E. M. BEMENT.

Street-Car Heater.

No. 211,214. Patented Jan. 7, 1879.

Fig. 1.

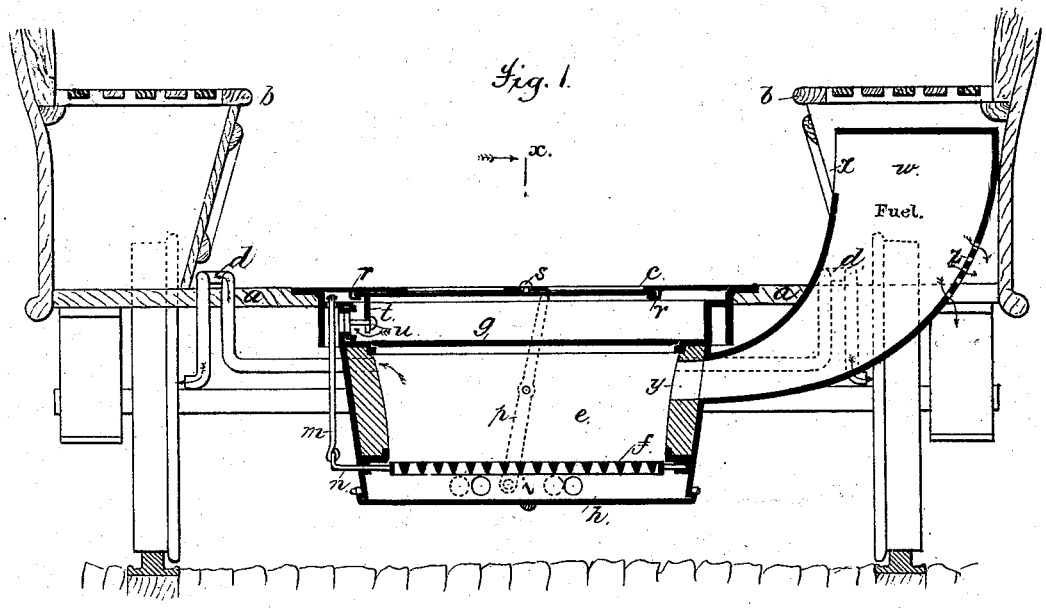


Fig. 2.

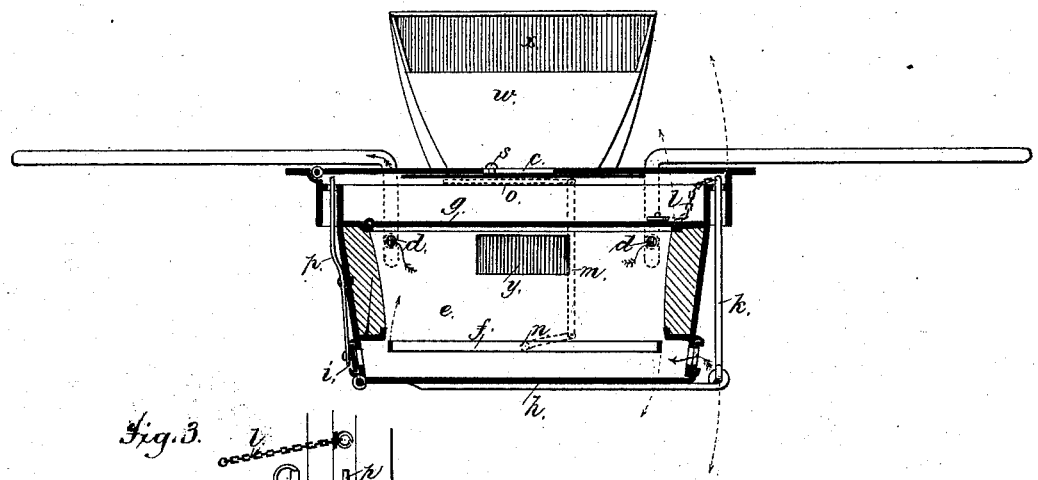


Fig. 3.

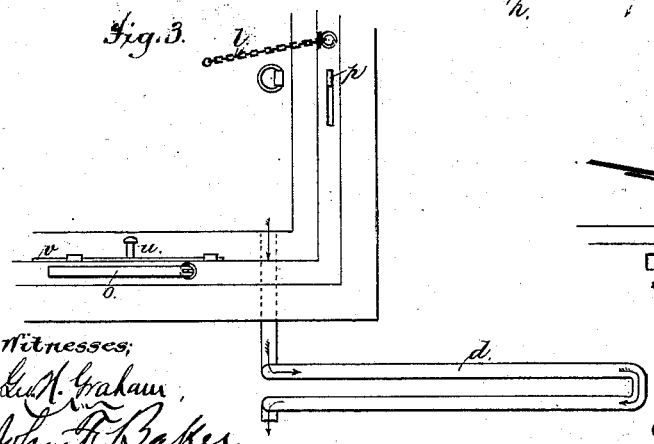
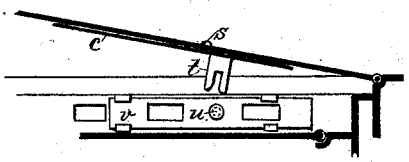


Fig. 4.



Witnesses;

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Inventor;

Ernest M. Bement,

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Atty.

UNITED STATES PATENT OFFICE.

ERNEST M. BEMENT, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN F. BAKER, OF SAME PLACE.

IMPROVEMENT IN STREET-CAR HEATERS.

Specification forming part of Letters Patent No. **211,214**, dated January 7, 1879; application filed December 4, 1878.

To all whom it may concern:

Be it known that I, ERNEST M. BEMENT, of the city, county, and State of New York, have invented a new and useful Improvement in Street-Car Heaters; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a central transverse section of the heater when attached to a car. Fig. 2 is a longitudinal sectional view of the heater disconnected; Fig. 3, a plan view of a portion of the same; and Fig. 4, a detached view, showing the escape-passage from the hot-air chamber.

In order to enable others to understand and apply my invention, I will first proceed to describe its construction and operation, and to subsequently point out in the claims its novel characteristics.

In the drawings similar letters of reference indicate corresponding parts in the several figures.

a a, Fig. 1, represent the floor of a car, and *b b* the passenger-seats as ordinarily arranged.

The heater is suspended beneath the floor, with its register *c* and extension-pipes *d d* resting flush with or adjacent to the interior surface, as shown.

The fire-pot *e* is provided with a pivoted grate, *f*, hinged cover *g*, ash-pan *h*, and draft-regulator *i*, each being supplied with devices for adjusting and operating them from the interior of the car.

The ash-pan *h* is opened or closed by means of the rod *k*, a chain, *l*, being connected at its upper extremity, as a convenient device for raising and lowering the same, and arresting its movement at any desired position, which may be effected by passing a pin transversely through one of the chain-links, as shown in Fig. 3.

The grate is pivoted centrally and dumped by means of the rod *m* and intermediate bell-crank lever, *n*, the rod *m* being provided with a jointed extension, *o*, (shown in Fig. 3, and dotted lines, Fig. 2,) to facilitate its operation from the interior of the car, and form a locking device in its horizontal position to prevent the grate from tilting.

The draft-regulator consists of a sliding plate, *i*, perforated to register with corresponding perforations communicating with the ash-pit, and is operated by means of the vibrating lever *p*.

The register *c* is arranged in the perforated hinged cover, and is flush with the floor-surface. It is composed of a sliding plate correspondingly perforated, and moving in guide-ways *r r*, and adjusted by means of the button *s*.

A depending arm, *t*, Figs. 1 and 4, is rigidly attached to the sliding plate *c*, and having its lower end bifurcated to engage with the stud *u* when the cover is closed. This stud *u* is connected with a perforated slide, *v*, which covers an escape-passage from the heating-chamber, forming the space between the cover *g* of the fire-pot and the register *c*.

The object of the connection between the register *c* and the slide *v* is to direct and regulate the radiated heat from the heating-chamber, the arrangement of the arm *t* and stud *u* causing the slide *v* to open the passage when the register *c* is closed, and in the opening movement of the latter to close the former. A partial opening of the register and a coincident movement of the slide will regulate the heat from this source, and the temperature may thus be governed.

The fire-pot *e* is supplied with fuel from the elevated reservoir *w*, which is arranged beneath the passenger-seat *b*, as shown in the sectional view, Fig. 1. This reservoir *w* is constructed in the form of a hopper, in order to increase its capacity, and also to insure gravitation of the fuel to the fire-pot. An opening, *x*, is provided for the introduction of the fuel, and the discharge-orifice *y* may be supplied with an adjustable gate to regulate the fuel-feed. The outboard side of the reservoir may be perforated, if found necessary, as shown at *z*, Fig. 1, to allow a ventilation of the same.

The extension radiating-pipes *d d* are connected with the upper portion of the fire-pot, and form a circuitous passage through a portion of the car, and their exit is directed

against the body of the car-wheels. These pipes may be connected with the heating-chamber above the fire-pot, and their direction and arrangement may be varied, or their number increased, if desired, in order to supply the requisite degree of heat; and when such pipes are connected with the heating-chamber the register *c* may be closed or dispensed with and the cover lined with any suitable absorbent to check radiation.

Additional pipes may also be inserted, leading from the fire-pot outboard or into the radiating-pipes, to carry off the gases.

A heater may also be arranged at each end of the car, and radiating-chambers located within the car in place of or in connection with the radiating-pipes, and such details of construction concerning the strength or material employed in the apparatus, or in its capacity, may be made without departing from the spirit of my invention; the object of which is to provide a heater for this purpose that shall include all the modern appliances for operating the same, that shall be compact in its construction and economical and convenient in use, and form no obstruction to any portion of the space at present utilized.

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

1. A heater for street-cars having its fire-pot, radiating-chamber, and operative mechanisms located beneath the floor of the car, and accessible from the interior thereof, and provided with radiating-pipes passing within the car, and an elevated reservoir for containing the fuel, connecting with the fire-pot and arranged beneath the passenger-seat, substantially as shown.

2. The register *c*, provided with the depending bifurcated arm *t*, in combination with the slide *v*, having the stud *u*, substantially as and for the purpose specified.

3. The pivoted grate *f*, having the lever-arm *n*, in combination with the connecting-rod *m* and jointed extension *o*, whereby the grate may be operated and locked in its horizontal position, as set forth.

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Witnesses:
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