C. S. HAWLEY.

ELECTRIC HEATER.

APPLICATION FILED JAN. 23, 1911.

992,715.

Patented May 16, 1911.

Fig. 4

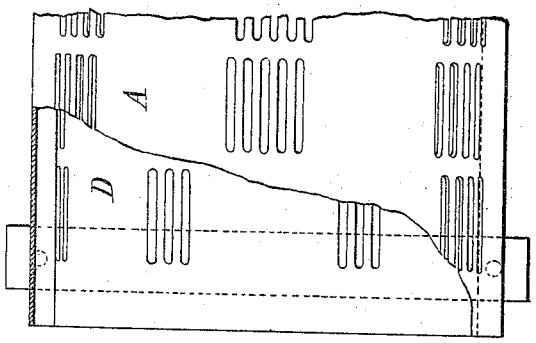


Fig. 3

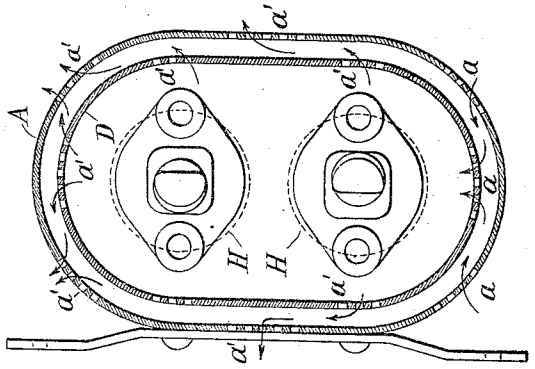


Fig. 2

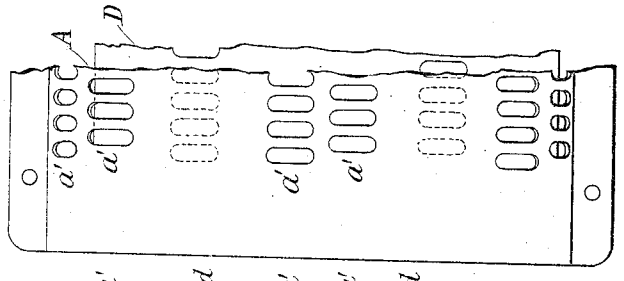
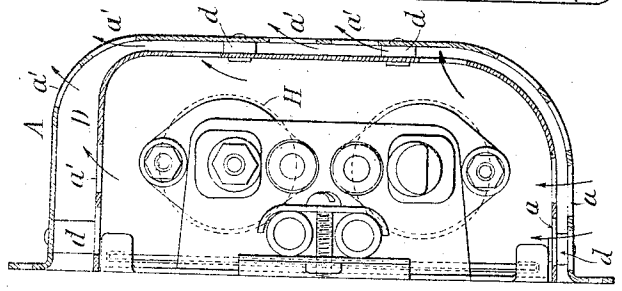


Fig. 1



WITNESSES:

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UNITED STATES PATENT OFFICE.

CORNELL S. HAWLEY, OF ALBANY, NEW YORK, ASSIGNOR TO CONSOLIDATED CAR HEATING COMPANY, A CORPORATION OF WEST VIRGINIA.

ELECTRIC HEATER.

992,715. Specification of Letters Patent. Patented May 16, 1911.

Application filed January 23, 1911. Serial No. 604,246.

To all whom it may concern:

Be it known that I, CORNELL S. HAWLEY, a citizen of the United States, residing at Albany, county of Albany, State of New York, have invented certain new and useful Improvements in Electric Heaters, the following being a full, clear, and exact disclosure of the one form of my invention which I at present deem preferable.

For a detailed description of the present form of my invention, reference may be had to the following specification and the accompanying drawings forming a part thereof, in which—

Figures 1 and 2 are respectively a section and a partial front elevation of one form of my invention, and Figs. 3 and 4 are respectively a section and a partial front elevation of a modified form thereof.

My invention relates to electric heaters and particularly to such heaters for railway cars wherein the heaters are exposed to contact with the clothing of passengers and hat pins, umbrella rods and other metallic articles are likely to be thrust through the heat openings in the casing which surrounds the heater coils.

My invention relates to a device for preventing contact with the heater coils of such articles as might be thrust or dropped through the heat openings in the casing and consists in brief of a double-wall casing with an air space between the two walls and emission openings in both walls but those in one wall so located as to come opposite an unperforated portion of the other wall. By this means an ample outlet flow of the heated air is permitted while no article that may be dropped or thrust through the openings in the outer casing will come in contact with the heater coils to short circuit the heater or cause injury to passengers.

Referring to the drawings, H represents an electric heater resistance of any description having its heating conductor exposed. This heater is mounted in a casing having an outer wall A and a parallel inner wall D. These two walls are spaced apart by blocks *d*, *d* a sufficient distance to provide for a flow of air in accordance with the plan of emission openings which may be adopted. Both walls are provided with admission openings *a*, *a* which are preferably in line with each other, as shown in Fig. 1, but which, if necessary, may be offset as in Fig. 3. Both walls are also provided with emission openings *a'*, *a'*, etc., which are on a higher level than openings *a*, *a* and those in one wall are offset with respect to those in the other. In arranging these an opening in the inner wall will have a corresponding higher opening in the outer wall, care being taken, first, that the openings in the inner wall are of adequate size to carry out all the heated air that is to be emitted and second that the space between the walls shall be adequate to carry the air received from each opening in the inner wall to some opening in the outer wall with the desired degree of freedom. By this means the hot air may be distributed from the outer surface as may be desired without causing undue resistance to its flow. In Figs. 1 and 2 the air is delivered from one side and the top of the casing while in Figs. 3 and 4 it is delivered from both sides as well as the top.

What I claim as new and desire to secure by Letters Patent is:

1. An electric heater comprising a heating resistance, and two inclosing walls separated from each other and from the heating resistance by air spaces and perforated at intervals by emission openings, the perforations in one wall being opposite an unperforated portion of the other wall, both of said walls being also provided with air admission openings.

2. An electric heater comprising a heating resistance and two casing walls on the heat-emission side or sides separated by air spaces from each other and from the heating resistance, and perforated by emission openings at different levels, the openings in one wall being opposite an unperforated portion of the other wall.

3. An electric heater comprising a heating resistance, a casing therefor having an outer wall perforated at intervals by emission

openings and an internal wall separated by an air space from the outer one and having an unperforated portion opposite each perforation in said outer wall, both of said walls being also provided with air admission openings.

In witness whereof I have hereunto set my hand, before two subscribing witnesses, this 20th day of January, 1911.

CORNELL S. HAWLEY.

Witnesses:
ROBERT MCCOCHRANE,
CLARENCE PALMER.