

(No Model.)

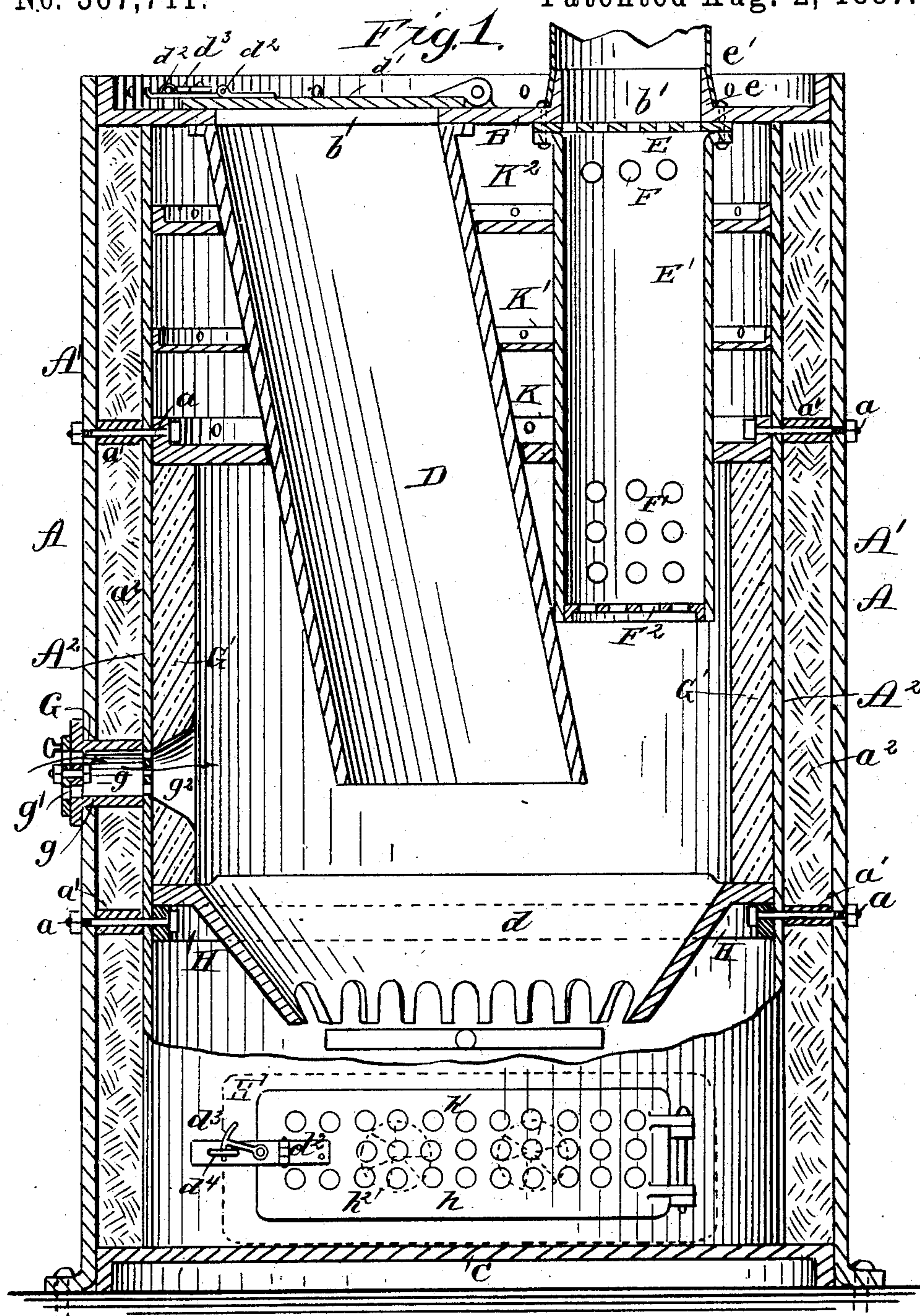
2. Sheets—Sheet 1.

P. J. GURNEE.

CAR HEATER.

No. 367,711.

Patented Aug. 2, 1887.



WITNESSES:

J. D. Garfield
C. Sedgwick

INVENTOR:

BY

J. J. Gurnee
Munn & Co

ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

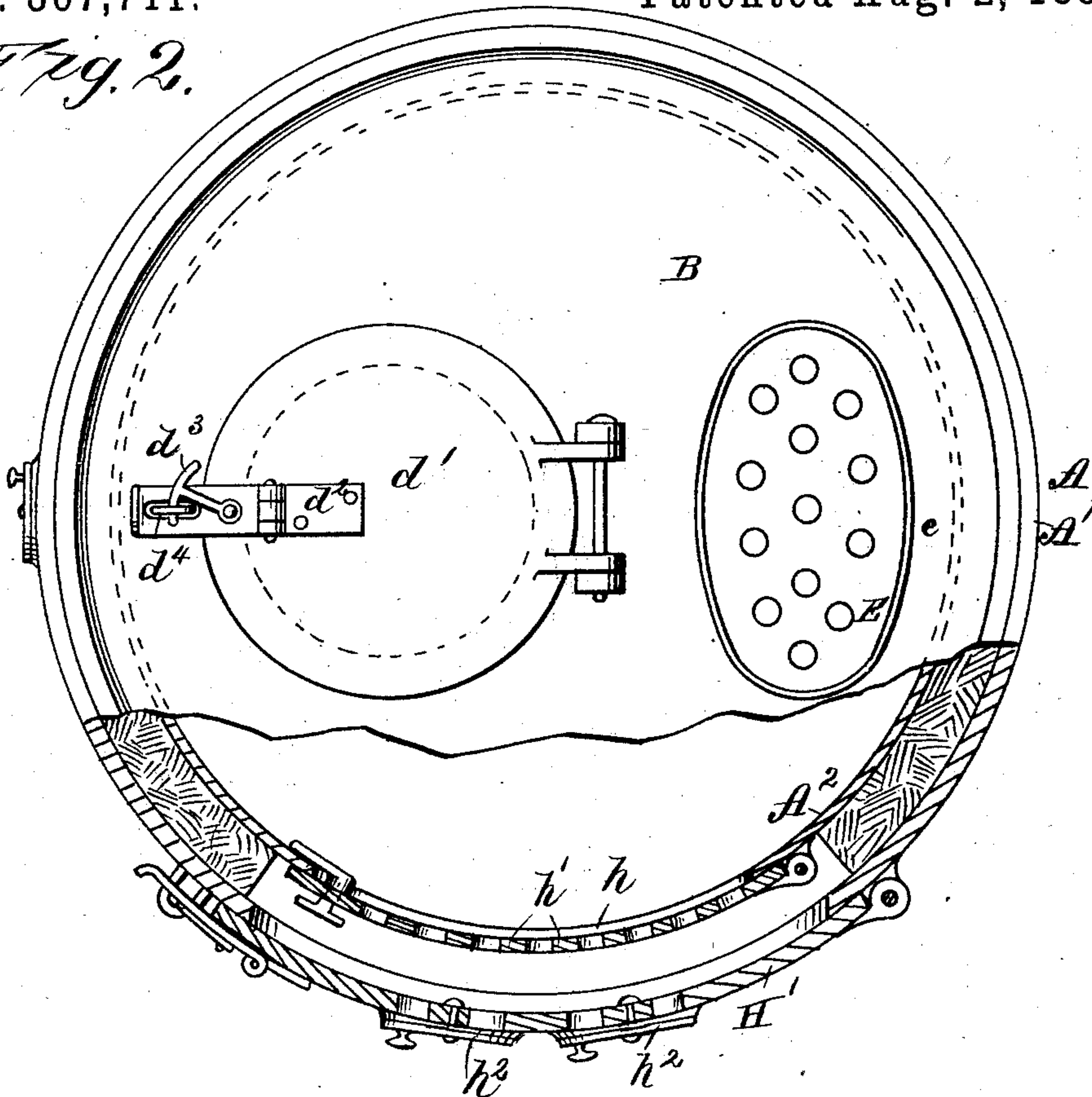
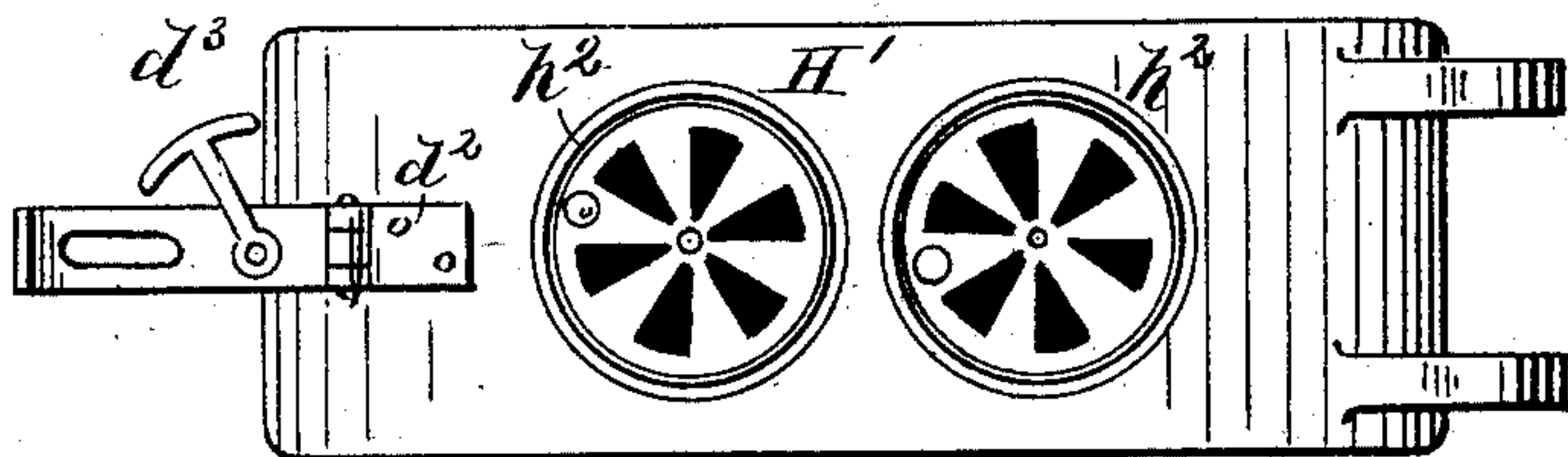


Fig. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

PALMER J. GURNEE, OF RONDOUT, NEW YORK.

CAR-HEATER.

SPECIFICATION forming part of Letters Patent No. 367,711, dated August 2, 1887.

Application filed January 31, 1887. Serial No. 226,035. (No model.)

To all whom it may concern:

Be it known that I, PALMER J. GURNEE, of Rondout, in the county of Ulster and State of New York, have invented a new and Improved Car-Heater, of which the following is a full, clear, and exact description.

My invention relates to an improvement in car-heaters, and has for its object to provide a heater capable of sustaining great abuse, in which ample means will be provided to retain the fuel in the heater in the event of an accident to the car.

A further object is to so construct the heater as that the bottom, sides, and greater portion of the top will at all times be substantially cool.

The invention consists in the construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is mainly a central longitudinal vertical section through the heater; and Fig. 2 is a plan view thereof, partly in section. Fig. 3 is a detail view of the outer and lower draft-door, also shown in dotted lines in Fig. 1.

The heater A is preferably cylindrical in form and composed of an outer casing, A', and an inner casing, A², the aforesaid outer casing being constructed of boiler-steel and the inner cylinder of boiler or cast iron. The two casings are securely bolted together by two or more series of bolts, a, the said bolts being provided with washers a', intervening the aforesaid outer and inner casings, to provide an annular space, a², from top to bottom of the heater.

The annular space a², intervening the casings A' and A², is packed with any suitable non-heat-conducting material, such as amorphous silica and clay. A head, B, and bottom C are provided the heater, the flanges of which bottom and head are securely riveted or bolted to the outer casing, A'. Two openings are cut in the head B, one each side of the center—a circular opening, b, and an oval opening, b', beneath the circular opening b and in registry therewith. A coal-magazine, D, is se-

cured to the said head, which magazine is adapted to extend downward within the heater at an inclination to a central position over the fire-pot d; and to the upper surface of the head B a lid, d', is hinged, so as to cover the circular opening b, the said lid being provided with a hinged hasp, d², having a hook, d³, pivoted thereon, which hasp is adapted to engage a staple, d⁴, whereby a secure fastening is provided by either causing the hook d³ to enter the said staple or securing the hasp in engagement with the staple by a padlock or equivalent device. The oval opening b' in the head is provided with an upwardly-extending and integral collar, e, adapted to receive a pipe, e', which pipe may be connected with a drum or any desired or suitable device for radiating heat generated in the heater, the waste products of combustion being carried out from said radiating device outside the car in any convenient or approved manner. Below the aforesaid oval opening b' an apertured plate, E, is secured to the under side of the head, and a tubular conductor, E', is secured to the said plate and to the head in registry with the said oval opening.

The tubular conductor E', made to project vertically downward from the head B to a point above the fire-pot, is provided with circumferential apertures F near the top and a series of similar apertures, F', near the bottom, which bottom is inclosed by an apertured plate, F², similar to the aforesaid upper apertured plate, E. The purpose of this conductor E' is to convey the heat up from the body of the heater to the supply-pipe e', from whence it is conducted to a drum or other radiating device, and the gases and smoke from said radiating device outside the car, as aforesaid; and the object of the apertured plates is to prevent the escape of the burning coal should the heater be upset.

As a means of conveying the heated air upward into the tubular conductor E', one or more air-apertures, G, are made in the outer casing, A', into which may be passed a thimble, g, to extend through the filling a² and abut against the outer face of the inner casing, A². Upon the said thimble, which is securely attached to the said outer casing, a register, g', may be pivoted, if desired, or the said air-passage

may be formed in any other approved manner. In every event, however, the inner casing at this point is not pierced, save by a series of apertures, g^2 , as shown, whereby, while the air is permitted to freely enter, as indicated by the arrows in Fig. 1, in event of accident the coals cannot escape. The fire-brick G' lining the fire-chamber is cut away in alignment with the said vent.

The fire-pot d is supported above the grate, and may be supported in any suitable manner, as by an annular band, H , held in position by one of the series of bolts a uniting the cylinders, as shown in Fig. 1.

Near the base of the heater upon one side a door, h , is hinged to the inner casing in front of the ash-pit, the said door being provided with a number of apertures, h' , to prevent the egress of coal, yet give ample draft; and it may be locked in similar manner to the hinged lid of the coal-magazine, above described. To the outer casing opposite the aforesaid inner apertured door, h , a similar yet larger door, H' , is hinged, which may be fastened in similar manner to said inner door, which outer door is provided with registers h'' , as shown in dotted lines in Fig. 1, in section in Fig. 2, and in detail in Fig. 3.

Above the fire-pot three spaced annular plates, K , K' , and K'' , are respectively secured to the inner casing, the said plates being provided with openings through which the coal-magazine and hot-air conductor are made to pass, which plates not only serve to strengthen the heater, but also as an extra safeguard against spilling the coal should the heater become damaged, as should one plate become loosened or broken two guards still exist between it and the head, although the annular plates K , K' , and K'' are intended simply to serve as strengthening-plates and as auxiliary safeguards against the spilling of coals from the heater. They of themselves radiate more or less heat, and a certain amount of the products of combustion will necessarily find their way between the edges of the said plates and the magazine D and conductor E' up into the last chamber formed by said plates. To utilize the radiant heat and escaping waste products as a heating factor, the apertures F are made in the conductor E' . Air may be admitted to the chambers formed by the said plates through suitable draft-openings—as, for instance, similar to the inlet G ; but preferably such inlets are omitted. It will be seen that there is scarcely a possibility of my heater being so damaged as to spill the coals, in that its outer casing of cylindrical steel will sustain great weight and abuse before yielding; and even should it yield the auxiliary safeguards are so many that the fire has scarce a chance to escape, and the sides, bottom, and almost the entire top, being comparatively cool at all times, will not char or promote combustion with the most inflammable material should they come in contact therewith.

The heater is bolted to the floor, when in

operation, securely enough to sustain it in a vertical position under ordinary circumstances, but not strong enough to hold in engagement with the floor should an accident occur, as the heater will sustain the most weight when upon its side.

It will be observed that the heater is designed to act merely in the capacity of a heat-generator and not a radiator, although heat is radiated from the top to some extent, the car being heated through the medium of a drum or coil of pipe having communication with the outside and also with the generator.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with a cylindrical heater, of a series of spaced annular guard-plates apertured to receive the fuel-magazine, substantially as shown and described.

2. The combination, with a double cylindrical heater provided with an intervening packing of non-heat-conducting material, of a series of spaced annular guard-plates apertured to receive the fuel-magazine, and means for conducting the products of combustion from said heater, substantially as herein set forth.

3. The combination, with a double cylindrical heater provided with an intervening packing of non-heat-conducting material, of a series of spaced annular guard-plates secured to the inner cylinder and apertured to receive a fuel-magazine, means for introducing air through the casings, and means for conducting the products of combustion from the heater, substantially as herein shown and described.

4. The combination, with a cylindrical heater provided with annular spaced guard-plates attached thereto, of a fuel-magazine having a hinged top and passing through said plates, and a tubular heat-conductor, also passing through said plates, provided with an apertured bottom, substantially as shown and described, and for the purpose herein set forth.

5. The combination, with a double cylindrical heater provided with an intervening packing of non-heat-conducting material and spaced annular guard-plates secured to the inner cylinder, of a fuel-magazine penetrating said plates and having a hinged cover, a tubular heat-conductor, also passing through said plates, provided with an apertured bottom, and an airway penetrating said cylinder, substantially as shown and described.

6. The combination, with a cylindrical heater provided with annular spaced guard-plates attached thereto and a fuel-magazine penetrating said plates, provided with a closed top, of a tubular heat-conductor, also passing through said plates, provided with an apertured top and bottom, substantially as shown and described, and for the purpose herein set forth.

7. The combination, with a double cylindrical heater provided with an intervening packing of non-heat-conducting material, a series of spaced annular guard-plates attached to the

inner cylinder, and a fuel-magazine provided with a closed top penetrating said plates, of a tubular heat-conductor, also penetrating said plates, provided with an apertured top and bottom, and means for introducing air in said heater, substantially as herein shown and described.

8. The combination, with a double cylindrical heater provided with an intervening packing of non-heat-conducting material, a series of annular spaced guard-plates attached to the inner cylinder, a fuel-magazine penetrating said plates, having a closed top, and an apertured tubular heat-conductor, also penetrating said plates, of an incased aperture in the outer casing to admit air, and registering apertures in the inner casing, substantially as shown and described, and for the purpose herein set forth.

9. The combination, with a cylindrical heater provided with a series of spaced annular guard-plates, a fuel-magazine penetrating said plates and having a closed hinged top, of a tubular heat-conductor, also penetrating said plates, provided with an apertured top and bottom, apertures in the side below the bottom guard-plate, and apertures in the side at the top between the upper guard-plate and head of the heater, substantially as herein shown and described.

10. The combination, with a double cylindrical heater provided with an intervening

packing of non-heat-conducting material, a series of annular spaced guard-plates attached to the inner cylinder, a fuel-magazine penetrating said plates, having a hinged closed top, of a tubular heat-conductor, also penetrating said plates, provided with an apertured bottom and top, apertures in the side below the lower guard-plate, and apertures in the side near the top between the upper guard-plate and the heater-head, together with means of introducing air in said heater, substantially as shown and described, and for the purpose herein set forth.

11. The combination, with a double cylindrical heater provided with an intervening packing of non-heat-conducting material, of an incased air-passage extending through the outer cylinder and packing, registering apertures g^2 in the inner cylinder adapted to introduce air over the fire, and an apertured base-door, h , hinged to the inner cylinder, together with an outer draft-door, H' , hinged to the outer cylinder parallel with the inner door, adapted to supply air beneath the fire, substantially as shown and described.

PALMER J. GURNEE.

Witnesses:

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JOHN MADDEN.