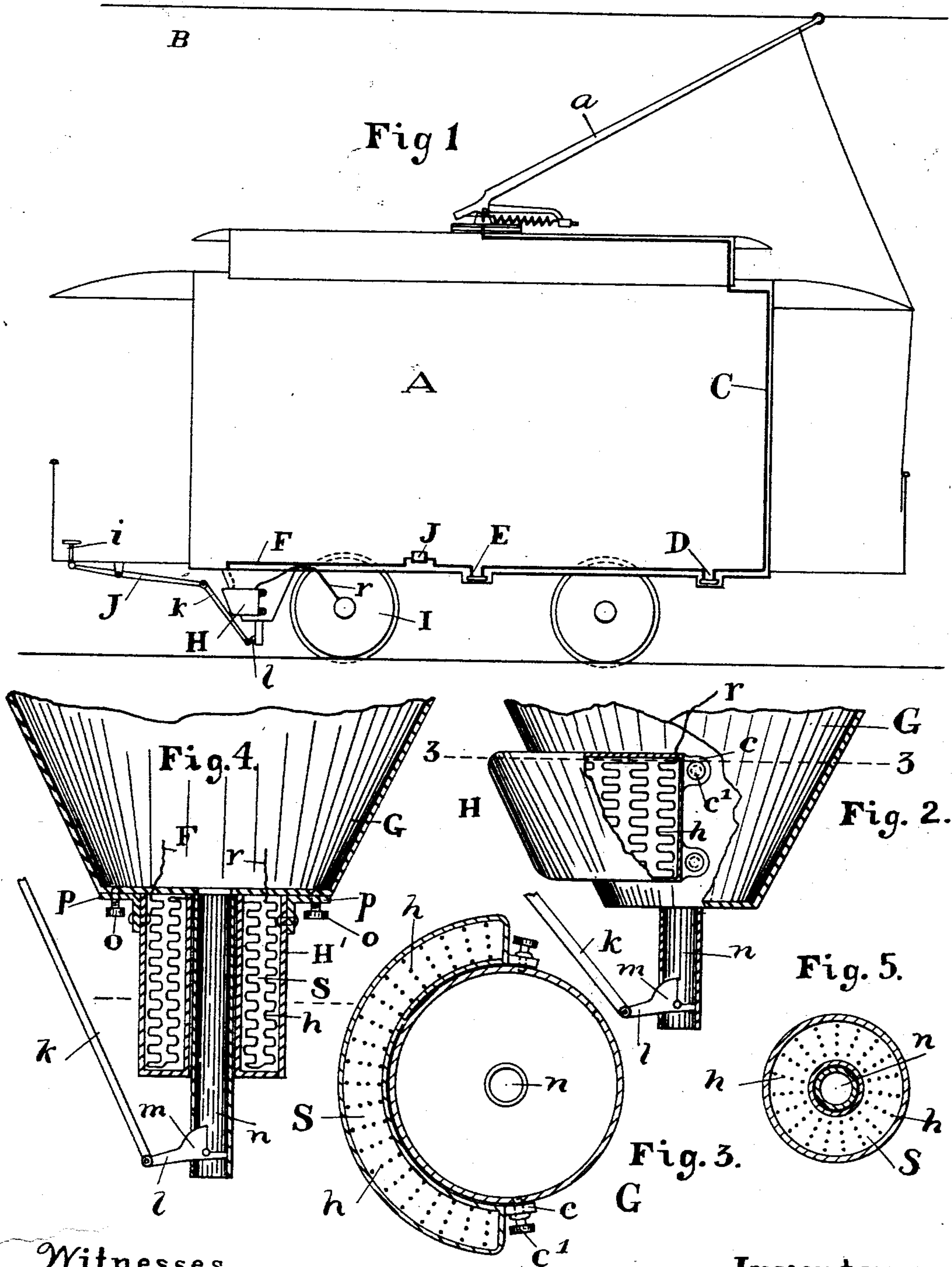


(No Model.)

J. M. CHRISTOPHER.
ELECTRIC HEATER FOR CAR SAND BOXES.

No. 520,253.

Patented May 22, 1894.



Witnesses

Charles B. Mann Jr.

Alvan Macauley.

Inventor

J. M. Christopher

By

Chas. B. Mann
Attorney

UNITED STATES PATENT OFFICE.

JOHN M. CHRISTOPHER, OF BALTIMORE, MARYLAND.

ELECTRIC HEATER FOR CAR SAND-BOXES.

SPECIFICATION forming part of Letters Patent No. 520,253, dated May 22, 1894.

Application filed June 13, 1893. Serial No. 477,434. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. CHRISTOPHER, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Heaters for Sand-Boxes of Electric Cars, of which the following is a specification.

My invention relates to an improvement in electric heaters for sand-boxes of cars, and is particularly applicable to electric street-cars, since the current to operate the heater may be had by simply tapping the motor-circuit at some convenient point, or if the car be of the storage battery system, the current may be obtained directly from the battery.

The object of my invention is to provide a heater that may be readily attached to a sand-box and as readily removed therefrom, as the use of the heater is not required at all times. In the drawings, Figure 1, is a diagrammatic or outline elevation showing a vertical, longitudinal section of an electric car of the "trolley" system with the improved heater applied to the sand-distributing box thereof; a valve; and means for operating the valve to release the sand from the box. Fig. 2, is a detail view of the sand-box and showing the heater as applied thereto, a portion of the box or casing of the heater being broken away to expose the resistance wires. Fig. 3, is a top view of a horizontal section on the line 3—3, of Fig. 2. Fig. 4, is a vertical section of a modification of the heater as applied to the spout or nozzle of the sand box. Fig. 5, is a section on the line 5—5 of Fig. 4.

Referring to the drawings the letter, A, indicates the car, having the trolley, a.

B, indicates the main line wire with which the trolley contacts. A conductor, C, leads as usual from the trolley, through the fuse-box, D, to the motor on the car-truck.

In the present instance the current which is passed through the heater, H, is obtained by tapping the motor circuit at the cut-out, E. From said cut-out the conductor F, conveys the current to the heater on or surrounding the sand box, G.

In Figs. 1, 2 and 3, I have shown the heater in the form of the inverted sector of the frustum of a hollow cone, being semi-circular in cross-section to fit partly around the outside of the sand-box, G, having ears, c, and set-

screws, c', passing through the ears into the casing of the sand-box, for removably securing the heater thereto. In Figs. 4 and 5 I have shown the heater in the form of the frustum of a hollow cone, but this form like that of the other figures is secured to the exterior and incloses or partly incloses the sand-box. It is obvious that the heater, which is designed to keep the sand dry so it will flow freely and also to prevent its freezing in cold weather, would not be necessary at all times, hence it is made detachable as above described. The resistance wires, h, in the heater become heated by the passage of the electric current through them and impart their heat to a packing, S, of asbestos or other non-combustible material which surrounds said wires inside the casing of the heater, and which in turn imparts the heat to the box and the sand in the box. A vertical depressible foot-rod, i, is shown passing through the platform of the car; it connects with one end of a lever, J, centrally pivoted to a lug on the under side of the said platform; the other end of the said lever is pivoted to a link, k, which in turn is jointed to the operating lever, l, of the valve, m, in the nozzle, n, of the sand-box, for regulating the flow of sand therefrom.

Figs. 4 and 5 illustrate a modified form of the heater; in this instance it comprises a hollow cylindrical casing, H', within which the resistance wires are looped back and forth in the usual way. In this modified form the cylindric casing is slipped over the outlet pipe, h', and is secured to the sand box in any suitable way, as by means of set-screws, o, passed through the brackets, p, secured to the casing of the heater. From the sand box the circuit is grounded by the wire, r, passing to the car-wheel, I, or in any other preferred manner. A cut-out, J, is employed to control the flow of current through the heater. I have thus combined a sand-box, a heater device adapted to dry the damp sand in the same, and circuit wires to supply the electricity to the heater.

Having thus described my invention, I claim—

1. The combination with the electrically-propelled car provided with a sand-distributing box, of an electric heater applied to the exterior of and inclosing or partly inclosing

the sand-box; and wires connecting the heater with the motor-circuit of the car, as described.

2. The combination with the electrically-propelled car provided with a sand-distributing box, of an electric heater applied to the exterior of the said sand-box, and comprising a casing inclosing or partly inclosing the sand-box; resistance wires within the said casing; and conductor-wires connecting the resistance wires with the motor circuit of the car, as described.

3. The combination with the electrically-propelled car provided with a sand-distributing box, of a heater-casing which surrounds

or partly surrounds the said sand-box; means for attaching said heater-casing to the sand-box and readily removing the same; resistance wires within the said heater-casing; and an electrical connection between the resistance wires and the car-motor circuit, as set forth.

In testimony whereof I affix my signature in the presence of two witnesses.

JOHN M. CHRISTOPHER.

Witnesses:

CHARLES B. MANN, Jr.,
ALVAN MACAULEY.