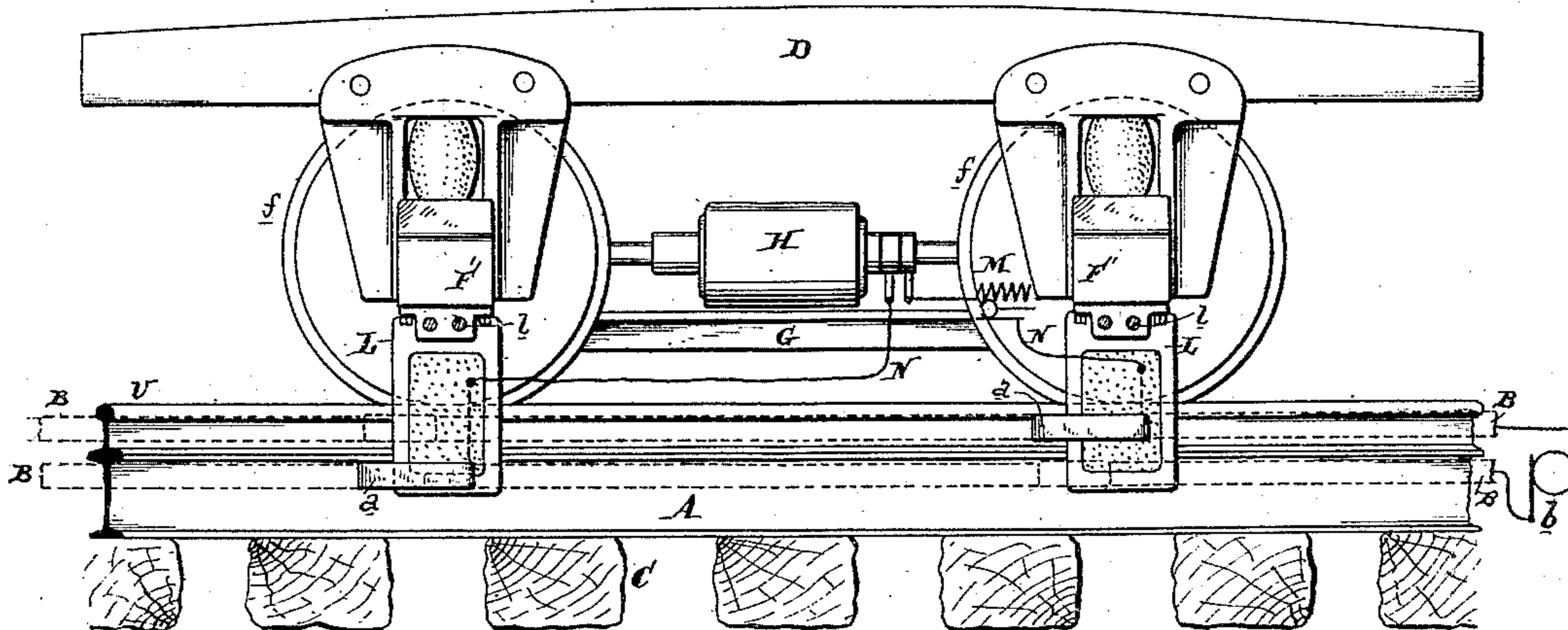


FIG. 2

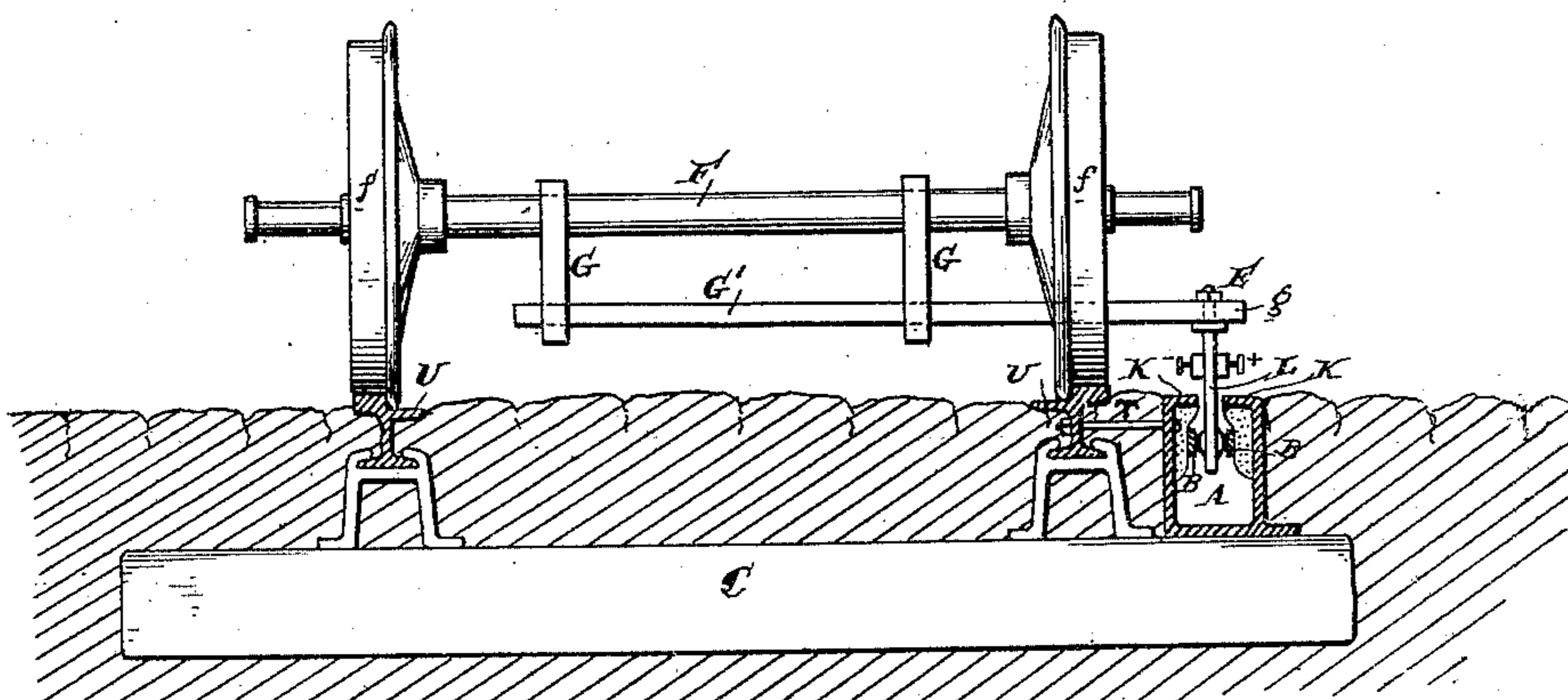


FIG. 3.

WITNESSES:

Henry Drury  
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# UNITED STATES PATENT OFFICE.

RUDOLPH M. HUNTER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR, BY  
MESNE ASSIGNMENTS, TO THE THOMSON-HOUSTON ELECTRIC COMPANY,  
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## ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 445,674, dated February 3, 1891.

Application filed January 14, 1889. Serial No. 296,292. (No model.)

*To all whom it may concern:*

Be it known that I, RUDOLPH M. HUNTER, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Road-Bed Structures and Current-Collecting Devices, (Case 79,) of which the following is a specification.

My invention has reference to electric railways; and it consists of certain improvements, all of which are fully set forth in the following specification and shown in the accompanying drawings, which form part thereof.

My invention relates, particularly, to the road-bed structure and the collectors on the car, which work in connection with the conduit and conductors. Considered generically, my invention consists in locating the conduit, in which is housed one or more electric conductors, outside of the track and preferably close to one of the rails. The current-collector is carried by the car upon the outside of the wheel-base, so as to depend into the conduit and make connection with the conductor. The collector is preferably supported from the axle box or boxes directly or indirectly, or may be supported by a frame supported from the axles independently of the car-body, which latter rests upon springs. In practice the conduit could be located at the highest part of the street or in the space between the tracks, and thus avoid the excessive quantities of surface water which usually run in the road between the rails of the track. The conduit may be formed in any suitable manner, either as part of the road-bed structure or as a separate conduit secured in fixed relation with the rail to which it is adjacent.

In the drawings, Figure 1 is a cross-section of a railway and car embodying my improvements. Fig. 2 is a side elevation of same with the conduit cut away, and Fig. 3 is a cross-section of a road-bed and truck of a modified form of my invention.

D is the car or vehicle or truck, and has the axles F, provided with wheels f, which axles are received in axle-boxes F' in the usual way. The car-frame D rests upon said boxes F' through the mediation of springs.

H is the electric motor, and is supported upon a frame G, carried by the axles in any suitable manner.

U are the rails of the road-bed and are supported upon cross-ties or frames C.

A is a conduit arranged upon the outside of the track-rails and preferably close to the outer edge of the rail. In Fig. 1 this conduit is formed in conjunction with the rail by arranging a longitudinal stringer V upon the cross-ties C outside of the rails and placing a plate or slot iron K upon its upper edge, so as to form a slot k between said plate and rail U. Within the conduit are the two conductors B B, one of which is for positive current and the other for negative current received from the generator b.

L L are two collectors depending from the axle-boxes F' and adapted to have lateral movement by being loosely guided by pins l in the bottom of the axle-boxes. Springs l' are employed to cause the collector to run close to the edge of the plate or slot iron K; but such springs may be dispensed with, if desired. It is evident that by making the guides loose fits the collector would have provision for slight rotary motion on a vertical axis. These collectors are provided with contacts a, which run in contact with the conductors B and supply current to the motor H by the motor-circuit N, which is provided with a suitable regulator M. The motor may be mechanically connected with the axles in any suitable and well-known manner.

As shown in Fig. 2, there are two collectors, one under each axle-box, and while one is designed to collect current of one polarity and the other to collect current of the other polarity, yet it is evident that each collector may collect current from both conductors B by the addition of the second contacts indicated in dotted lines. These collectors are arranged in a vertical line through the axle and wheel, and thus are not shifted when the vehicle is turning corners. The provision for lateral movement is to compensate for irregularities in the line of the slot.

In the modified form of my invention

shown in Fig. 3 we have the usual road-bed structure of a street-railway with the conduit A formed separate and secured to the cross-ties c.

5 B B are the conductors, as before, and are insulated from the sides of the conduit, which is shown as of metal.

K K are the top plates or overhanging ledges of the conduit and form the slot.  
10 This conduit may be constructed in any desirable manner, and for rigidity should be secured to the rail U by ties T, arranged at intervals. In this figure the collector L is shown as pivoted on a vertical axis at g to a  
15 laterally-movable frame G', supported by the frame G on the axles. By this means the collector may be arranged between the axles. The provision for self-adjustment in this case is practically no greater than that shown  
20 in Figs. 1 and 2.

I do not limit myself to the details of construction, as the various parts or devices may be modified in various ways without departing from the spirit of my invention.

25 Any matters set out in this application but not claimed therein are not dedicated to the public, but form subject-matter of my application, Serial No. 204,583, of 1886.

30 Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an electric railway, the combination of a stationary source of electric supply, bared working-conductors extending along the path  
35 of the vehicle, an electrically-propelled vehicle, and depending collectors to receive electricity from said bared conductors, supported by the axle-box of the vehicle, substantially as and for the purpose specified.

40 2. In an electric railway, the combination of a stationary source of electric supply, bared working-conductors extending along the path of the vehicle, an electrically-propelled vehicle, and depending collectors to receive elec-  
45 tricity from said bared conductors, supported by the axle-box of the vehicle and arranged upon the outside of the wheels, substantially as and for the purpose specified.

50 3. In an electric railway, the combination of a stationary source of electric supply, bared working-conductors extending along the path of the vehicle, an electrically-propelled vehicle, and depending collectors to receive elec-  
55 tricity from said bared conductors, supported by the axle-box of the vehicle, arranged upon the outside of the wheels and in line with their tread upon the rails or in a vertical line through the axles, substantially as and for the purpose specified.

60 4. The combination of the track-rails of a railway with an electric conduit arranged upon the outside of the track and close to or adjacent to one rail thereof, and an insulated working-conductor contained within said con-  
65 duit.

5. The combination of the track-rails of a railway with an electric conduit arranged upon the outside of the track and close to or adjacent to one rail thereof, and a positive and negative insulated working-conductor con- 70 tained within said conduit.

6. The combination of the track-rails of a railway with an electric conduit arranged upon the outside of the track and close to or adjacent to one rail thereof, an insulated work- 75 ing-conductor contained within said conduit, a traveling vehicle, and a current-collecting device arranged outside of the wheel-base of said vehicle and depending into the conduit for making connection with the working-con- 80 ductor.

7. The combination of the track-rails of a railway with an electric conduit arranged upon the outside of the track and close to or adjacent to one rail thereof, and positive and 85 negative insulated working-conductors contained within said conduit, a traveling vehicle, and two current-collectors carried thereby and arranged upon the outside of the wheel- 90 base, one in advance of the other, and depending into the conduit for making connection with the working-conductors.

8. The combination of a railway-track with a conduit arranged upon the outside thereof and a working-conductor housed therein and 95 insulated therefrom.

9. The combination of a railway-track with a conduit arranged upon the outside thereof and a working-conductor housed therein and insulated therefrom, and common supporting 100 cross-ties for both the rails and conduit.

10. The combination of a railway, a conduit arranged outside of the track, an insulated working-conductor housed within said con- 105 duit, and connections between the track structure and conduit, whereby they are maintained in relatively fixed positions.

11. In an electric railway, the combination of a traveling vehicle, a stationary source of electric supply, a bared working-conductor 110 extending along the path of the vehicle, and a current-collector device of less width than the diameter of the wheel and supported immediately outside of the wheel of the vehicle.

12. The combination of the track-rails of a 115 railway with an electric slotted conduit arranged upon the outside of the track and close to or adjacent to one rail thereof, and positive and negative bared conductors contained within the conduit and consisting of longi- 120 tudinal bars having vertical or substantially vertical faces exposed to a vertical plane extending through the slot.

In testimony of which invention I hereunto set my hand.

RUDOLPH M. HUNTER.

Witnesses:

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E. M. BRECKINREED.