

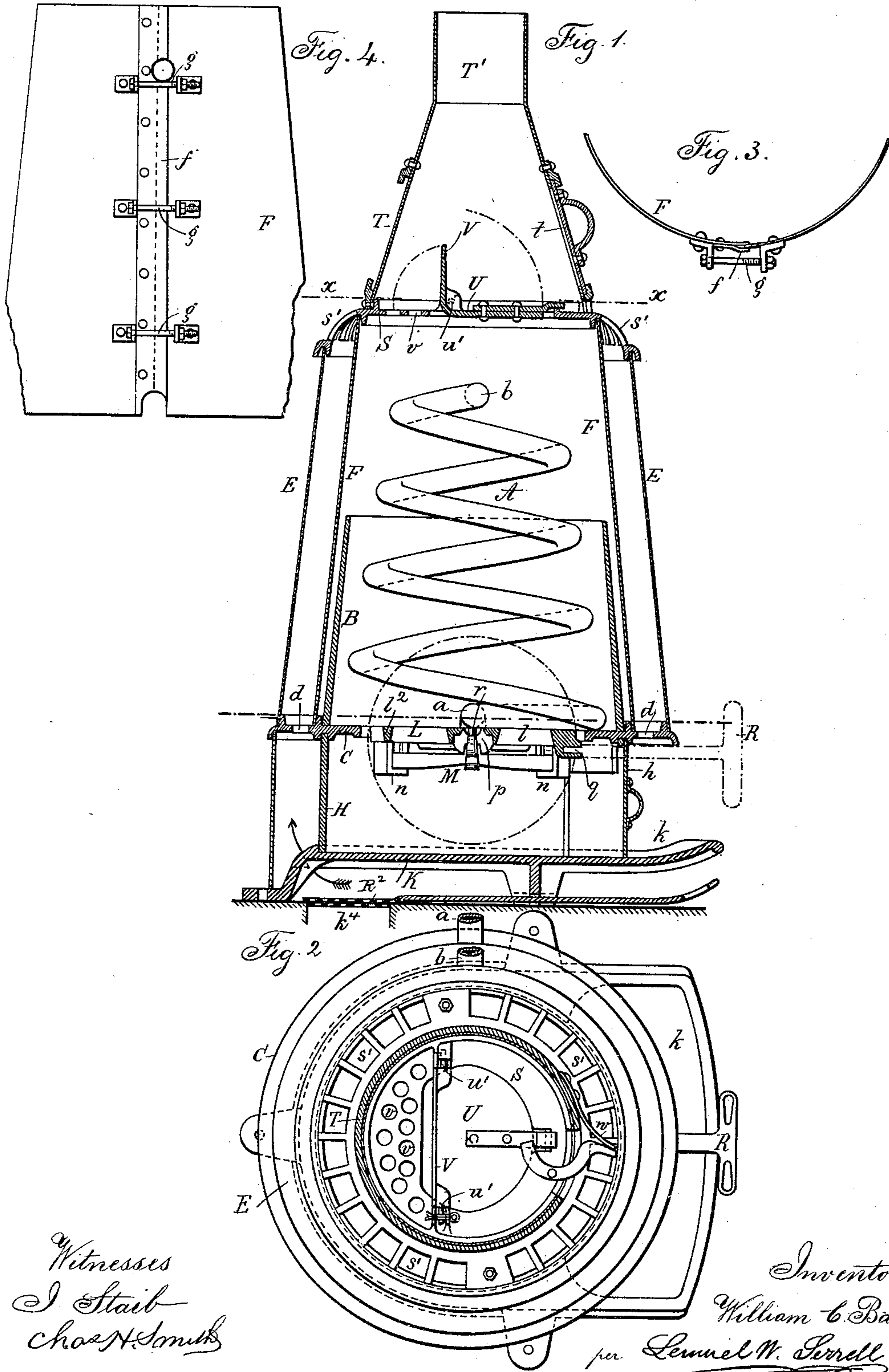
(No Model.)

W. C. BAKER.

HEATING APPARATUS FOR RAILWAY CARS.

No. 353,839.

Patented Dec. 7, 1886.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM C. BAKER, OF NEW YORK, N. Y., ASSIGNOR TO THE BAKER
HEATER COMPANY, OF SAME PLACE.

HEATING APPARATUS FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 353,839, dated December 7, 1886.

Application filed April 18, 1885. Serial No. 162,625. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. BAKER, of the city, county, and State of New York, have invented an Improvement in Heating Apparatus for Railway-Cars, of which the following is a specification.

In Letters Patent No. 75,345, granted to me, a heating apparatus is represented in which a coil of pipe is contained within a casing and connected with radiating-pipes within the car, and there is an escape-flue extending above the casing that surrounds the coil, and a safety-plate that is perforated, and serves to inclose the fuel and prevent the same falling out in case the car is upset.

My present invention relates to improvements upon this car-heater, whereby the same is rendered more reliable, economical, and efficient, and the escape of gas into the atmosphere of the case is prevented; and the said invention consists in the devices and combinations hereinafter fully set forth.

In the drawings, Figure 1 is a vertical section of the heater complete. Fig. 2 is a sectional plan below the line *xx*. Fig. 3 is a section of the case of the fire-chamber, showing the manner in which the sheet metal thereof is drawn closely together at the joint, and Fig. 4 is an elevation of the same.

The heating-coil A is a tube wound spirally, to which the radiating-pipes in the car are connected at *a*, and from which the heated circulating water passes by the pipe *b*. This coil is within the fire-pot B and above the ring-base C; but I find that the best effect is produced by the incandescent fuel when the coil A is sufficiently distant from the fire-pot B to allow the fuel to pass in between the fire-pot and the coil, and to settle down gradually as the fuel is consumed.

The base-ring C extends outside of the fire-pot B, and is provided with a circular range of openings, *d*, so that air may pass up through the chamber formed between the cases E F.

The outer case, E, is of thin sheet metal, because it is not directly exposed to heat, and it rests at the bottom end upon the outer portion of the base-ring C, and the inner case, F, rests upon this base-ring C, as in my said former patent; but the fire-pot B protects the

case F from the direct action of the fire, and I make this inner case, F, of thicker material than heretofore employed, because it is subject to great heat, and I provide for opening the same to allow of its removal when necessary for repairs. I make this case F with a lapping strip, *f*, riveted tightly upon the outer side of the case and near and parallel to one of its edges, and the other edge of the case F is passed in between the lapping strip *f* and the body of the case, and the space between these parts being wedge-shaped the case is rendered gas-tight by drawing the parts together, so that the one edge of the case is pressed firmly in between such lapping strip and the surface of the case. At the place where the edges of said casing F are lapped I cut notches, and these notches allow the ends of the coil pipe to pass through the casing when it is drawn together; hence said coil will not be disturbed when the casing is removed. To effect this I prefer to make use of angle-pieces riveted upon the exterior of the inner case, with bolts *g* passing through such angle-pieces, so that the bolts *g* may be availed of in drawing up the parts of the case to make a gas-tight joint.

Below the base-ring C there is an ash-pit cylinder, H, that supports the said ring C, and itself rests upon the base-plate K, and there is an opening at the front of the cylinder H, and a sliding section, *h*, to cover this opening, but to allow access for the removal of ashes, and there is a projecting hearth, *k*, extending beyond the ash-pit cylinder H at the place where the ashes are removed, and this hearth is dishing, as shown, to catch any falling fuel and to give facility in cleaning out the ashes.

The grate L, bearer M, central pivot, *p*, and the shaker R do not require to be described herein, as they are set forth in my separate application, Serial No. 205,859, filed June 22, 1886, and none of these parts relate to the present invention.

At the upper ends of the cases E F there is a top plate, S, having annular grooves upon its under surface for the reception of the upper ends of the cases E F, and there are openings in this top plate at S' for the heated air to escape from between such cases E F. Upon the upper surface of this top plate, S, is an an-

nular rib or groove for the bottom of the conical base T of the escape-flue T'. In one side of this base T is an opening through which fuel is supplied, as in my aforesaid patent, and there is a slide-damper, *t*, to cover this opening.

In the heaters heretofore constructed under my said patent there is a safety-grate covering the central opening in the top plate, and this safety-grate is perforated with numerous holes for the escape of the products of combustion, and there is a spring-lock for holding this safety-plate when closed to prevent fuel falling out if the car is upset. It is usual to open the damper *t* to check the fire when it becomes too warm. In this case, however, the gas frequently escapes at the opening in the conical base T. I remedy this difficulty by making use of a safety-plate, U, that is solid and pivoted at its back edge, *u'*, and there is a vertical flue-plate, V, above the back edge of the safety-plate. This flue-plate V may be cast with the safety-plate U, as shown, or it may be cast with the top plate, S, or bolted thereto. In this top plate, S, behind the flue-plate V, there are openings at *v* which are sufficient for the products of combustion to pass off freely, but the holes are too small to allow the fuel to fall out if the car is upset, and there is a lock formed of the spring-latch *w*, which closes over a bar riveted to the safety-plate, to prevent this safety-plate opening accidentally. The flue-plate V causes the products of combustion to pass up within the conical base T at a sufficient distance from the damper *t* to prevent the escape of gas into the car when such damper *t* is open, and the safety-plate U, being solid, prevents any gases passing up between the flue-plate V and the damper *t*, and prevents the heated gases, as they ascend, being chilled by air that may pass into the smoke-flue, especially when the car-door is open. When fuel is to be supplied, the damper *t* is opened and the safety-plate U unlatched and raised, so that the coal can be easily thrown in

by a shovel to the fire-chamber, and the safety-plate falls and the spring-latch retains the same automatically.

I make use of an opening at *k*⁴ through the floor directly below the heater, with a strainer of wire-gauze, to prevent cinders passing through, and with a register, R², that has a handle by which the amount of atmosphere may be regulated. This air passes up around the casings, and is heated before entering the car. This also allows for cooling off the car, if too hot, by the admission off a large volume of fresh air that is but slightly warmed in passing the heater.

I claim as my invention—

1. The combination of a fire-pot with the casing F, the top plate, S, setting upon said casing and having a fuel-opening and openings at *v* for the escape of products of combustion, the pivoted safety-plate U, and the vertical flue-plate between the safety-plate and the openings *v*, substantially as set forth.
2. The combination, with the base and side walls in a heater, of the flue having a conical base, T, and door *t*, the plate S, perforated at *v*, and upon which the base T rests, the safety-plate U, pivoted to the plate S and closing the fuel supply opening in the same, and the vertical flue-plate V, substantially as specified.
3. The combination, with the coil A, fire-pot B, and base-ring C, of the removable casing F, having notches through which the ends of the coil-pipe pass, the lapping strip *f*, and means, substantially as specified, for closing and holding the edges of the case F together around the coil and for allowing the case to be opened and removed for repairing the heater, substantially as set forth.

Signed by me this 13th day of April, A. D. 1885.

W. C. BAKER.

Witnesses:

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WILLIAM G. MOTT.