

No. 726,225.

PATENTED APR. 21, 1903.

H. KLEIN.

MECHANISM FOR CUTTING, CRUSHING, AND DISLODGING ICE OR SLEET  
ON THE THIRD RAILS OF ELECTRIC RAILROADS.

APPLICATION FILED FEB. 17, 1903.

NO MODEL.

FIG.1.

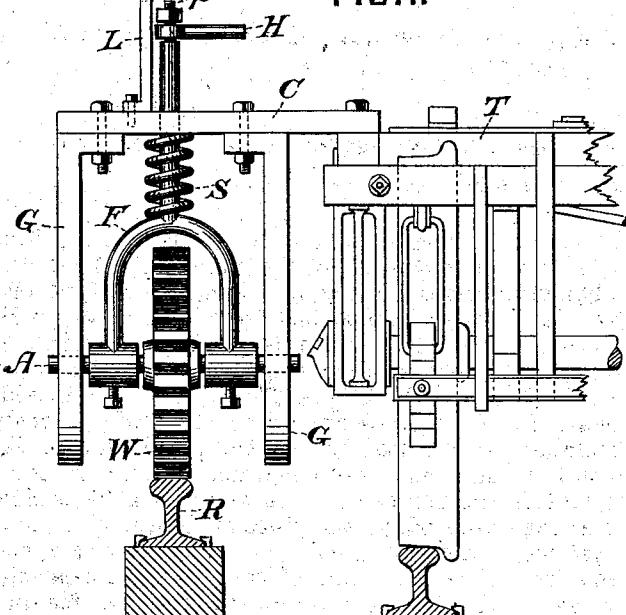


FIG.2.

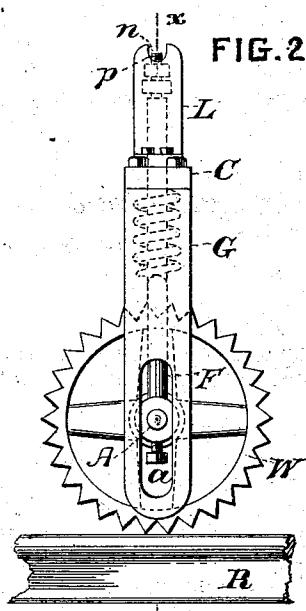


FIG.3.

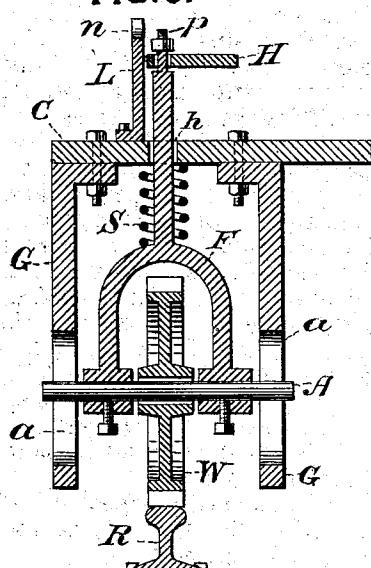


FIG.4.

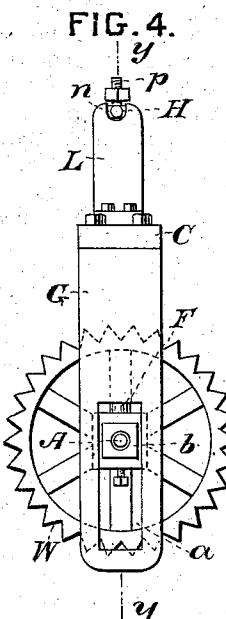
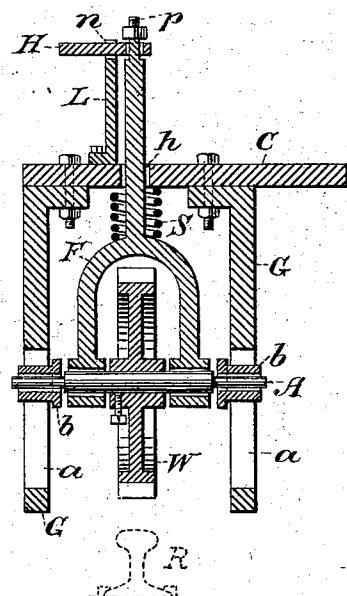


FIG.5.



WITNESSES:

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MECHANISM FOR CUTTING, CRUSHING, AND DISLODGING ICE OR SLEET ON THE THIRD RAIL OF ELECTRIC RAILROADS.

SPECIFICATION forming part of Letters Patent No. 726,225, dated April 21, 1903.

Application filed February 17, 1903. Serial No. 143,786. (No model.)

To all whom it may concern:

Be it known that I, HENRY KLEIN, a citizen of the United States, residing at Hoboken, in the county of Hudson and State of New Jersey, have invented a new and useful Mechanism for Cutting, Crushing, and Dislodging Ice or Sleet on the Third Rails of Electric Railroads, of which the following is a specification.

My invention relates to electric-railroad systems in which the operating-current is transmitted from the dynamo to the motor by a rail-conductor commonly known as the "third rail." The third rail in such systems of traction, while conforming to the requirements of the service under ordinary conditions, is when coated with ice or sleet precluded from contact with the shoe communicating with the motor, and as the cleaning-brush cannot remove the impediment the motor deprived of power is rendered inoperative. Traffic on the road is then interrupted or suspended until contact is restored by the presentation of a clean rail to the shoe. This is accomplished satisfactorily by my invention, which, having for its object the restoration and maintenance of contact between the rail and the shoe, consists of a mechanism that cuts, crushes, and dislodges the ice or sleet formed on and adhering to the contact-surface of the rail, and thus in facilitating its removal by the brush produces a clean rail, affording the desired contact with the shoe. I attain this object by the devices illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of my ice-cutting mechanism attached in position for operation to a partly-shown car-truck. Fig. 2 is a side or end elevation of the cutter detached from the truck, but resting in working position on the rail; and Fig. 3, a section of same in the plane  $x-x$ , Fig. 2. Fig. 4 is a side or end view of a modification of my invention; and Fig. 5, a central vertical section of same in the plane  $y-y$ , Fig. 4.

Similar letters refer to similar parts throughout the several views.

The frame of the mechanism, consisting of a cross-piece C and guides G, is attached by bolts and nuts or other appropriate means to the car-truck T; but when desired it can be

connected in suitable manner to the bottom or to the side of the body of the car. In the guides G are slots a, adapted, with provision for rectilinear motion, to receive the ends or journals of an axle or shaft A, upon which rotates or revolves the loose-toothed cutting-wheel W. Slots a, however, can be discarded, if preferred, and a reconstructed axle or shaft substituted having ends provided with clasps 55 so formed as to embrace and move freely on the guides G. The axle or shaft A is rigidly secured in the tines or prongs of a fork F, which, actuated by the spiral spring S, encircling the shank of said fork and bearing on 60 the crown of same and the under surface of the cross-piece C of the frame, directs and adjusts the cutting-wheel W in the frame and forces it into violent contact with the rail R. The shank of fork F, passing through a hole h in 65 the cross-piece C, has swiveled at its end on the threaded pin p, with engaged nut, a handle-bar H for lifting the cutting-wheel W from the rail R. When the handle-bar H in lifting the cutting-wheel W is turned or swung 70 around on its pin p at the proper elevation, it drops into the notch n of the standard L, fastened to the cross-piece C of the frame, as in Figs. 4 and 5, where it rests and supports the said cutting-wheel in the raised position. 75

In the modification of my invention shown in Figs. 4 and 5 the axle or shaft A, with the cutting-wheel W rigidly secured to it, rotates or revolves in the tines or prongs of the fork F, which serve as bearings for the 80 purpose, and also by its journals in bearings b, that slide in the slots a.

In operation the cutting-wheel W of my mechanism, under direction of the fork F and pressure of the spring S, bears forcibly 85 upon the rail R and adjusts itself to all elevations and depressions of same. As the said cutting-wheel W proceeds when given motion by the car equipped with the mechanism it rotates or revolves on the axle or shaft A and by the direction of the fork F and pressure of the spring S, exerted through the medium of the frame of the mechanism, cuts, crushes, and dislodges the ice or sleet on the said rail R, which when removed by 90 the brush produces a clean rail, affording contact with the shoe communicating with 95 100

the motor. When conditions are such that the services of the mechanism are not required, the cutting-wheel W is withdrawn from the rail R by the handle-bar H, which 5 when swung around on the pin p rests in the notch n of the standard L, connected to the frame, and there supports the said cutting-wheel W above the rail R.

What I claim as my invention, and desire 10 to secure by Letters Patent, is—

1. The combination, in an ice-cutting mechanism for the third rail of electric railroads, of the frame, consisting of a cross-piece C and guides G, and of spring S bearing on the said 15 cross-piece, with a toothed cutting-wheel W, axle or shaft A and fork F, all substantially as herein shown and described.

2. The combination, in an ice-cutting mechanism for the third rail of electric railroads, of a fork F, having on the end of its shank 20 a threaded pin p engaged by a nut, and the perforated handle-bar H swiveled on said pin, with the standard L attached to the frame, having at its top a notch n adapted to the said handle-bar, all substantially as 25 herein shown and described, for the purpose set forth.

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

HENRY KLEIN.

Witnesses:

JOHN M. SPEER,  
HANS C. JENSEN.