

J. S. WALKER.
HEATER.

APPLICATION FILED FEB. 1, 1911.

1,018,793.

Patented Feb. 27, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

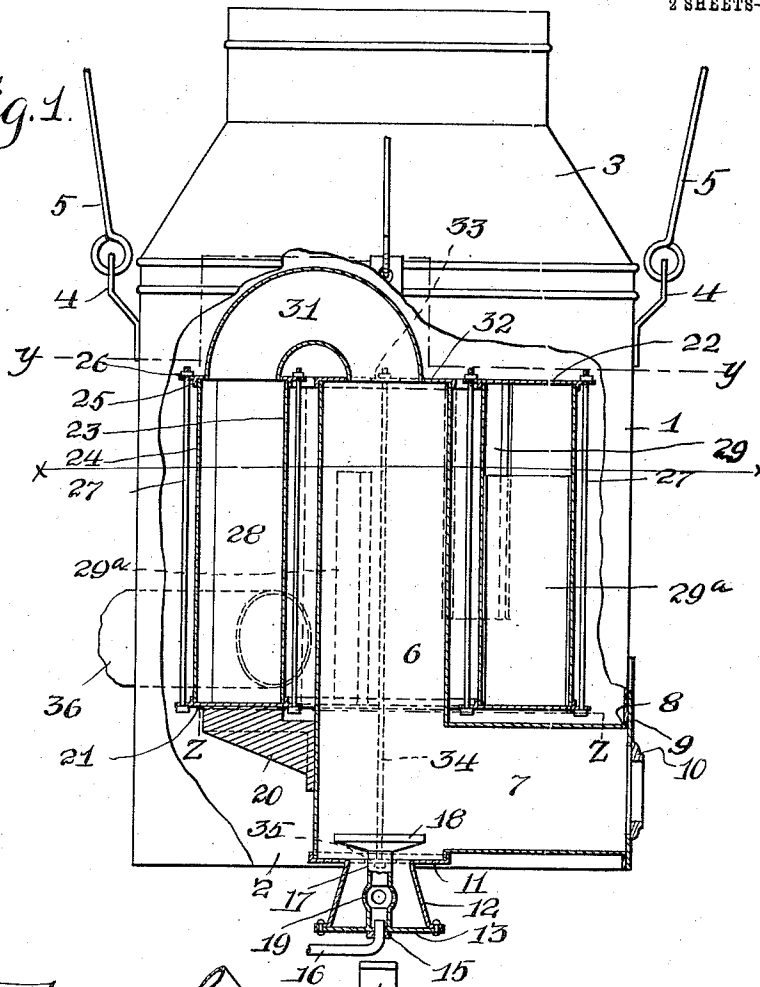
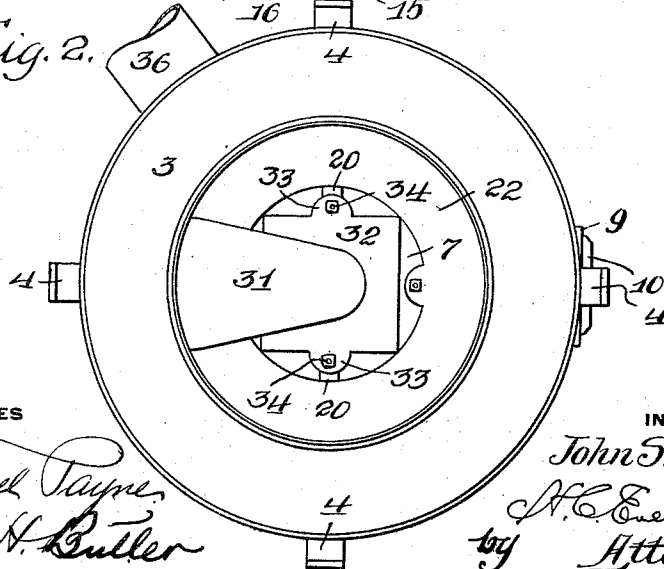


Fig. 2.



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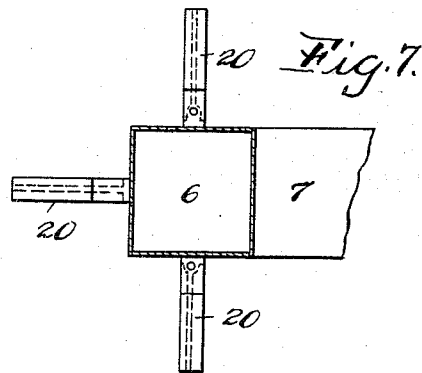
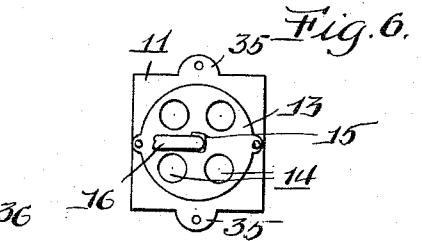
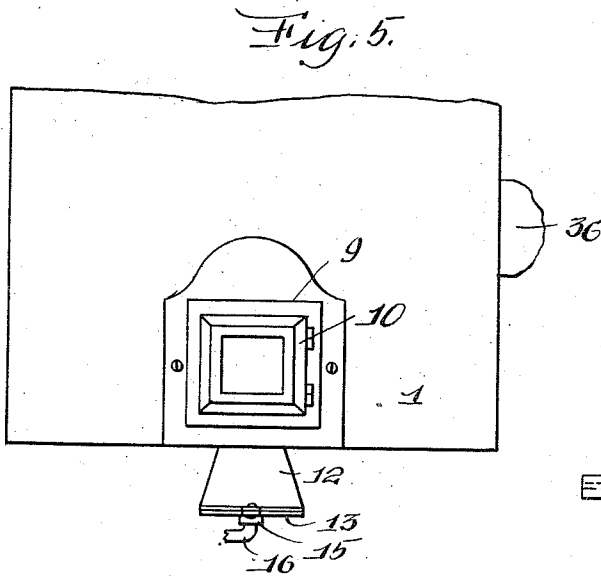
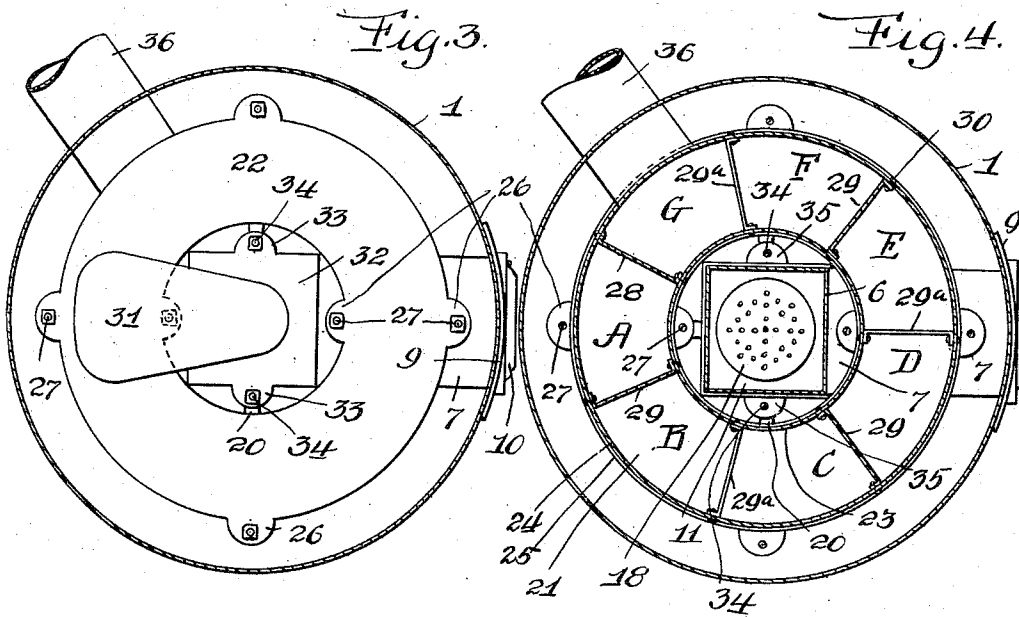
INVENTOR

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

JOHN S. WALKER, OF PITTSBURGH, PENNSYLVANIA.

HEATER.

1,018,793.

Specification of Letters Patent.

Patented Feb. 27, 1912.

Application filed February 1, 1911. Serial No. 606,014.

To all whom it may concern:

Be it known that I, JOHN S. WALKER, a citizen of the United States of America, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Heaters, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to heaters, and more particularly to that type of heater commonly styled a "hall" heater, which is located beneath the floor in conjunction with a register to emit hot air into the compartment above the floor.

The primary object of my invention is to provide a heater of the above type that is compact and efficient for producing a large number of heat units with a minimum expenditure of fuel.

Another object of the invention is to furnish a heater with means in a manner as will be hereinafter set forth whereby the heat units or products of combustion can be thoroughly utilized before escaping, and in a manner that will insure a safe operation of the heater without attention.

A further object of the invention is to accomplish the above results by a mechanical construction that is simple, durable, free from injury by ordinary use and easy to install.

With these and such other objects as may hereinafter appear, the invention consists of the novel construction, combination and arrangement of parts to be presently described in detail and then claimed.

Reference will now be had to the drawing, wherein:—

Figure 1 is a side elevation of the heater partly broken away and partly in section, Fig. 2 is a plan of the heater with the cap or dome of the heater casing removed, Fig. 3 is a horizontal sectional view of the heater on line Y—Y, Fig. 1, Fig. 4 is a similar view taken on the line X—X of Fig. 1, Fig. 5 is a front elevation of a portion of the heater, Fig. 6 is a bottom plan of the mixer casing, and Fig. 7 is a horizontal sectional view on line Z—Z, Fig. 1.

The reference numeral 1 denotes a cylindrical casing having an open bottom 2 and the top thereof provided with a dome 3 adapted to be connected to the register or a grate of a floor (not shown). The casing 1 has the upper edges thereof provided with

apertured lugs 4, and said casing can be suspended or supported from a floor by tie-rods 5 connected to said apertured lugs.

Centrally of the casing 1 there is a vertical burner casing 6 extending from the lower end of the casing 1 to a point in proximity to the upper edges of said casing. The burner casing 6 is rectangular in cross section and has the lower end thereof in communication with a right angular extension 7, the end of said extension protruding into an opening 8 in the casing 1, and said casing at the opening 8 is provided with a face plate 9 having a hinged door 10, whereby easy access can be had to the extension 7.

The lower end of the burner casing 6 is closed by the upper flanged edge 11 of a frusto-conical shaped mixer casing 12, said mixer casing having the bottom thereof closed by a plate 13 having a plurality of vents or openings 14 and a central opening 15 for the end of a gas supply pipe 16. In the casing 12 is a burner pipe 17 supporting a burner 18 in the lower end of the casing 6, said burner pipe having a mixer 19 of a conventional form.

The burner casing 6 adjacent to the lower end thereof is provided with a plurality of brackets 20, and mounted upon these brackets is a drum, comprising annular heads 21 and 22, an inner cylindrical shell 23 and an outer cylindrical shell 24, the shell 23 being of a less diameter than the shell 24 with the shell 23 arranged concentrically within the shell 24 and both of said shells held between the heads 21 and 22 by annular flanges 25. The edges of the heads 21 and 22 are provided with apertured lugs 26, and these lugs are connected by vertical tie-rods 27 to retain the parts of the drum in an assembled position. The inner walls of the shells 23 and 24 are connected by a plurality of radially disposed partitions 28, 29 and 29^a, said partitions being riveted or otherwise connected to the shells 23 and 24, as at 30. The partitions 29 extend downwardly from the head 22 in proximity to the head 21 and the partitions 29^a extend upwardly from the head 21 in proximity to the head 22, said partitions providing a sinuous or winding path through the drum. The partition 28 extends from the head 21 to the head 22.

The head 22 is connected by a curved pipe 31 to a top plate 32 mounted upon the upper end of the burner casing 6, said top plate having apertured lugs 33 connected by verti-

cal tie-rods 34 to apertured lugs 35, carried by the flange 11 of the mixer casing 12.

The drum at a point adjacent to the head 21 thereof between the partitions 28 and 29^a is provided with an exhaust pipe 36 extending through the wall of the casing 1 and adapted to be connected to a chimney or carried to the exterior of a building.

It is through the medium of the door 10 and the extension 7 that the gas at the burner 18 can be ignited, and as the products of combustion or heat units pass upwardly through the casing 6, the walls thereof are heated. The products of combustion passing through the pipe 31 into the drum can only travel in one direction on account of the partition 28 extending from the head 21 to the head 22. The products of combustion enter the top of the compartments A, pass downwardly under the partition 29 into the compartment B, over the partition 29^a into the compartment C, under the partition 29 into the compartment D, over the partition 29^a into the compartment E, under the partition 29 into the compartment F, over the partition 29^a into the compartment G, and then downwardly in said compartment and through the exhaust pipe 36 to the atmosphere. It is the passage of the products of combustion through the drum that heats the shells 23 and 24, and the cold air that passes upwardly into the casing 1 that contacts with the walls of the drum and the casing 6 will be thoroughly heated before passing into the register above the heater.

It is thought that the operation and utility of the heater will be apparent without further description, and I reserve the right to make the heater of various sizes whereby it can be used for heating small or large compartments.

What I claim is:—

1. A heater comprising a vertical burner casing of the same size throughout and provided with laterally-extending supporting brackets at points removed from its lower end said casing rectangular in plan, a drum including an inner and an outer section surrounding the upper portion of the burner casing and supported by said brackets, said inner section engaging the corners of the burner casing thereby providing a plurality of compartments, a head for each end of the drum, means extending through certain of said compartments and engaging said

heads for securing the inner portions of the heads in position, means for securing the outer portions of said heads in position, a plurality of vertically-extending and radially-disposed partitions secured between the sections of said drum and arranged to provide a sinuous path for the products of combustion, a plate for closing the upper end of the burner casing, means extending through the other of said compartments for securing said plate in position, a mixer located at the lower end of the burner casing and partially closing the same, a curved pipe opening at one end into the drum and at its other end into the top of the burner casing, a burner arranged within the lower end of the burner casing and above said mixer, a right-angular hollow extension projecting from the lower end of the burner casing below the drum and providing means whereby access can be had to the burner, a casing inclosing said burner casing and drum, and an exhaust pipe communicating with the drum.

2. A heater comprising a burner casing rectangular in plan, a plate for closing the upper end of said casing, a mixer connected to the lower end of said casing and communicating therewith, a burner arranged within the casing above said mixer, a drum surrounding the upper portion of said casing and having vertically-disposed means to provide a sinuous path for the products of combustion, said drum formed of an inner and outer section, means projecting from the burner casing for supporting the drum, the inner section of said drum abutting against the corners of said casing and providing a plurality of compartments and means extending through certain of the compartments for securing the inner portions of said heads in position, means for securing the outer portions of said heads in position, a curved pipe for establishing communication between the top of the drum and the top of the burner casing, means whereby access can be had to said burner, a casing inclosing the drum and burner casing, and an exhaust pipe communicating with the lower portion of the drum.

In testimony whereof I affix my signature in the presence of two witnesses.

JOHN S. WALKER.

Witnesses:

MAX H. SROLOVITZ,
CHRISTINA T. HOOD.