(No Model.)

W. P. BENDING.

DOMESTIC OR RAILWAY CAR HEATER.

No. 398,573. Patented Feb. 26, 1889.

Fig. 1.

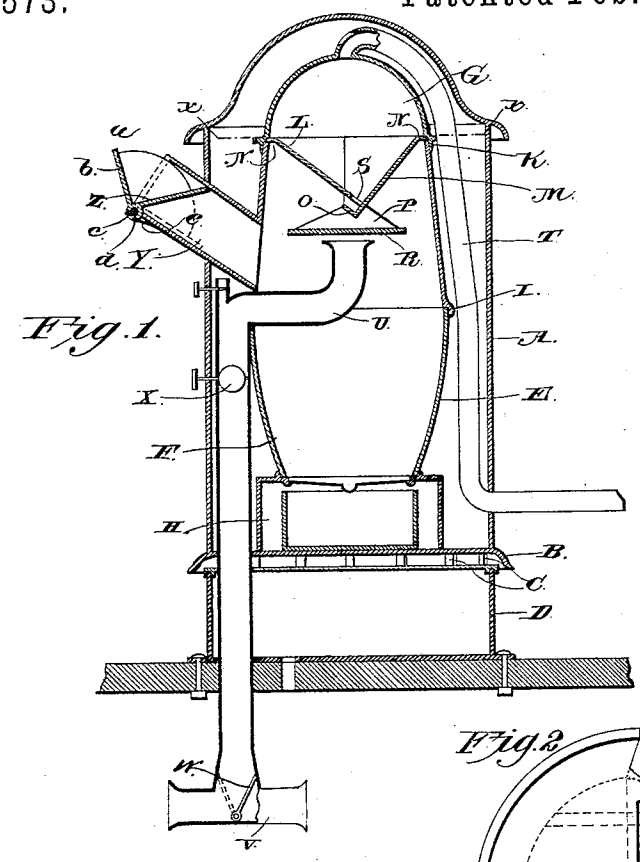


Fig. 2.

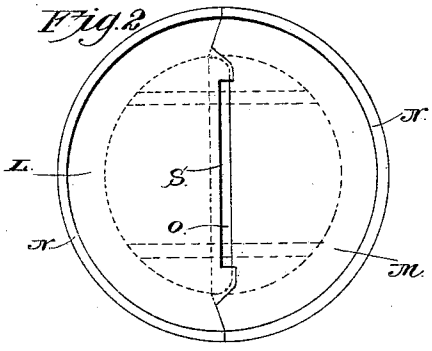


Fig. 3.

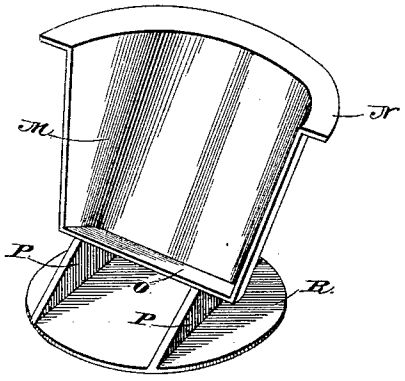
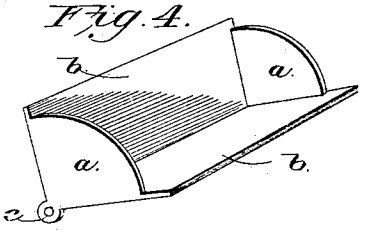


Fig. 4.



Witnesses.
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UNITED STATES PATENT OFFICE.

WILLIAM P. BENDING, OF COLUMBUS, OHIO, ASSIGNOR OF NINE-SIXTEENTHS TO VAN S. SELTZER, A. B. ROBINSON, AND WM. H. SLADE, ALL OF SAME PLACE.

DOMESTIC OR RAILWAY-CAR HEATER.

SPECIFICATION forming part of Letters Patent No. 398,573, dated February 26, 1889.

Application filed April 14, 1888. Serial No. 270,655. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. BENDING, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a new and useful Improvement in Domestic and Railway-Car Heaters, of which the following is a specification.

My invention relates to an improvement in car-heaters; and it consists in the peculiar construction and combination of devices that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical sectional view of a car-heater embodying my improvements. Fig. 2 is a horizontal sectional view of the same, taken on the line *x x* of Fig. 1. Fig. 3 is a detail perspective view of one of the deflecting-plates and the deflector. Fig. 4 is a detailed perspective view of the feed-door.

A represents the outer shell of the heater, the bottom plate of which is provided with a depending annular flange, B, and has a series of depending spurs, C.

D represents a tank, which is arranged on the floor of the car, and on which the outer shell, A, is supported, the depending studs C of the bottom plates of the shell serving to support the latter at a slight distance above the tank D, and thereby forming an air-space between the tank and the outer shell, and consequently preventing the contents of the tank from being overheated. The purpose of this tank is to contain extinguishing-fluid. The appliances and connections for this reservoir are not seen.

E represents the inner shell or heater proper, the same being arranged concentrically in the outer shell, and having the fire box or pot F, the dome G, and the ash-pit H. The fire-pot is made of two sections secured together by a lapped joint, I, and the dome is provided at its lower edge with a depending offset flange, K, which forms a lap-joint with the upper portion of the inner shell.

L M represent a pair of deflecting-plates, which are inclined at suitable angles and in opposite directions, and are each semicircular in form at their upper edges, and provided with outwardly-extending circular flanges N, which engage the upper edge of the inner shell and bear between the same and the lower edge of the dome G. The lower edge of the deflecting-plate M is bent at right angles to form an inclined ledge, O, and depending from the said ledge and from the rear lower side of the deflecting-plate M is a pair of vertical plates or ribs, P, at the lower edges of which is a horizontal circular deflecting-disk, R. The said disk, vertical plates, plate M, and ledge O are formed integral of a single piece of cast metal. The lower edge of the plate L extends over the ledge O at a slight distance above the same and is provided with a recess, S.

T represents an escape-pipe for the smoke and products of combustion, which communicates with and extends from the top of the dome G, is then bent downward and arranged in the space between the outer shell, A, and the inner shell or heater, E, passes through one side of the outer shell, A, and from thence extends longitudinally under the bottom of the car, (not shown,) and then passes upward through the roof of the car and is provided with a suitable eduction-hood.

U represents an induction-pipe, which has its upper end arranged in the stove E at a suitable distance below the center of the deflecting-disk R. Said eduction-pipe passes through one side of the inner shell, E, down between said shell and the outer shell, A, through the bottom of the car, and is provided at its lower end with a double-ended eduction-hood, V, which is provided with an automatically-operated valve, W. The said induction-pipe is further provided with a draft-regulator or damper, X.

Y represents a feed-chute, which extends from one side of the inner shell, at a suitable height above the fire-pot, upward and outward through the shell A. In the outer open end of the said chute is arranged a feed-trough, Z, having the quarter circular end plates, *a*, and the right-angled sides *b*. From the ends of the said trough at the vertices of the plates A project ears *c*, which are pivoted on a rod or

bolt, *d*, that passes through bearings *e* on the lower side of the chute at the outer end thereof. This trough is thereby adapted to be rocked or oscillated through nearly a quarter of a circle in the mouth of the chute, and the operation thereof is as follows:

The feed-trough is in its initial or normal position when the upper edge of its inner side is in contact with the upper side of the chute, as shown in Fig. 1, thereby arranging the outer side of the said feed-trough at a distance beyond the mouth of the chute. Coal or fuel is poured into the trough, and the latter is then rocked or tilted on its pivotal bolt, so as to cause it to assume the position indicated in full lines in Fig. 1, with its inner side in contact with the lower side of the chute and its outer side snugly pressed against the mouth of the chute, the said trough thereby feeding the fuel through the chute into the fire, and also serving to effectually close the mouth of the chute at all times, so that gas from the burning fuel cannot escape into the car, and so that burning coal cannot escape from the stove through the chute in the event that the stove should be overturned in a railway accident.

The operation of my improved heater is as follows: When the car is in motion in either direction, a current of air is caused to pass upward through the induction-pipe U and to strike against the lower side of the disk R, where it is deflected and caused to pass under the said disk, around the same, and up through the space between the ledge O and the lower ledge of the plate L, and from thence up through the dome, through the eduction-pipe, through which latter the air escapes, together with the smoke and products of combustion. By this means a constant circulation of air is maintained in the heater above the fire-box, so as to promote active combustion of fuel. The disk R and the plates L M serve to deflect the heat downward and outward, as will be readily understood, so as to reduce the loss of heat to a minimum and to reflect as much heat as possible from the inner shell to the outer shell, which latter serves to heat the surrounding atmospheric air by radiation.

Having thus described my invention, I claim—

1. The inner shell and the removable dome G, the latter having the depending flange K, to fit around the upper end of the shell, in combination with the deflecting-plates L M, inclined in opposite directions and having the flanges N at their upper edges, said flanges bearing on the upper side of the shell, substantially as described.

2. The combination, with the shell or stove, of the deflecting-plates L M, suspended in the upper end thereof and inclined in opposite directions, and the horizontal deflecting-plate R, having the vertical ribs P on its upper side fast to the lower edge of the plate M, substantially as described.

3. The heater comprising the outer shell, the inner shell or stove, the eduction-pipe leading from the upper end of the latter and extending out through the outer shell, the oppositely-inclined deflecting-plates L M in the upper end of the inner shell, the horizontal deflecting-plate below plates L M, and the air-induction pipe having its upper end arranged under the horizontal deflecting-plate, substantially as described.

4. In a heater, the fire-pot, combined with the deflecting-plates L M, arranged in the upper end of the fire-pot, the lower edge of the plate M being extended below the plate L and having the ledge O, and the horizontal deflecting-disk R, suspended below the deflecting-plates at or about the ledge O, as set forth.

5. The heater provided with the oppositely-inclined plates L M, having their meeting inner ends separated by a space, and the horizontal deflecting-disk R, suspended below the meeting inner ends of the plates and secured to one of said plates, as set forth.

6. The inner shell and the removable dome G, combined with the removable deflectors L M, the latter being held in place within the shell by means of the dome, as set forth.

7. The heater having the inclined deflector-plates L M above the fire-box, the deflector-disk R, suspended below the plates, the eduction-pipe T, leading from the dome of the heater above the deflectors, and the induction-pipe U, having its upper end arranged below the deflectors, as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

WILLIAM P. BENDING.

Witnesses:
ASHLEY B. ROBINSON,
WILLIAM H. SLADE.