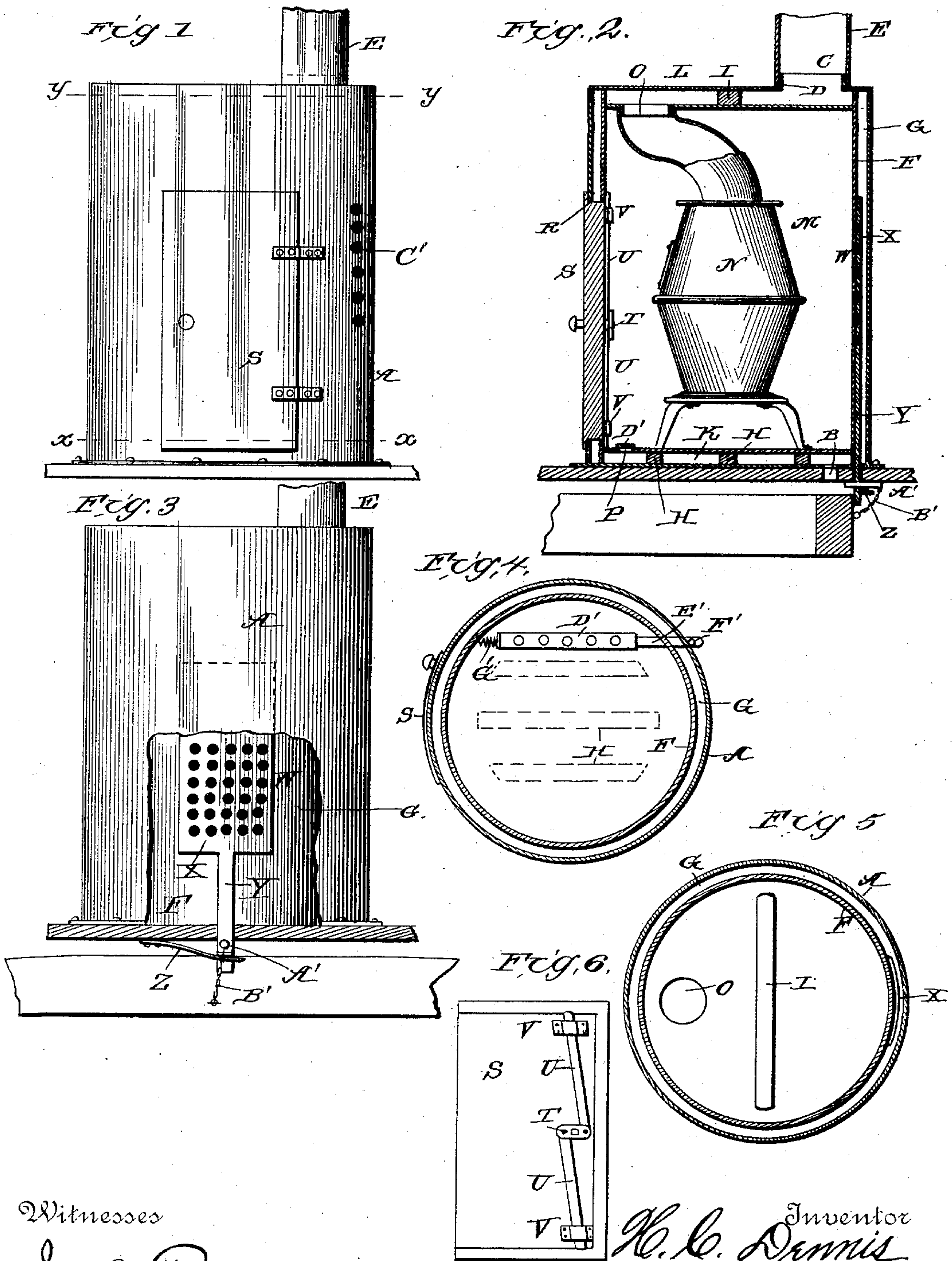


(No Model.)

H. C. DENNIS.  
SAFETY CAR HEATER.

No. 371,178.

Patented Oct. 11, 1887.



Witnesses

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# UNITED STATES PATENT OFFICE.

HENRY CLAY DENNIS, OF TYRONE, PENNSYLVANIA.

## SAFETY CAR-HEATER.

SPECIFICATION forming part of Letters Patent No. 371,178, dated October 11, 1887.

Application filed March 30, 1887. Serial No. 233,071. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY CLAY DENNIS, a citizen of the United States, residing at Tyrone, in the county of Blair and State of Pennsylvania, have invented a new and useful Improvement in Safety Car-Heaters, of which the following is a specification.

My invention relates to an improvement in heaters for railway-cars; 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 drawings, Figure 1 is an elevation of a car-heater embodying my improvements. Fig. 2 is a vertical sectional view of the same. Fig. 3 is an elevation of the same with part of the outer casing removed. Fig. 4 is a horizontal section taken on the line *xx* of Fig. 1. Fig. 5 is a similar view taken on the line *yy* of Fig. 1. Fig. 6 is a detailed elevation of the door of the heater.

A represents an outer cylindrical casing, which is made of boiler-iron or other suitable material, and is secured to the floor of the car. In the bottom of the car is an opening, B, which communicates with a similar opening made in the bottom of the outer casing, and at the upper end of the latter is an opening, C, having a vertically-upwardly-projecting flange or collar, D, adapted for the attachment of the lower end of the usual stove-pipe, E.

F represents an inner cylindrical casing, which is somewhat less in diameter than the outer casing, A, and is also somewhat shorter than the said outer casing. The inner casing, F, is located in the outer casing, and is arranged concentrically therein, so that an annular space, G, is formed between the inner and the outer casing. The lower end of the inner casing, F, is raised a slight distance above the bottom of the outer casing, and is supported on transverse slats or flanges H, and the upper end of the inner casing is somewhat below the upper end of the outer casing, being separated therefrom by a similar slat or flange, I. This forms a space or chamber, K, between the bottom of the inner and outer casing and a space or chamber, L, between the tops of the inner and outer casing. It will be observed by reference to Fig. 2 that the chamber K does not communicate with the chamber G,

and that the chamber L does not communicate with either the chamber G or K. The space within the inner casing forms a hot-air chamber, M, in which is placed the usual stove or heater, N. The smoke-pipe of the stove is connected to an opening, O, in one side of the upper end of the casing F and opposite the opening C. In the bottom of the inner casing, F, and opposite the opening B, is an inlet-opening, P.

R represents a large rectangular opening which is made in one side of the casings A and F on the side opposed to the door of the heater, and in the said opening R is hinged a tightly-fitting door, S. On the inner side of this door, near the free edge thereof, and at its center is pivoted an arm, T. To the ends of the said arm, on opposite sides of the pivotal portion thereof, are connected the inner ends of locking bolts U, which extend to the upper and lower edges of the door and are guided in keepers V. When the door is closed, it is locked by turning the arm T, so as to project the ends of the bolts beyond the edges of the door, and thereby cause the said bolts to bear against the inner side of the inner casing.

In one side of the inner casing is a register, W, comprising a series of perforations made in the casing. The outer side of this register is covered by a vertically-movable plate, X, having perforations or openings which coincide and communicate with the openings in the register when the plate X is lowered. From the lower end of the said plate X projects a depending arm, Y, which passes through aligned openings in the bottom of the casings and in the floor of the car. On the underside of the floor of the car is secured a spring, Z, the free end of which normally bears upward against the arm or rod Y. The latter is prevented from rising under the tension of the spring by a transverse pin, A', that passes through an opening in the arm Y and bears against the bottom of the floor.

B' represents a chain which is attached to one end of the pin and connects the latter to one of the timbers of the truck under the car, the said chain being normally slack.

The outer casing, A, is provided with a series of perforations, forming a register, C', that communicates with the annular space or chamber G.



The inlet-opening P in the bottom of the inner case is covered by a slide, D', having a series of openings adapted to register with the openings P. One end of the slide is reduced to form an arm, E', that projects outwardly through aligned openings in the sides of the casing. A pin, F', extends through an opening in the outer projecting end of the arm and enters the floor of the car, thereby securing the slide rigidly in place, and a spring, G', is provided for the slide, which is adapted to move the slide inwardly, and thereby cause it to cover the openings P, when the pin F' becomes broken, or if the heater should move on the bottom of the car.

The operation of my invention is as follows: A fire is started in the stove in the usual manner and the smoke therefrom enters the chamber L and passes across the same to the opening C, and passes upwardly through the stove-pipe into the outer air. Cold air enters the opening B in the bottom of the car and the air-chamber K between the bottoms of the casing and passes across the said air-chamber and escapes through the openings P into the interior hot-air chamber, M, where it affords draft for the fire in the stove to promote active combustion therein, and the air in the chamber M surrounding the stove becomes heated to a very high degree and escapes through the register W into the annular chamber G, and from thence through the register C' into the car, thus thoroughly heating the same. The inner and outer casings become so heated by the hot air that they also afford considerable heat by radiation, as will be readily understood.

In the event of a serious railway accident the pin A' will be broken by the chain B', attached to the truck, and the spring Z will instantly raise the slide X, so as to close the openings in the register W; and in the event that the stove or heater should become dislodged from its fastenings to the floor of the car and moved thereon the pin E' will be broken and the spring G' will instantly close the slide D' over the inlet-openings P, and thus the burning coals in the stove will be con-

finied closely within the inner casing, and will be prevented from coming in contact with the wood-work of the car in the event that the latter is smashed or overturned, and thereby prevent conflagration.

Having thus described my invention, I claim—

1. In a car-heater, the case comprising the inner and outer shells having the registers in the sides, the inlet air-chamber formed between their lower ends and communicating with the space within the inner shell, and the smoke-chamber formed between their upper ends, in combination with the stove arranged in the inner shell and having the pipe communicating with the smoke-chamber, for the purpose set forth, substantially as described.

2. In a car-heater, the combination of the case having the opening B in its lower side communicating with an opening in the bottom of the car, the air-chamber K in the lower side of the case, having the opening P, communicating with the interior of the case, the annular chamber G between the inner and outer shells of the case, said shells having the registers, the smoke-chamber at the upper end of the case, and the stove arranged in the interior of the case and confined therein and having the pipe communicating with the smoke-chamber, substantially as described.

3. In a heater for cars, the combination of the inclosing-case adapted to receive and confine a stove, the said case having the register to radiate heated air, the slide-plate adapted to close the register and having the arm projecting through the bottom of the stove, the pin to secure the said arm, the spring to close the slide-plate over the register when the pin is released, and means, substantially as set forth, connecting the pin with one of the trucks of the car, substantially as described.

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

HENRY CLAY DENNIS.

Witnesses:

JOHN H. SIGGERS,  
M. E. FOWLER.