

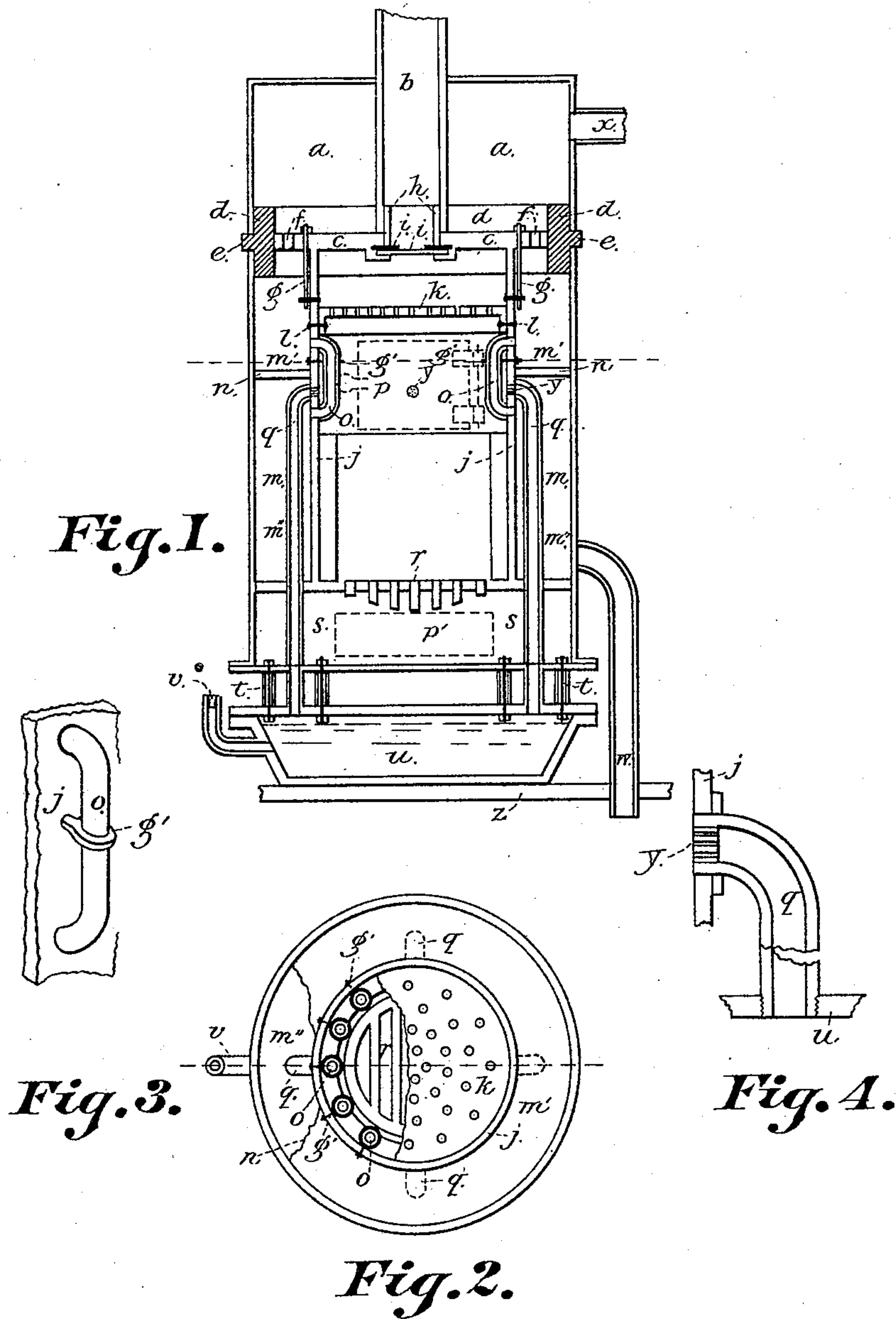
(No Model.)

G. M. EDWARDS.

CAR HEATER.

No. 390,953.

Patented Oct. 9, 1888.



**Witnesses:**

Sewall T. Fowler,  
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# UNITED STATES PATENT OFFICE.

GRANVILLE M. EDWARDS, OF GRAY, ASSIGNOR OF ONE-HALF TO WILLIAM E. DENNISON, OF PORTLAND, MAINE.

## CAR-HEATER.

SPECIFICATION forming part of Letters Patent No. 390,953, dated October 9, 1888.

Application filed December 14, 1887. Serial No. 257,852. (No model.)

*To all whom it may concern:*

Be it known that I, GRANVILLE M. EDWARDS, of Gray, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Car-Heaters; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in stoves, and more particularly stoves intended for use in cars and other conveyances, and to the stove for which Letters Patent of the United States were issued to me dated October 31, 1882, and numbered 366,794; and it has for its principal objects the heating of the air which is to warm the vehicle by passing it through pipes located in the fire-pit and the placing of a perforated plate between the fire-pit and the smoke-flue, as additional safeguards against communicating fire to cars in which they are used in case of accidents.

The principles of my invention are fully illustrated by the accompanying drawings, of which—

Figure 1 is a vertical section. Fig. 2 represents parts of three cross sections—one taken on dotted line in Fig. 2, one above perforated plate *k*, and one immediately beneath the band *n*. Fig. 3 is a detail showing one method of holding hot-air pipes *o* in position. Fig. 4 is a detail of the water-tubes.

The principle of my invention consists in taking air from outside the car, allowing it to enter a space between the fire-box and an outer casing, thence into pipes which enter the fire-box, thence out into a hot-air chamber above or at the side of the stove, from which the hot air may be conducted off to any desired points.

Reference being had to the accompanying drawings for illustration, my invention may be thus described:

The same letters refer to like parts in all the figures.

The base of the stove is represented by *s*. Above the base is located the fire-box *j*, or body of the stove proper, within which is a lining of any convenient form or material. Surround-

ing the fire-box *j* is an outer casing, forming between said outer casing and the fire-box *j* the space *m*, extending from the bottom of the stove to the diaphragm *c*. This air-space *m* is divided by means of the band *n* into a lower chamber, *m''*, and an upper chamber, *m'*. The top of the stove is covered by the diaphragm *c*, which has on its outer edge the flange *e*, which rests down on the outer casing of the stove. The diaphragm has a hole at or near the center opening downward into the fire-box and surrounded on top by a collar, *h*, upon which the smoke-pipe *b* is fixed. The diaphragm has near its outer rim—that is, between the wall *j* of the fire-box and the outer casing of the stove—perforations *f*. It carries also the damper-slides *i*, and it is fixed to the wall *j* by bolts *g*. Resting down on the flange *e* of the diaphragm is the drum or hot-air reservoir *a*. The lower air-chamber, *m''*, has the supply-pipe *w*. *o* are pipes, the bodies of which are within the fire-box, and which have one end opening into the lower air-chamber, *m''*, and the other opening into the upper chamber, *m'*. Leading out from the hot-air reservoir *a* are pipes or tubes *x*, which distribute the heated air. Within the fire-box, between the fire and the smoke and gas vent, is placed a perforated plate, *k*. *u* is a water-tank placed beneath the stove, and *q* are pipes communicating at their lower ends with the said water-tank and at their upper ends with the inside of the fire-box. On the upper ends of these pipes nozzles *y*, of any convenient shape, may be affixed in any convenient way. The water-tank is filled through the tube *v*. The hot-air pipes *o* may be fixed and held in place in any convenient manner, one of which is illustrated in Fig. 3, in which it is shown as having shoulders resting against the wall *j* and held firmly by the band or clasp *g'*, encircling the pipe and having its end inserted in the wall *j*. The stove has doors and a grate, as and for the purposes common to other stoves.

The operation of my invention is as follows: The cold air is taken into the chamber *m''* through pipe *w*. The air which is in the pipes *o* when heated rises into the chamber *m'*, thence through perforations *f* in the diaphragm *c* into reservoir *a*, whence it is distributed by pipes *x* to any points desired. The hot air as it rises



tends to form a vacuum in the pipes *o*, to prevent which fresh or cold air rushes in from chamber *m''*. The band *n* divides the chamber or space *m*, so that no air from *m''* can get into *m'* unless it first passes through the pipes *o* in the fire-box, which are always hot when there is a fire in the stove. The operation of the perforated plate *k* is to prevent any fire or coals from coming in contact with or passing out through the smoke-vent, yet at the same time offering no obstruction to the free passage of the smoke and gases.

The air-reservoir *a* may be dispensed with and the distributing pipe *x* open directly into the chamber *m'*, in which case of course there should be no perforations *f* in the diaphragm *c*.

I do not claim, broadly, the heating of air by passing it through pipes located within the fire-box, but only the particular devices hereinbefore described.

Having thus described my invention and its use, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a stove of otherwise suitable construction, having an outer and inner case, as described, the combination of the dividing-band *n* and pipes *o*, arranged within the fire-box, as described, and opening one end above

the said band and the other below into the space between the two said cases, with the diaphragm *c*, having perforations *f*, hot-air reservoir *a*, distributing-pipes *x*, and supply-pipe *w*, all substantially as and for the purposes hereinbefore set forth.

2. In a stove of otherwise suitable construction, having an outer and inner case, as described, the combination of a band or partition dividing the space between the two said cases into an upper and lower chamber, pipes within the fire-box, one end of which opens into the said lower chamber, the other into the said upper chamber, a hot-air reservoir communicating with the said upper chamber by means of perforations in the plate or top of the stove between said upper chamber and said reservoir, a supply-pipe opening into the said lower chamber, and distributing-pipes communicating with said reservoir, all substantially as and for the purposes hereinbefore set forth.

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

GRANVILLE M. EDWARDS.

Witnesses:

ELGIN C. VERRILL,  
PHILIP J. LARRABEE.