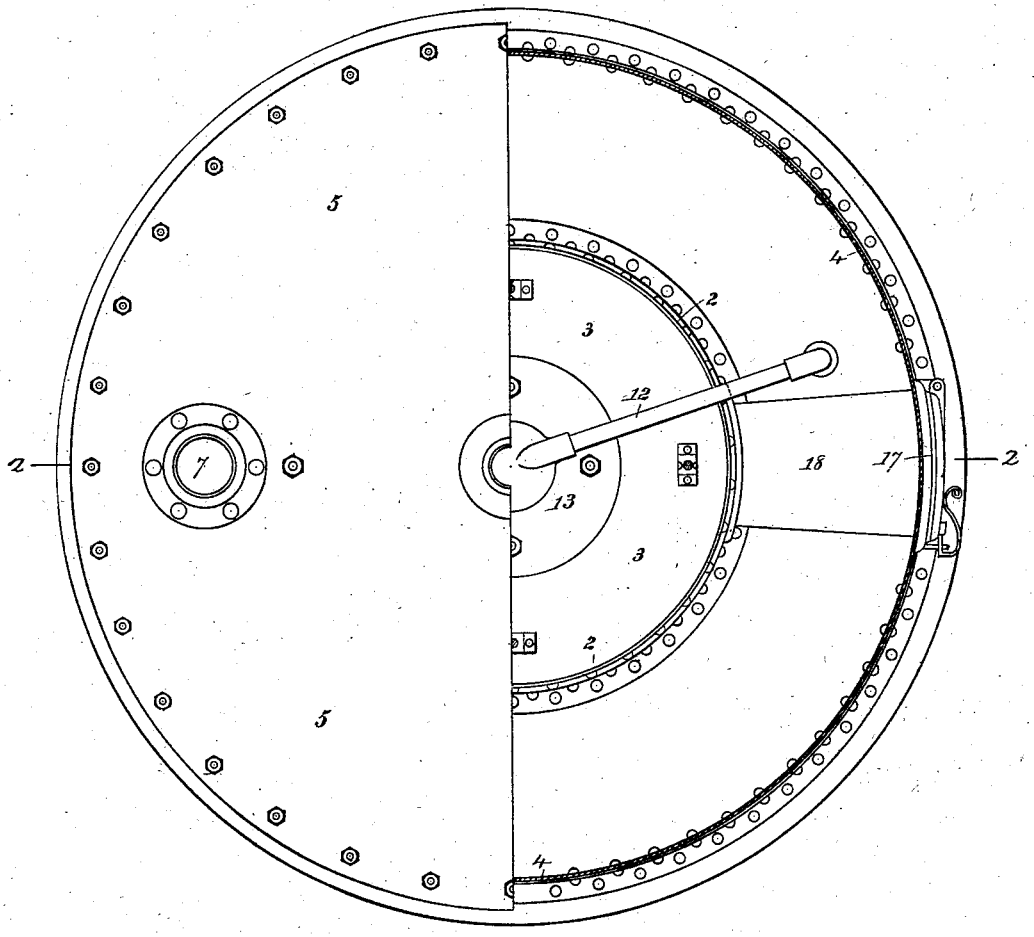
(No Model.) 3 Sheets—Sheet 1.

B. CHAMBERLAIN.

APPARATUS FOR HEATING RAILWAY TRAINS.

No. 259,976. Patented June 20, 1882.

Fig 1.



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(No Model.) 3 Sheets—Sheet 2.

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Fig 2.

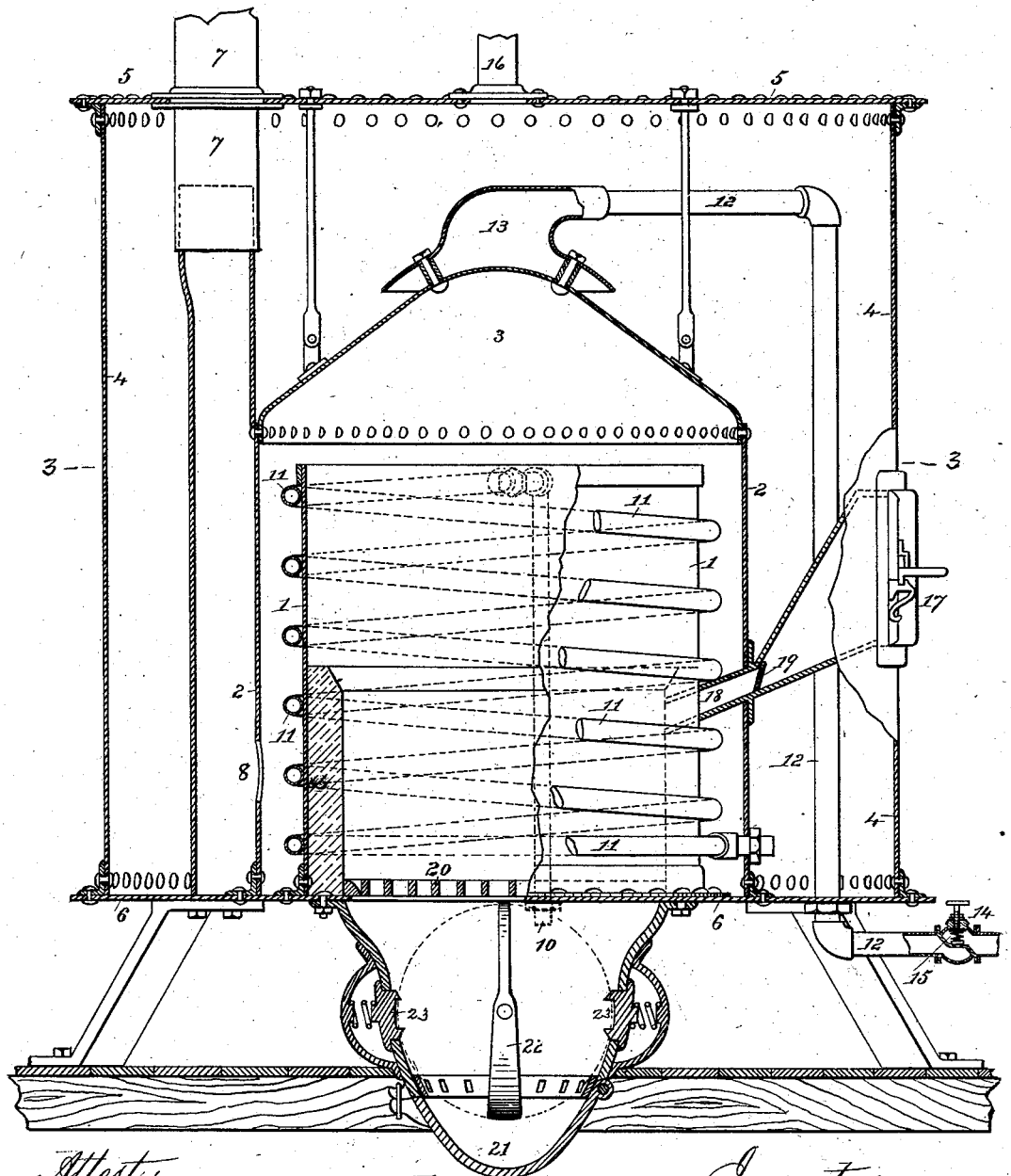
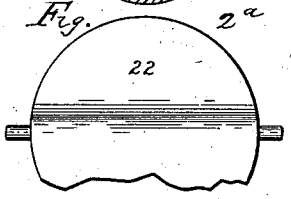


Fig. 2a



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(No Model.) 3 Sheets—Sheet 3.

B. CHAMBERLAIN.

APPARATUS FOR HEATING RAILWAY TRAINS.

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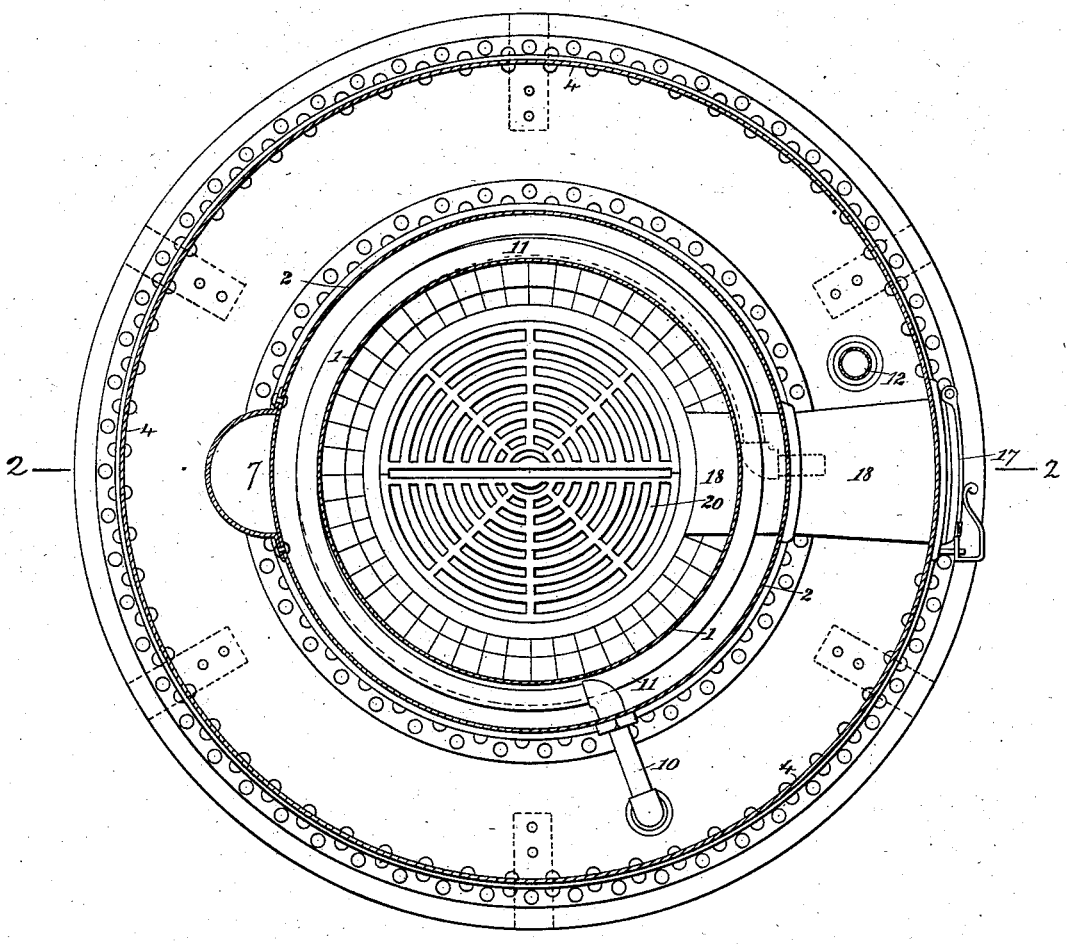
Fig 3.



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UNITED STATES PATENT OFFICE.

BLANCHARD CHAMBERLAIN, OF BELLEFONTAINE, OHIO.

APPARATUS FOR HEATING RAILWAY-TRAINS.

SPECIFICATION forming part of Letters Patent No. 259,976, dated June 20, 1882.

Application filed April 7, 1882. (No model.)

To all whom it may concern:

Be it known that I, BLANCHARD CHAMBERLAIN, a citizen of the United States, residing at Bellefontaine, in the county of Logan and State of Ohio, have invented a new and useful Improvement in Heaters for Railway-Cars, of which the following is a specification.

My heating apparatus consists essentially of two concentric air-tight shells or cylinders, one within the other, forming an air-heating chamber between them; a third cylinder, constituting a fire-chamber, located concentrically within the inner shell above referred to with an annular space between; an air-heating coil passing through said annular space and emptying into the air-chamber first referred to, and a delivery-pipe connected with a hood which surmounts the dome-shaped top of the inner shell in such a manner as to compel the air as it is delivered to pass in close contact with the said dome.

My improvement further relates to a combination of check and safety valves for maintaining pressure within the hot-air chamber, devices for introducing fuel for supplying the fire and for preventing the escape of fire through the feeding-aperture in case of accident, and an automatic shutter by which, in case of the overturning of the car, the opening beneath the grate is closed, so as to confine the burning fuel to prevent the communication of fire.

In order that the invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a top view of a furnace, illustrating my invention. Fig. 2 is a vertical section on the line 2 2, Figs. 1 and 3. Fig. 3 is a horizontal section on the line 3 3, Figs. 1 and 2.

1 represents an inner cylinder, open at top and lined at bottom for one-half of its height (more or less) with fire-brick, as shown in Fig. 2.

2 is a second cylinder, formed with a dome-shaped top, 3, surmounting the fire-chamber 1, so that the flame and gaseous products of combustion will rise in contact with the said dome and will pass downward through the annular space surrounding the cylinder 1.

4 is a cylinder constituting the outer casing, which may have a continuous flat top, 5, and an annular bottom, 6, the latter extending inward as far as the fire-cylinder 1.

7 is a smoke-stack or chimney extending upward from the bottom of the heater through the top 5, and having near its lower end an opening, 8, communicating with the annular space between the cylinders 1 and 2.

10 represents an inlet-pipe for air, which extends upward within the heater to about the top of the fire-cylinder 1, and passes around on the outside of the same in a number of convolutions, 11, nearly to the bottom of the annular space, at which point it is extended through the cylinder 2, delivering into the hot-air chamber. The outlet-pipe is shown at 12, connected with a hood, 13, surmounting the dome or crown 3 of the furnace and in close proximity thereto, so that the air will be compelled to pass in contact with the heated dome.

A check-valve, 14, is applied at any suitable point in the outlet-pipe 12, opening outward, and held to its seat by a spring, 15, so as to maintain any desired pressure within the hot-air chamber.

16 represents a safety-valve applied to the top 5 of the hot-air chamber, which valve will in practice be weighted slightly in excess of the valve 14, thus permitting the discharge of air in case of any obstruction in the outlet-pipe.

The feeding-door is shown at 17, communicating with a chute, 18, extending to the interior of the furnace and provided with an automatic inner door, 19, closing outward by gravity, so that it will open under the superincumbent weight of coal, but in the event of accident will effectually prevent the escape of burning fuel from the furnace or the communication of fire.

Beneath the grate 20 is a hinged ash-pit, 21, projecting beneath the bottom of the car to facilitate cleaning.

Between the ash-pit and the under side of the grate is a heavy wrought-iron plate, 22, pivoted on two sides, so as to be suspended edgewise, and thus prevent the obstruction of air while the apparatus is in its erect position, and adapted to close automatically and prevent the communication of fire in the event of the upsetting of the car.

The plate 22 is shown in front elevation in Fig. 2, and in edge view in position in Fig. 2. It is of circular form, and, being much thicker on one side of its gudgeons than on the other, hangs in vertical position so long as the heater

is erect, and will instantly shut by gravity if the heater upsets. It is then caught and held tightly shut by the automatic catches 23.

In practice it is preferred to employ a single heater for the entire train, the air being forced from the fan-cylinder beneath the engine through the inlet-pipe and delivered from the outlet-pipe to a system of coils or other radiators in the successive cars of the train, the connection being by automatic couplings, which it is my purpose to make the subject of a separate application for Letters Patent.

If preferred, a heater may be used in each car, as the apparatus is so constructed as to preclude danger from fire. The question as to using a separate heater for each car or one heater for the entire train is one of economy and convenience.

I am aware that it has been proposed to use an automatic shutter over the top of the fire-pot; but this is not required with my construction of heater. Dampers underneath the grate closed by a crank or handle are old and well known.

Having thus described my invention, the following is what I claim as new and desire to secure by Letters Patent:

1. The combination of the fire-chamber 1, casings 2 4, and a coil, 11, passing through the annular flue-chamber between the fire-chamber 1 and casing 2, for the purpose of heating air, substantially as herein described.

2. The combination of the fire-chamber 1, inner and outer casings, 2 and 4, forming a hot-air chamber between them, and the hood 13, forming the entrance to the discharge-pipe 12 and placed over the top 3 of the casing 2 so as to compel the discharged air to pass in contact with the said top 3, substantially as described.

3. In a railway-car heater, the safety-shutter 22 beneath the grate, adapted to close automatically in event of the upsetting of the car.

4. The combination, with a stove or furnace, of the weighted pivoted door 22 and automatic catches 23 to lock the same in closed position in event of upsetting, substantially as described.

5. The combination of the air-tight heater 1 2 3 4, outlet 12, check-valve 14, and safety-valve 16, substantially as and for the purposes set forth.

BLANCHARD CHAMBERLAIN.

Witnesses:
E. J. HOWENSTEIN,
J. O. SWEET.