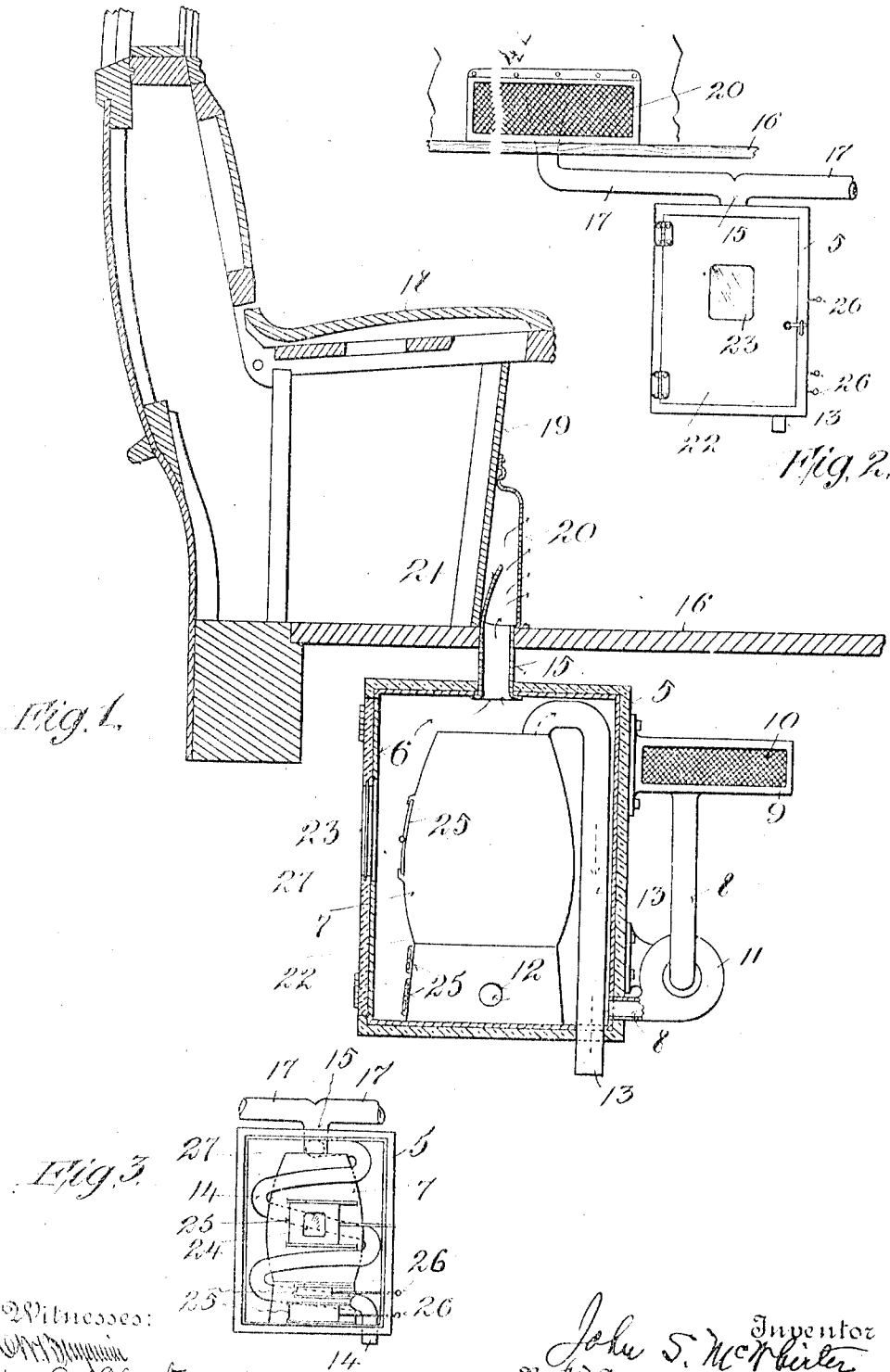


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CAR HEATING APPARATUS.
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1,064,151.

Patented June 10, 1913.



Witnesses:
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UNITED STATES PATENT OFFICE.

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CAR-HEATING APPARATUS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN S. McWHIRTER, a citizen of the United States, residing in New York city, county and State of New York, have made a certain new and useful Invention in Car-Heating Apparatus, of which the following is a specification.

This invention relates to car heating apparatus.

The object of the invention is to provide an apparatus for heating street or other cars, vehicles or the like, which is simple in construction, economical to manufacture, capable of easy application to the car or vehicle and efficient in operation.

A further object of the invention is to provide an apparatus of the character referred to wherein coal or other fuel may be employed thereby securing economy, and wherein a heating stove is used with a forced draft and forced heat distribution to the car or vehicle to be heated therefrom, and wherein the heater and associated parts and apparatus are so located as to be wholly removed from available passenger space in the body of the car or vehicle, while the heat distribution is effected from a point adjacent the floor level of the car or vehicle, thereby not only securing a efficient heating of the car or vehicle but also a desirable artificial ventilation of the same.

Other objects of the invention will appear more fully hereinafter.

The invention consists substantially in the construction, combination, location and relative arrangement of parts, all as will be more fully hereinafter set forth, and particularly pointed out in the appended claims.

Referring to the accompanying drawing,—Figure 1 is a view in transverse section of a portion of a street car, showing the application thereto of a heating apparatus embodying the principles of my invention. Fig. 2 is a detail view in elevation of the heater showing a slight modification of the manner of distributing the heat therefrom into the car. Fig. 3 is a detail view in elevation of the heater, the door of the inclosing casing being removed, and showing a slight modification of the arrangement of draft connection from the heater.

Referring to the drawings, in carrying out my invention, in one form of embodiment thereof, I provide an air tight casing 5,

which may be constructed in any suitable form and of any suitable material. I have found that sheet asbestos lumber is efficient for my purposes as it is light, durable and fireproof. If desired, the chamber 27 of the casing 5 may be lined with galvanized sheet iron 6. This casing I propose to locate and conveniently support beneath the floor of the car, as clearly shown, and to place therein the stove 7. This stove may be of any suitable construction and form, for coal or other fuel consumption. In the form shown the upper part of the stove constitutes the fire chamber and the lower part the ash pit. A pipe connection 8, delivers into the chamber 27, of the casing, which surrounds the stove, preferably at a point adjacent the lower end of said casing, said pipe connection communicating with the outer air, preferably through an air intake device 9, which is preferably protected by means of a perforated screen 10. A blower fan, indicated at 11, in Fig. 1 is arranged in the pipe connection 8, and operates to deliver air into said chamber.

A draft may be maintained through the stove in any suitable or convenient manner for the purpose of supporting the combustion of the fuel therein. A simple and effective arrangement is shown wherein I provide a small opening 12, through the side of the stove, preferably at a point beneath the fire chamber thereof, as shown. From the top of the stove extends the draft pipe 13, which is arranged in any desired manner within the chamber 27 of casing 5, and extends downwardly therein and out through the wall thereof at any convenient point to deliver to the outer air.

In the modified arrangement shown in Fig. 3 the down draft pipe is arranged in a spiral coil around the stove as indicated at 14.

The heat distribution from the heater to the interior of the car may be accomplished in many different ways. A simple arrangement is shown wherein a distributing pipe connection 15, which communicates with the chamber 27, of casing 5, is arranged to extend upwardly through the floor 16, of the car or vehicle, to deliver into the interior of the car, or vehicle, at a point adjacent the level of floor 16, as shown in Fig. 1. If desired, the heated air may be delivered into the body of the car at various points by

means of distributing pipe connections 17, which are arranged to communicate with the pipe connection 15, or, in any other manner, with the chamber 27.

5 In order that the heating apparatus may not occupy any space inside the car or vehicle body which would otherwise be available for passengers, the heat distributing pipe connections may be arranged to deliver
10 into the car at a point beneath the seats. A practical arrangement is shown wherein the heat distributing pipe connection is made to deliver into the car adjacent the foot board or riser, 19, of a longitudinal side
15 seat 18, of the car, and, if desired, through a suitable register 20. If desired, and in order to direct the heated air into the car body through the register 20 and in a direction transversely of the car, a deflector plate
20 21 may be employed at the point of delivery of the heat distributing pipe connections into the car, said plate being suitably curved or bent, as shown to accomplish the desired result.

25 In order to gain access to the interior of the chamber 27, for the purpose of inserting or removing the stove, or of attending to the fire or to supply fuel or remove ashes, the casing 5 may be provided with a removable side 22, which, in the drawing, is shown
30 as a hinged side door.

In order to afford means for inspecting the fire without opening the door 22, the casing 5, may be provided with a panel 23,
35 of isinglass or other suitable transparent material, and a similar panel 24, may be provided in the stove.

If desired, and in order to afford means for regulating and controlling the fire in the
40 stove, said stove may be provided with the usual damper slides 25, controllable by rods 26, which extend to the exterior of the casing 5.

The operation of the apparatus is very
45 simple and will be readily understood. With a fire in the stove 7, and the latter arranged in chamber 27, and the chamber closed, the blower 11, delivers air into said chamber 27, with a velocity sufficient to create a desirable degree of pressure in said
50 chamber. This air circulating around the stove and around the down-draft pipe connection 13, thereby becomes heated and is delivered through the distributing pipe connections 15, 17, into the body of the car and
55 at any desired point, or points, preferably adjacent the floor level thereof. The small opening 12 in the stove affords means for a draft to be maintained through the stove,
60 The heated products of combustion pass from the stove through the down draft pipe connection 13, and are finally delivered thereby to the outer air, said draft pipe passing, as above explained, through the casing 5. The air circulating in the chamber

27, and around the down draft pipe, enables
70 me thereby to extract the heat from the gases or other products of combustion passing from the stove, and to utilize the same for heat distribution into the interior of the car, and consequently I am enabled to attain great efficiency in fuel economy. The heated
75 air distributed at one or more points into the car body and adjacent the floor level thereof not only heats the car most efficiently throughout wide areas, but the heated air rising within the car effects a desirable artificial ventilation of the car. In these respects a heating apparatus embodying my
80 invention embodies very great practical advantages over the usual method of car heating from stoves where only the space immediately adjacent the stove is heated, and only by radiation and not from a hot air draft, and besides, this system of heating affords
85 no material degree of ventilation of the car. By locating the heating apparatus beneath the floor of the car it does not take up any passenger space on the inside of the car, and by employing a downdraft pipe connection I avoid the necessity of running a
90 stove pipe up through the car body and roof which would take up passenger space.

An apparatus embodying my invention enables me to employ coal or other fuel
95 stoves in place of electric heaters, and to secure the greatest degree of economy of fuel consumption, while affording ample means for regulating the heat supply, and consequently securing great economy in the
100 car heating system. By arranging the down draft pipe connection in a coil within chamber 27, as indicated at 14, Fig. 3, I am enabled to increase the efficiency of the heat extraction therefrom for heat distributing
105 purposes.

While I have shown my invention as applied to street car heating, it is readily seen that it is equally well adapted for use in
110 connection with other vehicles, as automobiles, railway cars, wagons, carriages or the like.

While I have shown and described a specific construction and arrangement embodying my invention, it is obvious that many
115 changes and modifications in the details thereof, will readily occur to persons skilled in the art, without departure from the spirit and scope of my invention as defined in the claims. But
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Having now set forth the objects and nature of my invention, and a construction embodying the principles thereof, what I claim as new and useful, and of my own invention, and desire to secure by Letters
125 Patent, is,—

1. The combination with a car, of a closed chamber located beneath the floor of said car, a heating stove within said chamber and receiving its air supply from said cham-
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ber, a draft pipe leading from the top of said stove downwardly through the bottom of said chamber, a register in said car, a pipe for conducting heated air from said chamber to said register, means for delivering air into said chamber, and means for maintaining a higher air pressure in said chamber than in said stove.

2. The combination with a car, of a closed chamber located beneath the floor of said car, a heating stove within said chamber and receiving its air supply from said chamber, a draft pipe leading from the top of said stove downwardly through the bottom of said chamber, a register in said car, a pipe leading from the top of said chamber to said register, means for delivering air into the lower part of said chamber, and means for maintaining a higher air pressure in said chamber than in said stove.

3. The combination with a car, of a closed

chamber located beneath the floor of the car, a stove located within said chamber and receiving its air supply from said chamber, a register in said car, a pipe for conducting heated air from the top of said chamber to said register, and means for delivering air to said chamber and also to said stove, a draft pipe extending from the top of said stove through the bottom of the chamber, said pipe being arranged in a spiral coil around said stove, and means for maintaining a higher air pressure in said chamber than in said stove.

In testimony whereof I have hereunto set my hand in the presence of the subscribing witnesses, on this 1st day of February A. D., 1911.

JOHN S. McWHIRTER.

Witnesses:

MAE W. CLINTON,
S. E. DARBY.