(No Model.) 4 Sheets—Sheet 1.

C. E. STRUCK.

CAR HEATER.

No. 383,417. Patented May 22, 1888.

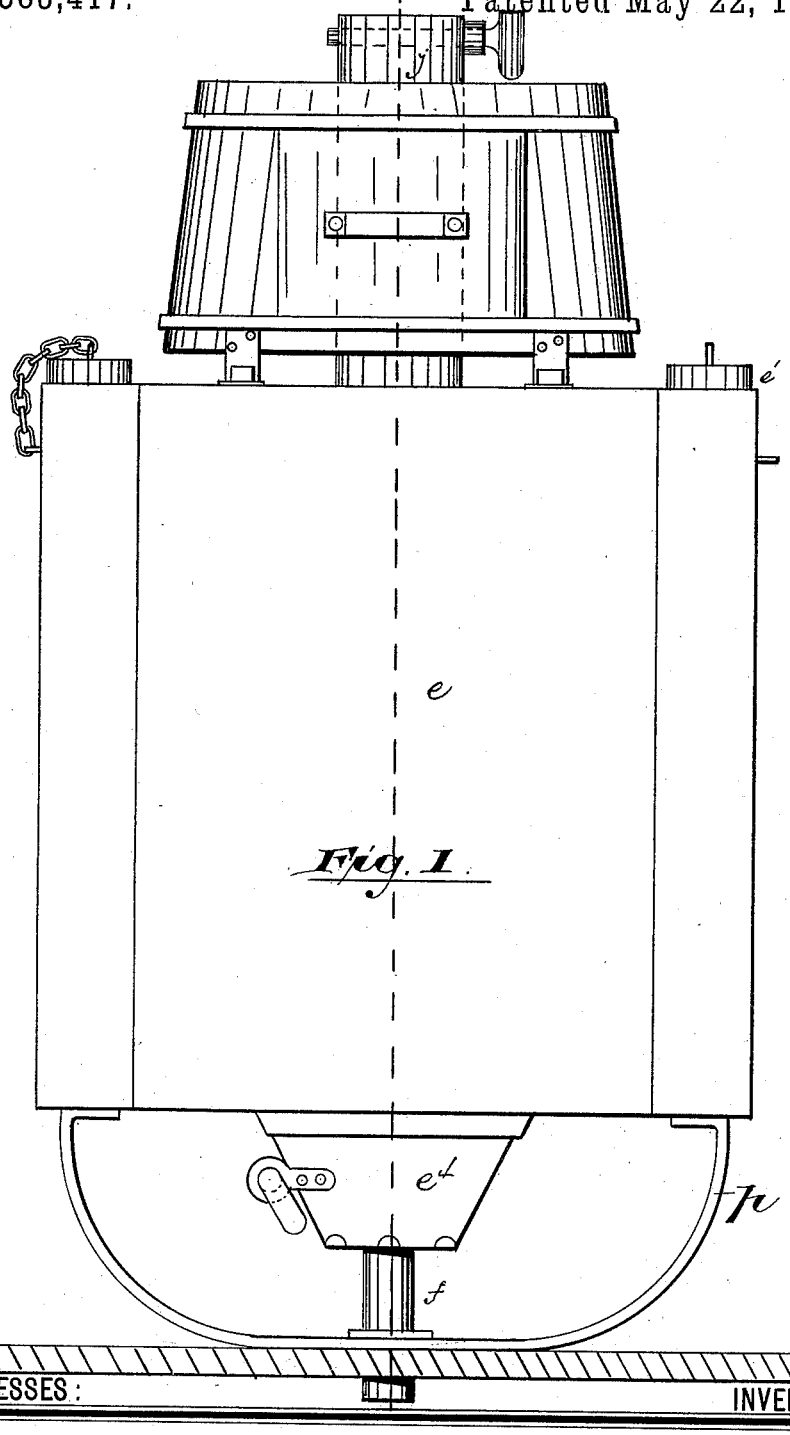

Fig. 1.

WITNESSES: INVENTOR:

Oscar A. Michel.
Horace & Reeve

Charles E. Struck,

BY Drake & G., ATT'YS.

(No Model.) 4 Sheets—Sheet 2.

C. E. STRUCK.

CAR HEATER.

No. 383,417. Patented May 22, 1888.

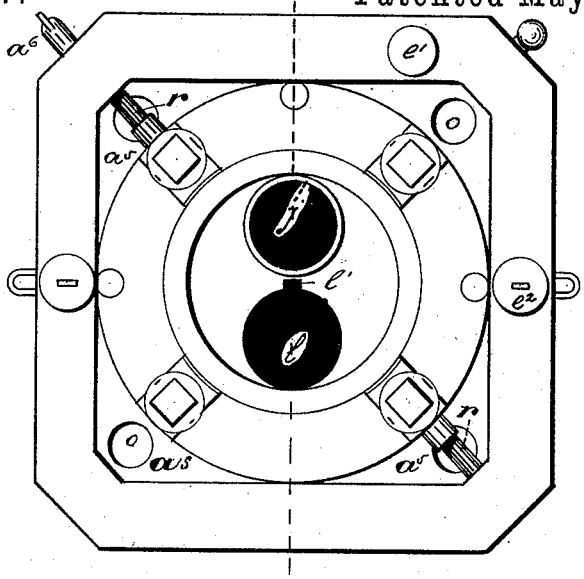

Fig. 2.

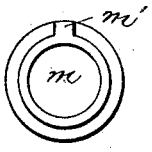

Fig. 7.

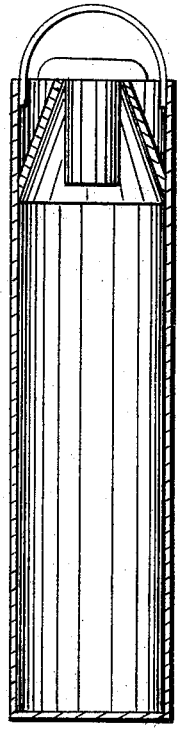

Fig. 4.

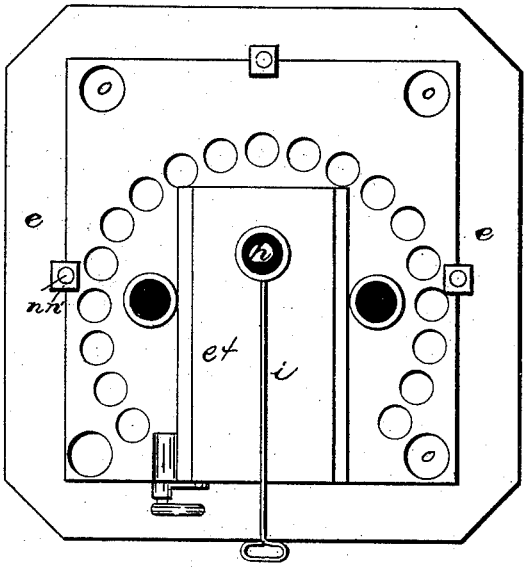

Fig. 3.

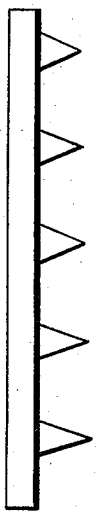

Fig. 5

WITNESSES: INVENTOR:—

Oscar A. Michel.
Horace E. Reeve

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(No Model.) 4 Sheets—Sheet 3.

C. E. STRUCK.

CAR HEATER.

No. 383,417. Patented May 22, 1888.

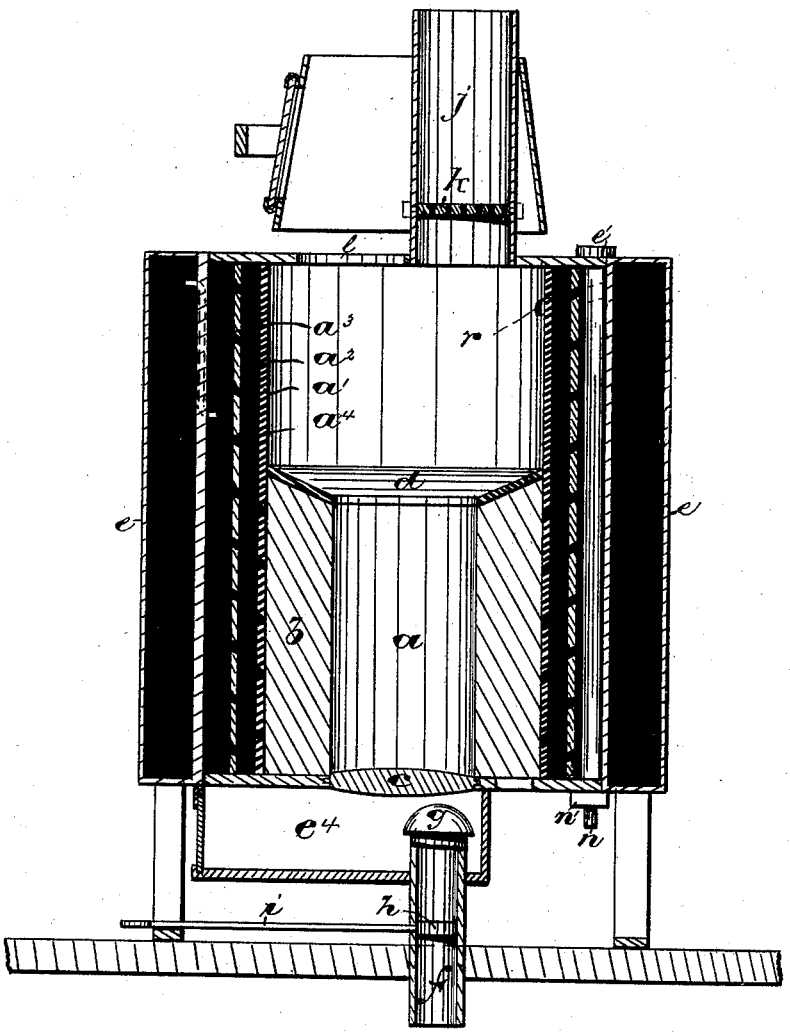

Fig. 6.

WITNESSES: INVENTOR:-

Oscar A. Michel.
Horace E Reve

Charles E. Struck,

BY Drace & G. ATT'YS.

(No Model.) 4 Sheets—Sheet 4.

C. E. STRUCK.

CAR HEATER.

No. 383,417. Patented May 22, 1888.

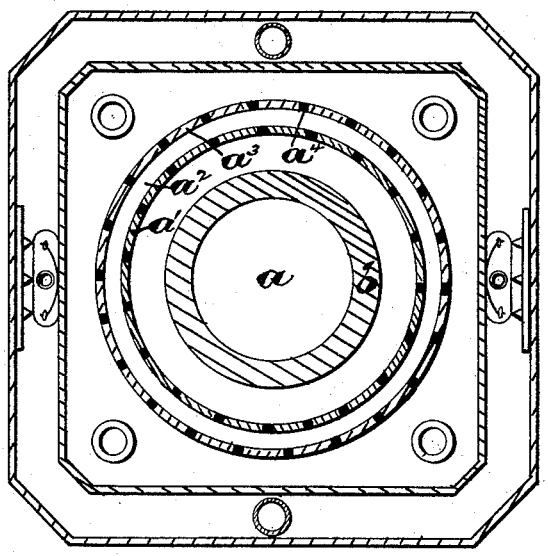

Fig. 8.

WITNESSES: INVENTOR

Oscar A. Michel.
Philip G. Dodgeton.

Charles E. Struck,

BY Drake & Co ATT'YS.

UNITED STATES PATENT OFFICE.

CHARLES E. STRUCK, OF NEWARK, NEW JERSEY, ASSIGNOR OF ONE-HALF TO JOHN A. BALDWIN, OF SAME PLACE.

CAR-HEATER.

SPECIFICATION forming part of Letters Patent No. 383,417, dated May 22, 1888.

Application filed April 16, 1887. Serial No. 235,000. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. STRUCK, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Car-Heaters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to reduce the danger of a conflagration in the event of a collision of one train of cars with another train or with any other obstacle, whereby it is overturned and thrown from the track.

Further specific objects are to more perfectly provide against the escape of live coals from the heater in case of accident and to avoid the use of steam in the heating process; to provide convenient means whereby the ashes may be removed from the heater and fuel inserted therein, such means being securely fastened through openings, so as not to become detached from the heater in case of collision, and, generally, to provide a more convenient, inexpensive, durable, and efficient heating device for railway-cars.

The invention consists in the arrangement and combination of parts, such as will be hereinafter set forth, and finally embodied in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several figures, Figure 1, Sheet 1, is a front elevation of a heater embodying my improvements. Fig. 2, Sheet 2, is a plan, and Fig. 3 is a bottom view, of the same. Figs. 4 and 5 are details of certain parts of the device. Fig. 6, Sheet 3, is a central vertical section of the device, and Fig. 7 is a detail bottom plan of a certain lid or cover fitting an aperture in the top of the fire-box. Fig. 8, Sheet 4, is a horizontal section taken through the heater at a point below the flange which protects the fire-brick of the fire box or chamber.

In said drawings, *a* indicates a fire-box suitably lined with fire-bricks *b*. *c* is a suitable grate at the bottom of said box. *d* is a conical flange having a central opening to the fire-chamber of the box and protecting the upper edges of the bricks, so that the water, when thrown into the fire-chamber, as hereinafter described, will not be absorbed by the brick. Surrounding the fire-box case a' is a heat-chamber, a^2, formed by an outer steel casting, a^3, provided with perforations a^4, adapted to allow the escape of heat to the car through top openings, a^5, Fig. 2. Said casing serves to protect the fire-box, so that it may not be broken. Surrounding the fire-box is a water-tank, *e*, which is provided with passages *r* at the top, preferably at opposite corners of the device, connecting said tank with the fire-box. Said tank is also provided with suitable openings at the top, as at e', through which the water is supplied to the tank. An exit-valve, a^6, is also provided for drawing the water from the tank. Openings e^2 are also provided at the top and on two opposite sides of the tank, and allow the insertion of receptacles for fire-extinguishing compounds, such as shown in Fig. 4. These receptacles rest upon the bottom of the tank and have their tops open, so that in case of collision water would be thrown from the tank into the receptacle and mingle with the extinguishing material therein contained, thus producing gas, as in the ordinary manner of the mixture of the compounds of ordinary fire-extinguishers.

In the two alternate sides of the water-tank are placed other receptacles for fire-extinguishing compounds, such as shown in Fig. 8, constructed of glass or other fragile material. These receptacles are hung or suspended in the tank by means of a bail on the top of the receptacle, resting in a hook on the side of the tank. In the tank and opposite these receptacles are placed perforating devices, as shown in Figs. 5 and 8. In case of a collision these receptacles would come in contact with the perforating device and be broken, thus allowing the extinguishing material to co-operate with the water in said tank in extinguishing the fire.

Below the fire-box is an ash-chamber, e^4, also of wrought-iron or steel, which communicates with the outer atmosphere by means of a tube, *f*, provided with a cap, *g*, the latter

adapted to prevent the ashes from escaping through the tube to the track, and thus setting fire to the ties. The cap is held a little away from the end of the tube and allows for a draft-space between. Said tube is also provided with a damper, *h*, operated by a handle, *i*, to open and close the draft-opening to the fire-box. At the upper end of the fire-box is a pipe, *j*, adapted to allow the escape of smoke or other products of combustion from the heater. Said pipe is provided with a perforated diaphragm or screen, *k*, adapted to prevent the coals from passing into the car or into contact with the wood-work thereof should the pipe become disconnected in the collision. The partition of the fire-box is provided with an opening, *l*, to allow the insertion of fuel to the fire-box. Said opening *l* is closed by a cover, *m*, provided with a teat, *m'*, adapted to pass through the notch *l'* of the opening, the cover being held upon the heater to close said opening by said teat, and being adapted to be disengaged from the heater when the teat coincides with the notch.

The top and bottom plates of the heater are firmly held together in fixed relation to the said case by suitable bolts, *n*, and nuts *n'*. The bottom plate is also provided with openings *o*, to allow the passage of air into the chamber between the fire-box and the tank. Within the tank are inserted the extinguishing-compound receptacles, which are made of any fragile material adapted to break readily in case of accident, and also with a perforating device. (Shown in Figs. 5 and 8.)

The heater is preferably arranged on a pair of rockers, substantially such as are illustrated in Figs. 1 and 6, adapted to guide the heater as it is thrown from its vertical position by the concussion of the cars, so that the water will pass certainly and copiously into the fire-box, the rockers allowing to the body of the heater a positive movement, so that it is readily thrown over and the level of the water brought to or above the water-passages *r*, leading from the tank *e* to the fire-box. Said passages *r* are disposed at several points around the fire-box, as shown in Fig. 2, so that should the heater fall either forward or backward or rock laterally in either direction the water will be certain to flow into the fire-box. The fire-box being provided with burning coals and the tank with water, as described, should an accident occur to the train, so that the heater is thrown from its normal position, as it falls from its vertical position the water in the tank passes through one of the passages *r*, flowing upon the burning coals and extinguishing the same automatically. Should the receptacles provided with the extinguishing compounds be broken, the process of extinguishing will be greatly facilitated, as will be evident.

I am aware that heaters have been provided in which a water-tank has a communication with fire-boxes to supply the latter with water in case of an accident, and I do not claim the same, broadly. In my improvement the tank surrounds the fire-box, so that the body of water lies at one side of the box, and but a slight inclination of the heater causes the water to pass into the fire-box. Furthermore, the fire-box of my improvement is separated from the water-tank by an air-chamber, and the water is thus prevented from heating unduly, and should a person be thrown against the heater in an accidental collision such person would not be burned.

Having thus described the invention, what I claim as new is—

1. A heater combining a fire-box, *a*, lined with fire-brick, flange *d*, to protect said brick from water, air-chambers a^2, and water-tank *e*, having communication with said fire-box, substantially as set forth.

2. A heater combining a fire-box, water-tank, passages *r*, openings *e'*, and heat-chamber a^2, provided with walls perforated, as at a^4, substantially as and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 12th day of April, 1887.

CHARLES E. STRUCK.

Witnesses:
CHARLES H. PELL,
OSCAR A. MICHEL.