(No Model.) 2 Sheets—Sheet 1.

W. C. DUNN.

CAR HEATER.

No. 343,445. Patented June 8, 1886.

Fig. 1.

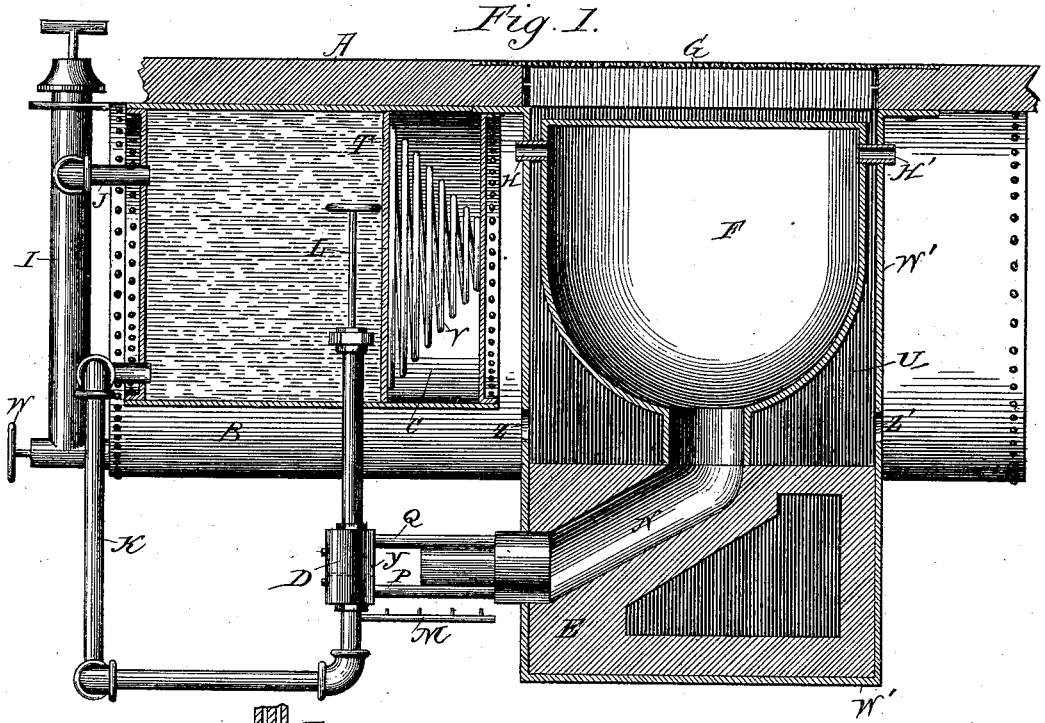
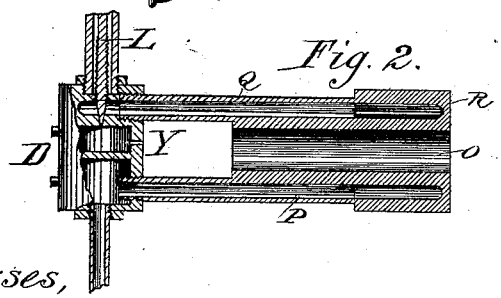


Fig. 2.



Witnesses,
L. F. Mann,
C. L. Huber.

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(No Model.) 2 Sheets—Sheet 2.

W. C. DUNN.

CAR HEATER.

No. 343,445. Patented June 8, 1886.

Fig. 3.

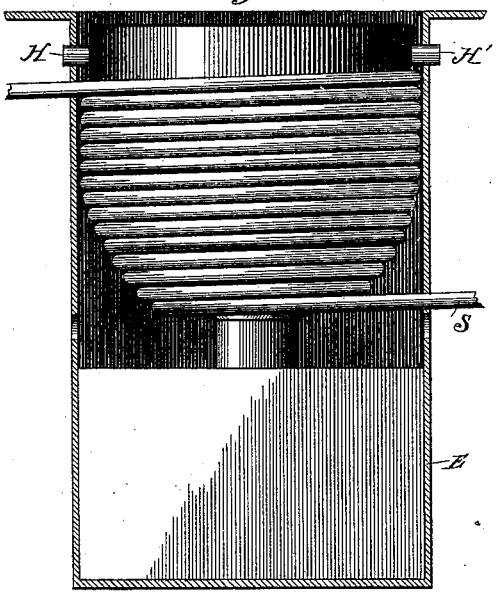
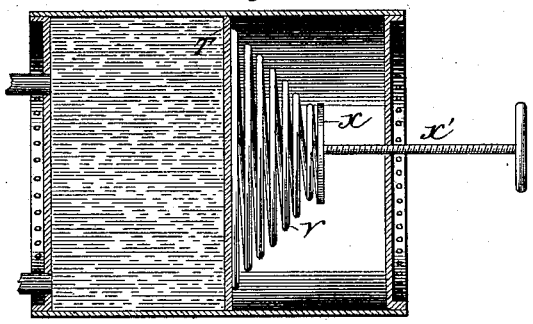


Fig 4.



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UNITED STATES PATENT OFFICE.

WARD C. DUNN, OF CHICAGO, ILLINOIS.

CAR-HEATER.

SPECIFICATION forming part of Letters Patent No. 343,445, dated June 8, 1886.

Application filed October 23, 1885. Serial No. 180,741. (No model.)

To all whom it may concern:

Be it known that I, WARD C. DUNN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Car-Heaters, of which the following is a specification.

The object of my invention is to provide a simple and compact heater of small weight, which may be placed where it will not occupy useful space, can be easily and perfectly controlled, shall give forth no offensive odor or noise, not be liable to frequently become clogged and unserviceable until overhauled, and which shall also develop the greatest possible amount of heat from the fuel used. To meet these requirements I have devised a heater of the general type known as "vaporizing oil-stoves," which has many advantages over any other heater now in use, as well as peculiar adaptations to the particular use above specified, the same being hereinafter described in detail, and pointed out in the claims.

In the drawings hereto annexed, and forming a part of this specification, Figure 1 is a vertical section of my improved heater and its supply-tanks. Fig. 2 is a detail of a part of the vaporizer. Fig. 3 is a modification showing water-pipes used as an adjunct to the heater; and Fig. 4 shows a modified interior construction of the supply-tank.

A main reservoir-tank, B, is attached to the floor of the car A, from which the fuel is forced from time to time, as required, into supply-tank C, by means of pump I, through tube J, this passage-way being closed, when desired, by valve or cock W.

To provide for forcing the oil from the supply-tank to the vaporizer, it is pumped into the former against atmospheric pressure; or, in case the oil absorbs too much of its atmospheric cushion when in actual contact with it, I interpose a snugly-fitting piston, T, between the oil and the air cushion. If desired, a coil or other spring, V, may be placed between the piston and the head of the tank to give the oil greater head than would be furnished by the resiliency of the air alone. If desired, the rear bearing of such spring may be against a plate, X, Fig. 4, carried by a screw-threaded rod, X', playing in the head of the tank, by adjustment of which the pressure on the oil may be kept substantially uniform as the tank is emptied.

From the bottom of the supply-tank a small pipe, K, extends to the cylinder D of the vaporizer, said cylinder being divided into two parts by a diaphragm, as shown by dotted lines. From the lower part of the cylinder a tube, P, leads to a flat ring-shaped space, R, just within the fire-door of the heater. A second tube, Q, leads from the upper side of this annular space R to the upper part of cylinder D. This annular space constitutes the vaporizing-chamber, and is made of the shape shown, with a passage-way for the air through it, in order that it may present a large surface to the action of the air, that overheating the fuel may be prevented and a constant and equable temperature maintained.

Between the two pipes P and Q, and within the annular space R, is a cylindrical passage-way of mixing-tube O, communicating freely with the fire-pot N of the retort. A small vent, Y, is provided in the upper part of cylinder D, through which the fuel is forced after having been vaporized during its passage through the heated annular space R. The amount of gas passing through the vent Y is regulated by the position of a valve or cock, controlled by stem L, passing through a stuffing-box to a point where it is within easy reach of the attendant in charge of the car. After passing through vent Y, the gas enters the mixing-tube O, and, together with a suitable quantity of atmospheric air, is drawn into combustion-chamber N F. This combustion-chamber, as shown, is made in two parts, the main part, F, having a downward tubular extension, N, to the lower and outer end of which the vaporizing-chamber R is applied. The products of combustion pass through tubes H H' to the outer air. The part N of the combustion-chamber is formed in a filling, E, of fire-brick, which occupies the lower part of the casing W', and the main part F is of metal, resting upon the fire-brick and occupying the larger portion of the upper part of the casing. The metal chamber F acts both as a combustion and as a radiating chamber.

To effect a preliminary heating of the oil before it reaches the vaporizing-chamber R, a tube, M, communicating with pipe K, is provided with burners and placed under pipe P.

The cylinder D, with its vent, ring R, and pipes Q and P, together form what I hereinafter designate as the "burner." The heat in the inclosed space between the combustion-chamber and casing W′, bolted to the floor of the car, as it becomes heated, rises through register G, and is replaced by fresh air entering through ports Z Z′.

In the modified form of Fig. 3 the register is dispensed with, a water-coil, S, being wound about the combustion-chamber and communicating with a heating-coil in the car, the latter being provided with a suitable air-jacket. The heat passes from the water to the air, the water passing back to the first coil to be reheated and returned.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, in an oil-burning heater having a combustion-chamber, of cylinder D, provided with a diaphragm and a jet-orifice, Y, mixing-tube O, annular chamber R, surrounding the mixing-tube and placed in the entrance to the combustion-chamber, and pipes P Q, connecting the annular chamber with the cylinder above and below the diaphragm, substantially as described.

2. The combination, with the supply-tank provided with pump I and pipes J K, of piston T, spring V, head X, and rod X′, the latter screw-threaded into the head of the tank and furnishing an adjustable support for the spring, substantially as described.

3. The combination, in an oil-heater, of cylinder D, provided with a diaphragm and a jet-orifice, Y, an annular chamber, R, surrounding a passage-way to the combustion-chamber of the heater, said annular chamber being connected by pipes with the cylinder D, both above and below its diaphragm, and valve and stem L, whereby the flow of gas from the jet-orifice Y may be regulated, substantially as described and shown.

WARD C. DUNN.

Witnesses:
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E. L. HUBER.