No Model.)

G. W. RODGERS.

CAR HEATER.

No. 493,388. Patented Mar. 14, 1893.

FIG. 1.

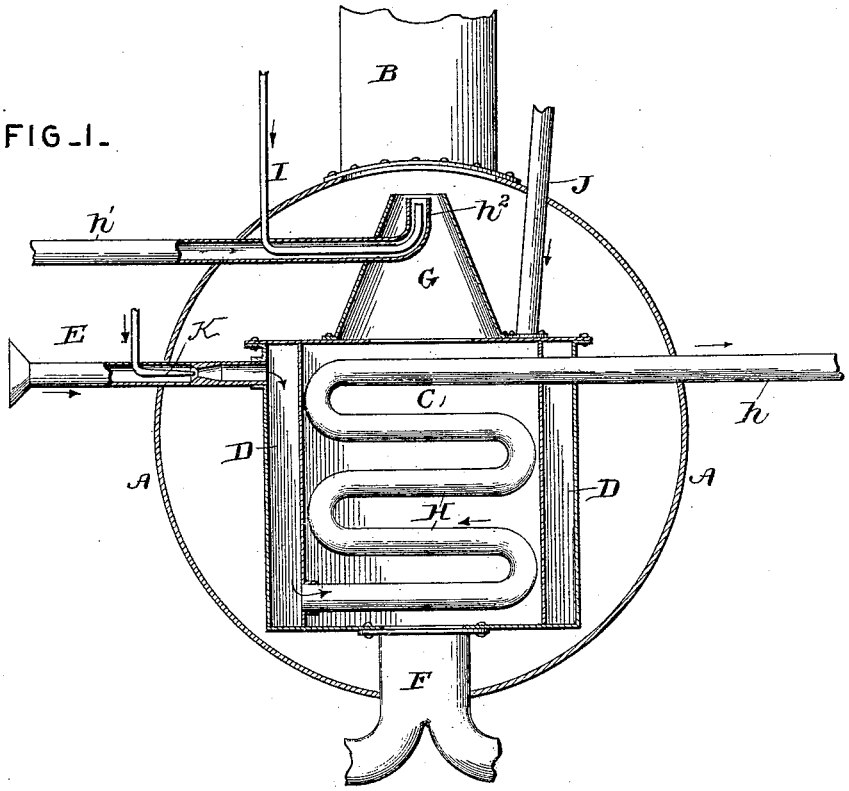
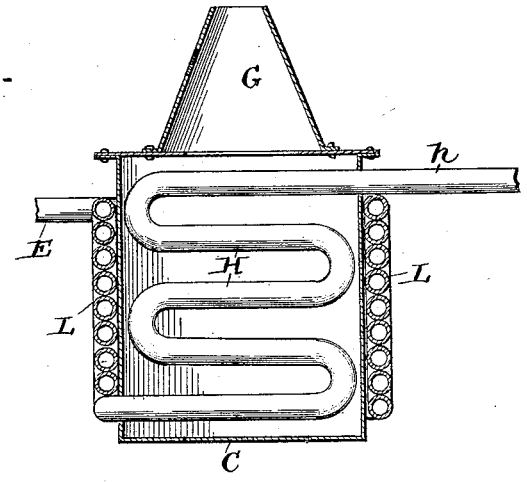


FIG. 2.



Witnesses

Jas. F. McCathran

D. C. Wolhaupter.

Inventor

George W. Rodgers

By his Attorneys,

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

GEORGE W. RODGERS, OF BELLEFONTE, PENNSYLVANIA, ASSIGNOR OF TWO-THIRDS TO ISAAC THOMAS, OF SAME PLACE, AND ABRAM S. VALENTINE, OF ATLANTIC CITY, NEW JERSEY.

CAR-HEATER.

SPECIFICATION forming part of Letters Patent No. 493,388, dated March 14, 1893.

Application filed April 6, 1892. Serial No. 428,066. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. RODGERS, a citizen of the United States, residing at Bellefonte, in the county of Centre and State of Pennsylvania, have invented a new and useful Car-Heater, of which the following is a specification.

This invention relates to car heaters; and it has for its object to provide an improved heating device which utilizes the exhaust steam and escaping heat from the locomotive, to heat and circulate the air, which is conducted to the ordinary radiators within the cars.

To this end it is the main object of this invention to simplify and improve upon devices of a similar character, while at the same time attaining the same ends in a more efficient manner.

With these and many other objects in view which will readily appear as the nature of the invention is better understood, the same consists in the novel construction combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

In the accompanying drawings;—Figure 1 is a vertical sectional view through the smoke box of a locomotive and heating device constructed in accordance with this invention, and located in the smoke box. Fig. 2 is a detail sectional view of a modification of the heating box.

Referring to the accompanying drawings;—A represents the front smoke box of a locomotive, to which is connected the ordinary smoke stack B, through which the exhaust steam and the smoke and other products of combustion pass from said box. Supported within the smoke box A at the front end of a locomotive, is the heating box or chamber C one or more of which may be located in the smoke box according to the demands of the system. The heating box or chamber C is constructed in a suitable shape, preferably rectangular and is entirely surrounded by the annular air chamber or jacket D, to which is connected in one side thereof, the cold air pipe E, leading outside of the smoke box and terminating in a funnel end, through which the air is drawn into the air chamber. The air in said air chamber D is heated by the smoke and other products of combustion escaping from the fire flues into the smoke box A. Connected with the lower end of the box C are the steam exhaust pipes F, which direct the exhaust steam from the cylinders of the locomotive into and through the said heating box or chamber, from which the steam finds escape at the top through the tapered exhaust nozzle G, projecting into the smoke stack from the top of said heating box or chamber. Suitably arranged within the heating box or chamber C is the air circulating coil H, extending the full height and width of the said box or chamber and connected with the surrounding air chamber or jacket D, from which the heated air passes through said coil or pipes, and out through the hot air pipe h, connected with said coil or pipes and led by suitable piping and connections to the radiators within the car. It will be seen that instead of coiling the pipe in the hot air box or chamber the same may be arranged in any suitable shape or form within the same, so as to connect the hot air chamber with the conducting hot air pipes, and provide means for additionally heating the air passing through said coils or pipes, by means of the exhaust steam passing through the box C and out of the smoke stack. The hot air circulating pipe h, as stated, is connected with the series of radiators and carries the hot air to said radiators, and back through the return pipe h', passing back into the smoke box and terminating in an upwardly extending end h^2, within the exhaust nozzle G. The exhaust steam escaping through the exhaust nozzle G, at a great velocity, creates a vacuum within the return pipe h', and thus creates a continuous suction within the hot air conducting pipes so as to draw the cold air through the receiving pipe E. If found necessary a steam jet pipe I may be brought into play to assist in creating the requisite suction in the return pipe h'. The said jet pipe I is connected with the boiler and is controlled in any suitable manner, the same being passed into the pipe h' and extending into the extreme extended end h^2 of the same, so that when the steam is jet-

ted through said pipe the action of the escaping exhaust steam is supplemented.

When the locomotive is standing still and the cylinders therefore are not exhausting in order to prevent the radiators in the cars from getting cold, I employ a supplemental steam pipe J leading from the cab of the locomotive, under the control of the engineer, so as to not only heat the air passing through the circulating pipes in the heating box or chamber, but also to create the requisite suction in the return pipe h'.

Suitably arranged within the receiving pipe E is the steam injector pipe K, which jets the steam within said cold air receiving pipe so as to moisten the air and impart the heat of the steam thereto before the same enters the air chamber D, while at the same time the said pipe acts in the capacity of a pump serving to force the cold air into the air chamber, and to heat and carry the air to the car radiators, when the cars are not in motion.

In the modification illustrated in Fig. 2, it will be seen that instead of providing the heating box or chamber C with a continuous surrounding air chamber D, I dispense with such air chamber or jacket and surround the box or chamber with a jacket of air pipes L, which encircle the entire heating box or chamber so as to receive the heat from the smoke box A and therefore form an air jacket corresponding to the air chamber D, while providing for causing the air to continuously circulate around the box or chamber C, from the receiving pipe to its connection with the coil in the box or chamber.

By simply employing the suction return pipe h' and connecting the same with open pipes in the cars, it will be readily seen that simple and effective means are provided for drawing the foul air from the cars and ventilating the same.

The many advantages of the herein described heater will be apparent to those skilled in the art.

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

1. In a car heater, a heating box or chamber supported within the smoke box of a locomotive, and provided with a tapered steam exhaust nozzle, the steam pipes connected to the lower end of the box, an air jacket surrounding said box or chamber and having a force feed receiving pipe, a hot air circulating coil located in said box or chamber and connected with the surrounding air jacket, and the main circulating pipe, and the return pipe, terminating within said exhaust nozzle substantially as set forth.

2. In a car heater, a heating box or chamber supported within the smoke box of a locomotive and connected at its lower end with the cylinder exhaust pipe and provided with a tapered steam exhaust nozzle, an air jacket surrounding said air box or chamber, and having a receiving pipe, hot air circulating pipes located within said box or chamber and connected with the surrounding air jacket and the radiators, and the return suction pipe leading into the smoke box and terminating in said exhaust nozzle, substantially as set forth.

3. In a car heater, a heating box or chamber supported within the smoke box of a locomotive and provided with the surrounding air chamber or jacket having an inlet pipe projecting outside of the smoke box, an upper tapered exhaust nozzle, the steam exhaust pipes connected with said box, hot air circulating pipes located within said box or chamber and connected with the surrounding air jacket and the radiators, the return suction pipe leading into the smoke box and terminating in said exhaust nozzle, a supplemental jet pipe arranged within said return pipe, and a steam injector pipe arranged in said air receiving pipe, substantially as set forth.

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

GEORGE W. RODGERS.

Witnesses:
E. M. BLANCHARD,
JOHN BLANCHARD.