(No Model.)

J. L. BANGLEY.

CAR HEATER.

No. 367,693. Patented Aug. 2, 1887.

Fig. 1.

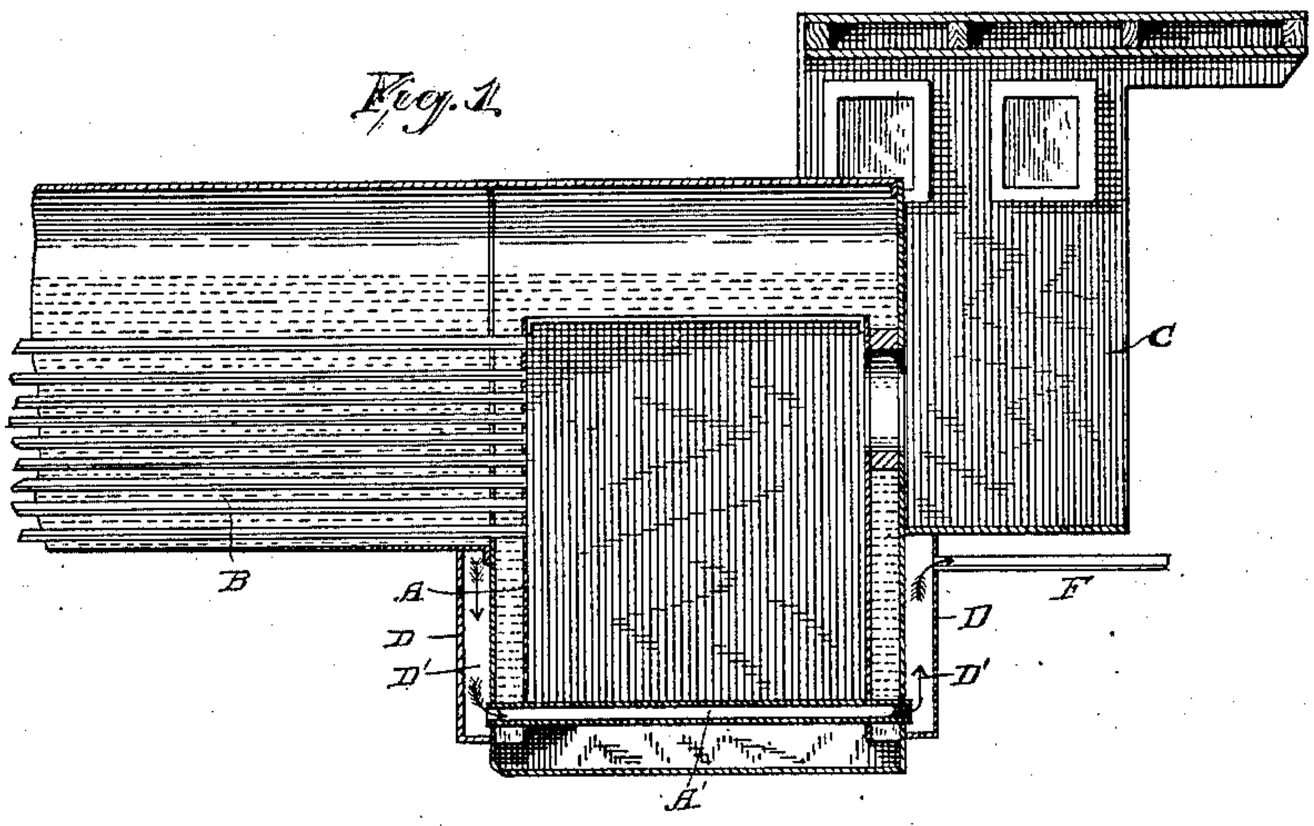

Fig. 2.

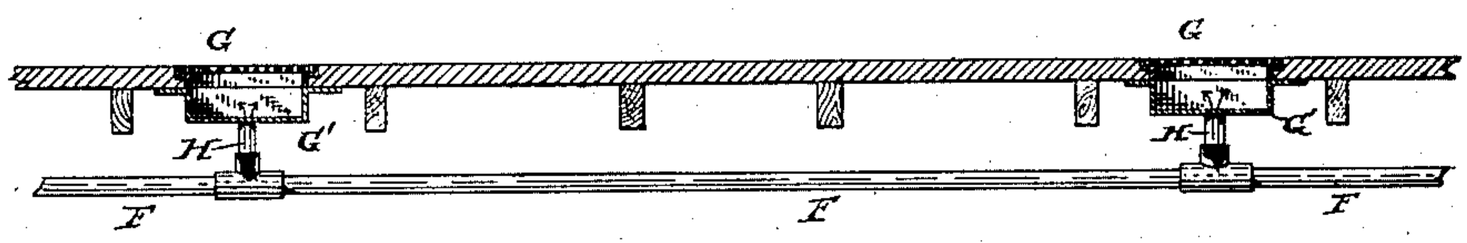

Fig. 3.

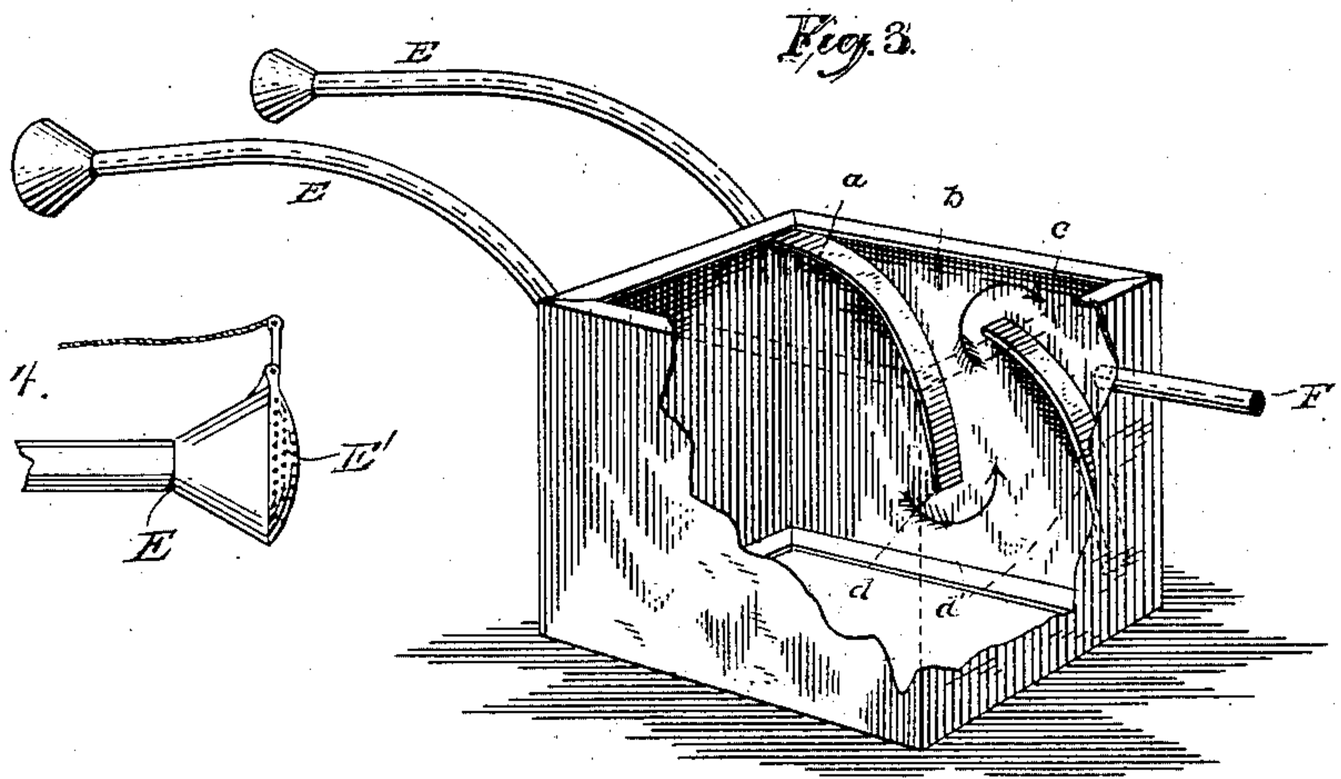

Fig. 4.

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UNITED STATES PATENT OFFICE.

JOSEPH LEWIS BANGLEY, OF PETERSBURG, VIRGINIA.

CAR-HEATER.

SPECIFICATION forming part of Letters Patent No. 367,693, dated August 2, 1887.

Application filed February 26, 1887. Serial No. 228,999. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH LEWIS BANGLEY, a citizen of the United States, residing at Petersburg, in the county of Dinwiddie and State of Virginia, have invented certain new and useful Improvements in Car-Heaters; and I do hereby declare the following to be 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.

The object of my invention is to heat all the cars of a railroad-train by means of hot air conducted through pipes leading from a hot-air chamber around the fire-box of a locomotive to registers located in the floor or sides of a car.

My invention therein consists in a jacket or casing placed around the outside of the fire-box to form the hot-air chamber, combined with ducts for supplying fresh air to said chamber, with flues for retarding the passage of the air-currents through the chamber, with hollow grate-bars opening into the chamber, and with pipes for conducting the hot air from said chamber to the registers in the cars, all as will be more fully hereinafter described and claimed.

For the better understanding of my invention as regards details of construction and arrangement attention is invited to the accompanying drawings, wherein like letters of reference denote corresponding parts, and in which—

Figure 1 is a vertical central section through the fire-box, cab, and a portion of a boiler of a locomotive provided with my improvements; Fig. 2, a longitudinal section through the floor of a railroad-car and through the registers and chambers below them for admitting the hot air, together with one of the conducting-pipes in side elevation and its couplings with the chambers partly in section; Fig. 3, a detail in perspective of the jacket or casing which surrounds the fire-box, together with its attachments; and Fig. 4 a detail of the outer end of one of the fresh-air ducts.

These improvements are applicable to any locomotive and to any kind of railroad-car, and hence such parts of a railroad-train as are shown are for illustration only.

A denotes the fire-box, B the boiler, and C the cab, of a locomotive of the ordinary type. D is the jacket or casing which surrounds the fire-box, and which forms the intermediate hot-air chamber, D′, which may be of any suitable width all around.

The jacket or casing D may be secured to the outside walls of the fire-box in any well-known way, and extends from a point near the bottom of the same up as far as the floor of the cab, and at its front fits partly around the under side of the boiler next to the fire-box. Leading into the front side of this jacket or casing, preferably near its upper end, are two fresh-air ducts, E E, which curve up from the jacket and extend forward horizontally along the outside of the boiler, one on each side. Fresh air is supplied to the chamber D′ around the fire-box through the funnel-shaped ends of these ducts, and to reduce the force and supply of the air through these ducts when the train is traveling at a high rate of speed their funnel-shaped ends may be provided with hinged and perforated doors E′, as shown in Fig. 4, that may be operated from the cab of the locomotive by a rope or any other practical device.

The passage of the air through the chamber D′ is retarded by flues *a*, *b*, and *c* on each side. These flues are formed by two downwardly and rearwardly curved wings, *d d′*, cast or otherwise provided on the inside of the jacket or casing D, on opposite sides thereof. The forward one, *d*, of these wings extends from the upper front corner of the chamber down to a point about one-third the distance from the bottom, and the rear one, *d′*, extends from a point about one-third the distance from the top down to a point very near the bottom. This arrangement allows the air to circulate very freely before passing out of the chamber to the cars, and, furthermore, it prevents the air from entering the cars in blasts. To further increase the circulations of the air in this chamber and to cause it to heat more rapidly, the grate-bars A′ of the fire-box should be made hollow and open into this hot-air chamber D′, as shown in Fig. 1.

The air as it is heated is conducted from the chamber D′ by one or more pipes, F, which lead from the rear side of the jacket or casing D at points preferably just below the cab of the locomotive to registers G in the floor of the cars. These pipes F, which pass along under the cars, are preferably covered with asbestus or some other non-conducting mate-

rial, and should be connected between the cars by flexible couplings, so as to make a continuous line of pipe.

The section of pipe belonging to each car should have a cut-off valve at each end, and when the train is made up all of these valves should be opened, except the valve on the rear end of each pipe of the last car, which should be closed, so as to prevent the escape of air at these points.

The registers G, of which there may be any number, are located, preferably, in the floor of the car, and below each is a chamber, G′, which receives the hot air from the conducting-pipes by means of a coupling, H. Instead of locating these registers and chambers in the floor of the car, they may be placed in the sides thereof, in which instance they would be supplied with hot air from the conducting-pipes by means of elbow-couplings. It will also be apparent that the number of flues in the hot-air chamber around the fire-box may be increased or decreased, and that their present arrangement may be modified without detrimental effect. This hot-air chamber may also be provided at any convenient point with an outlet for the hot air when it is not required.

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

1. The combination, with the fire-box of a locomotive, of a hot-air chamber all around the same, fresh-air ducts leading into the upper front end of said chamber, hollow grate-bars opening into said chamber, and pipes for conducting hot air from said chamber to registers in the cars, substantially as set forth.

2. The combination, with the fire-box of a locomotive, of a surrounding hot-air chamber, fresh-air ducts leading into said chamber, and flues in the sides of said chamber, formed by one or more wings or partitions, substantially as and for the purpose set forth.

3. The combination, with the fire-box of a locomotive, of the surrounding jacket or casing D, provided with the fresh-air ducts E E, and with the wings *d d′*, for forming the intermediate flues, *a b c*, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH LEWIS BANGLEY.

Witnesses:

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R. N. PASTIN.