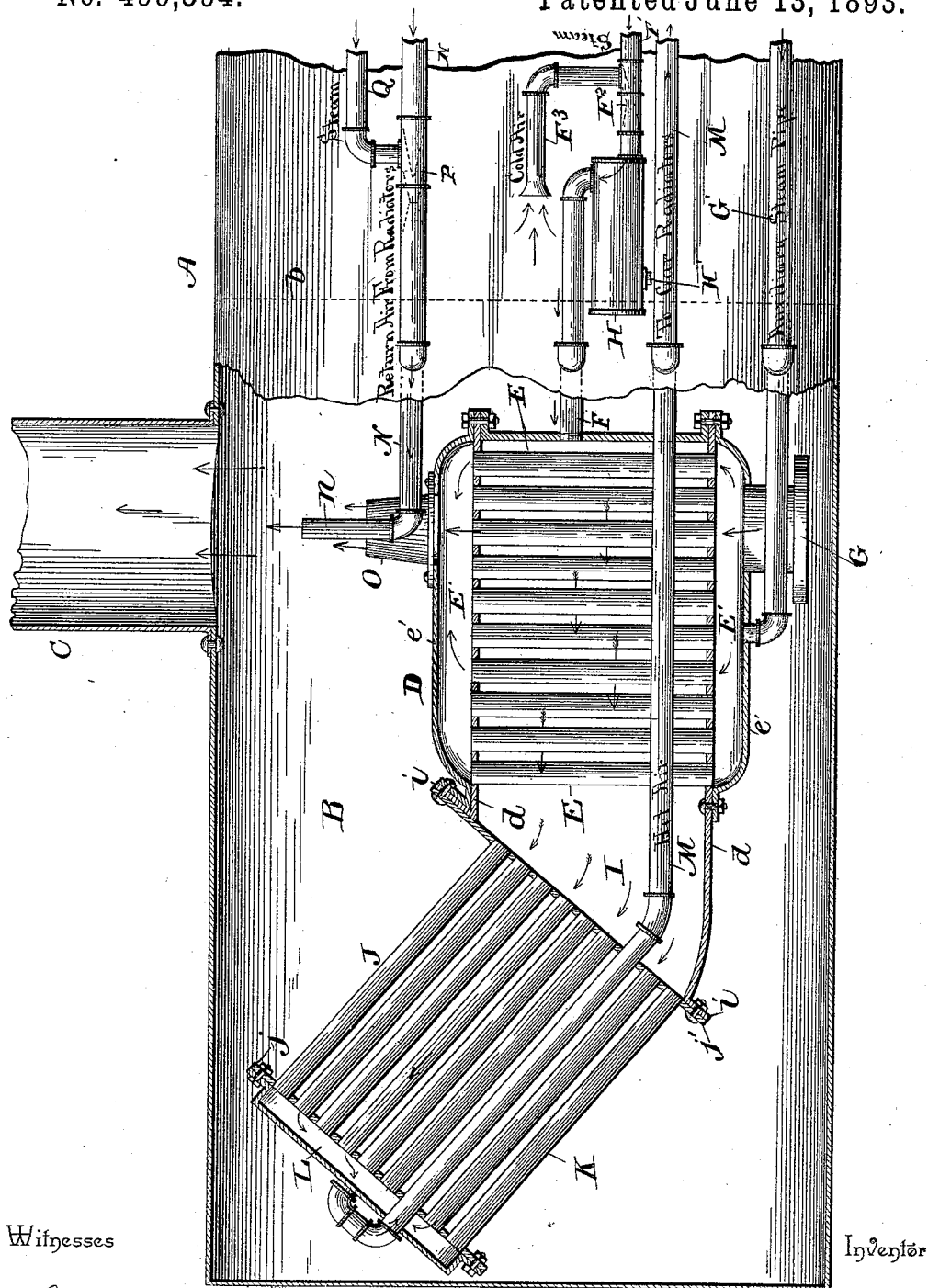


(No Model.)

G. W. RODGERS.
CAR HEATER.

No. 499,594.

Patented June 13, 1893.



Witnesses

Jas. F. McLaughlin
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By *His* Attorneys,

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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. 499,594, dated June 13, 1893.

Application filed June 30, 1892. Serial No. 438,566. (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 car heater which furnishes the heat to the radiators of the several cars of a train, while such train is either in motion or at rest.

To this end the main and primary object is to provide an improvement in car heaters which derives its heat from the escaping products of combustion of the locomotive boiler and which is constructed with special reference to simplicity and efficiency.

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 drawing the figure represents an elevation of the front end of a locomotive boiler partly in section, and a vertical sectional view partly in elevation of the car heater within said boiler.

Referring to the accompanying drawing:—A represents the front end of a locomotive boiler terminating in the smoke box B, in front of the front end of the flues, at *b*, illustrated by dotted lines, and from which the smoke and other products of combustion escape through the ordinary smoke stack C.

Supported within the smoke box B is the main heat box D, having the inclosing top and bottom plates *e'*, connected by a series of steam flues E, opening into the upper and lower steam chambers E and E', respectively, which chambers inclose the open ends of said flues and are formed by the swelled or flared heads or cap plates *d'*, removably secured to the top and bottom plates *d* of said main heat box. The cold air is passed through the pipe F from the outside of the boiler into the rear end of the closed heat box so that as the air passes around said flues or tubes the same is

heated by the exhaust steam passing there- 50
through from the lower to the upper steam chamber, the same being led through the exhaust steam pipe G, by means of piping led from the cylinders of the locomotive when the engine is traveling, but when the locomotive 55
is at rest, through the auxiliary steam pipe G', opening into the lower steam chamber and connected with the boiler at a suitable point of attachment so as to be under the control of the engineer. The air supply pipe F, be- 60
fore referred to, leads from the water separator box H arranged upon the outside of the locomotive and to one end of which is connected the steam pipe F', within which is arranged the steam injector F², arranged di- 65
rectly below the cold air funnel F³, which is disposed toward the front end of the locomotive so as to collect and force the cold air into the heat box D, while the locomotive is running or at rest, the said air being partially 70
heated by the steam through the pipe F', which also serves to draw the air through said funnel and force it into the separator. It will be readily seen that the steam coming in contact with the cold air will be rapidly con- 75
densed and the water of condensation together with the heated air will be carried into the water box H, from which the air now heated by the steam to a certain degree, passes through the pipe F into the box D, while the 80
water collects in the box or chamber H and finds escape through a suitable discharge pipe H' in the bottom thereof, and to which may be connected a suitable trap. The top and bottom plates *d* of said heat box D are ex- 85
tended at their front ends to form an enlarged hot air space I, and are flanged as at *i* to receive and support the lower plate of the inclined auxiliary or gridiron heater J. The said auxiliary or gridiron heater J comprises 90
the upper and lower perforated plates *j* and *j'*, respectively, the lower one of which is removably clamped to the flanges of the plates *d*, and the connecting hot air tubes K, connecting said plates and exposed exteriorly to 95
the heat within the smoke box of the boiler. The hot air passing from around the steam tubes E within the hot air box passes from

the hot air space I through the heat tubes K and into the outer heat chamber L inclosing the open outer ends of the tubes within the upper plate j. The air by this time is heated
 5 to a high degree of temperature and is led from the heat chamber L through the circulating pipe M, outside of the boiler to the several radiators of the cars. From the radiators the heat is led through the return pipe N back
 10 into the smoke box of the locomotive, where such pipe terminates in a turned discharge end n, alongside of and projecting above the movable exhaust nozzle O. The said exhaust nozzle O is removably connected to the upper
 15 steam chamber so that the same can be removed at any time desired, and the steam escaping therethrough and around the discharging end n of the return pipe creates an additional suction through said return pipe, which
 20 materially assists the circulation throughout the line of piping. The said return pipe N is further provided at a point outside of the boiler with the ejector P through which steam is passed from the pipe Q, under the control
 25 of the engineer so that when the train is at rest, said ejector, in connection with the injector, combines to provide for a perfect circulation of the cold air into the heater and for the utilized hot air from the radiators as
 30 already described. If found desirable the return pipe N may be led to the fire box of the locomotive so that an increased draft may be obtained and the combustion within the fire box greatly aided.

35 From the foregoing it will be readily understood that an improved car heater is provided which not only provides means for thoroughly heating cold air and leading the same to the radiators of the car while the train is in motion, but also while the same is at rest, and it
 40 is thought that the construction, operation and many advantages of the same will be apparent without further description.

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

1. In a car heater, the combination with a locomotive boiler smoke-box; of a main heat box arranged within the smoke box, a series
 50 of vertical steam tubes passing vertically through the heat box and connecting the top and bottom plates thereof, said heat box being enlarged at one end to form a hot air space, steam chambers inclosing the upper

and lower ends of said tubes above and below the top and bottom plates of said box, a
 55 steam pipe leading into the lower chamber over the lower open ends of said tubes, a cold air suction supply pipe connected to one end of said heat box, an exposed auxiliary heater
 60 connected directly with the hot air space of the heat box at the other end thereof, and a hot air circulating pipe connected to said auxiliary heater and leading to the car radiators, substantially as set forth.

2. In a car heater, a tubed heat box, steam chambers arranged upon the top and bottom of said heat box, a movable steam escape funnel secured to the top of the upper steam
 65 chamber, a hot air circulating pipe leading from the heat box to the radiators of the system, a return pipe leading from said radiators and having a discharging end arranged alongside of and projecting above said escape
 70 funnel, and an auxiliary steam ejector pipe connected with said return pipe, substantially as set forth.

3. In a car heater, a tubed heat box adapted to be arranged within the boiler smoke box and having extended flanged sides and an enlarged
 80 hot air space inclosed by said extended sides, steam chambers removably arranged upon the top and bottom of said heat box, an exposed auxiliary or gridiron heater removably secured to the flanged plates of the main heat
 85 box, and a circulating pipe connected to said auxiliary heater, substantially as set forth.

4. In a car heater, a tubed heat box arranged within the boiler smoke box, heating steam chambers inclosing the open ends of the tubes
 90 passing through the heat box, said heat box being provided with an enlarged hot air space at one end, an auxiliary or gridiron heater leading from said hot air space and comprising upper and lower perforated plates and
 95 hot air tubes connecting said plates, a heat chamber inclosing the open outer ends of said heat tubes, a circulating pipe leading from said heat chamber, and a return pipe leading back into the smoke box, substantially as set
 100 forth.

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

GEO. W. RODGERS.

Witnesses:

E. M. BLANCHARD,
 WILLIAM W. BELL.