

G. A. BADGER.  
Car-Heater.

No. 219,898.

Patented Sept. 23, 1879.

FIG 1.

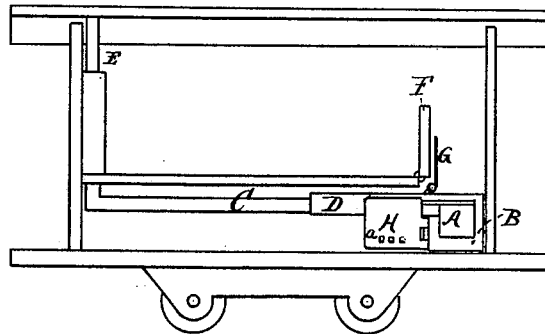


FIG 2.

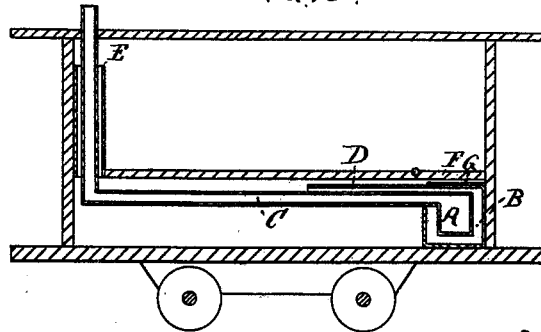
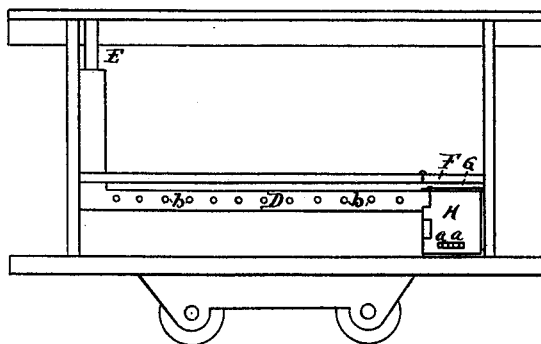


FIG 3.



WITNESSES.  
Samuel D. Kelly.  
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INVENTOR.  
George A. Badger  
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# UNITED STATES PATENT OFFICE.

GEORGE A. BADGER, OF QUINCY, MASSACHUSETTS.

## IMPROVEMENT IN CAR-HEATERS.

Specification forming part of Letters Patent No. **219,898**, dated September 23, 1879; application filed February 10, 1879.

*To all whom it may concern:*

Be it known that I, GEORGE A. BADGER, of Quincy, in the county of Norfolk and State of Massachusetts, have invented a new and useful or Improved Car-Heating Apparatus, which invention is fully set forth in the following specification, reference being had to the accompanying drawings.

My invention consists in an improved heating apparatus, hereinafter described, for passenger-cars, particularly horse-cars, whereby the temperature of a car may be maintained at a comfortable degree by an equal distribution of heat, and without monopolizing with the heating apparatus any room in the car which is usually occupied by passengers.

The accompanying drawings indicate the character of my invention, in which Figure 1 is a side elevation as viewed from the interior of the car. Fig. 2 is a central longitudinal section of the same in a vertical plane. Fig. 3 is a side elevation showing a modification of the heating apparatus.

The combustion chamber or apparatus, which may be a small coal-burner or other suitable fuel-consumer, is represented by box A, located in chamber B and connected with the draft and smoke flue C, as shown.

Chamber B constitutes an air-space all around the heater, for purposes of safety and accumulation of hot air, and connects with the hot-air space or conductor D, which may partially surround and cover the horizontal portion of flue C, as in Figs. 1 and 2, or wholly inclose the same and its vertical portion, as in Fig. 3, and open into the upper part of the car, as shown at E.

The metallic tubes, or parts which constitute, respectively, the smoke-flue and hot-air conductor, are so constructed and arranged as to run from the heater horizontally beneath the passenger-seat of a car, and terminate, as shown, with the smoke-flue passing out through the ceiling or roof of the car, while the surrounding hot-air conductor opens, as shown, into the car along the front of the passenger-seat and near the ceiling at the end opposite the heater.

A hinged portion, F, of the passenger-seat, opens, as shown, to admit fuel into the heater through an aperture in the top of chamber B, covered by a hinged lid, G, while door H al-

lows access to the said air-chamber to regulate the draft of the inclosed heater; and said door H may also have adjustable draft-openings or cold-air inlets, as at *a a*, Fig. 3, through which cold air may be admitted to the hot-air chamber B and conductor D, to promote combustion and regulate the temperature of the hot-air chamber and conductor, and secure the necessary circulation therein.

The front edge or side of conductor D, when continued or prolonged as described, may be also perforated, as at *b b*, Fig. 3, to allow a portion of the heated air contained therein to escape into the car, and thus become distributed directly and uniformly along the front of the car-seat.

By such means it is believed that a passenger-car may be made comfortable in cold weather with moderate expense and entire safety.

I am aware that various inventions have been patented wherein was embodied a stove or burner placed either beneath the end platform, the floor, or between the floor and seat of the car, and that in part or all of such inventions hot-air ducts were arranged to pass longitudinally beneath the seats or a portion thereof; and also that hot-air vents of various kinds were provided, by means of which the heat resulting from combustion in such stove or burner could be diffused through the car; and I claim none of these features broadly or in the abstract, but only the peculiar combination and arrangement of the several parts which I believe distinguishes my invention from preceding ones.

What I claim as my invention is—

In a passenger-car, and in combination with the seat having a hinged or removable section, F, a stove or burner, A, arranged between the floor and seat at one end thereof, and inclosed in an air-heating chamber, B, provided with suitable cold-air ducts *a a* and a door, H, for access to the stove to regulate the draft thereof, and a smoke and heat conducting funnel or flue, C, extending beneath the seat to the opposite end thereof, whence it passes through the seat and roof, all substantially as specified.

GEO. A. BADGER.

Witnesses:

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H. N. RANDALL.