J. H. GARNER.

HOT AIR HEATER.

APPLICATION FILED AUG. 5, 1911.

1,037,894.

Patented Sept. 10, 1912.

2 SHEETS—SHEET 1.

Fig. 2.

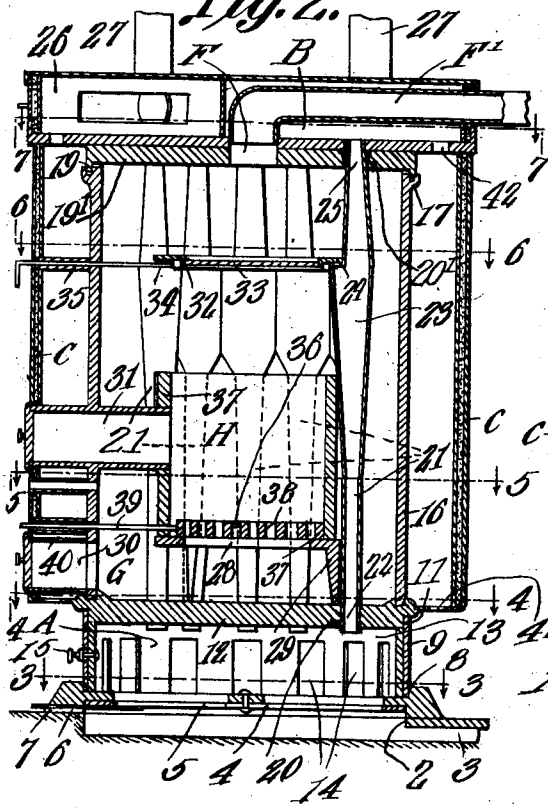


Fig. 1.

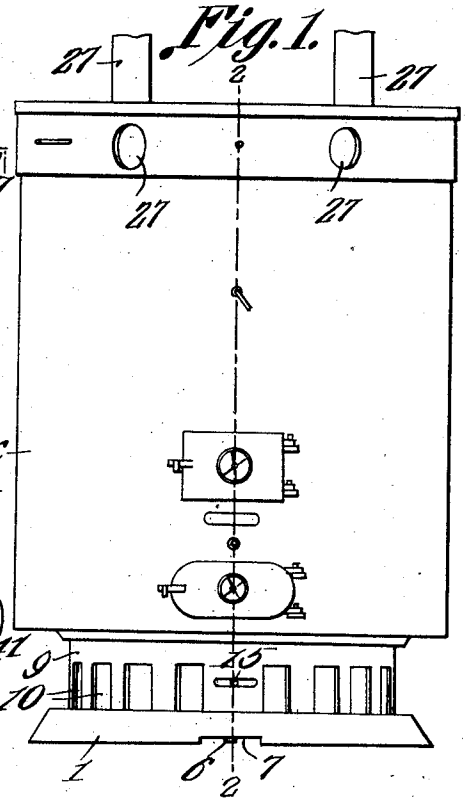


Fig. 3.

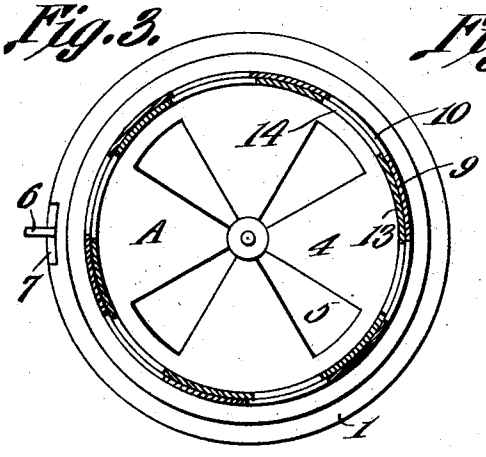
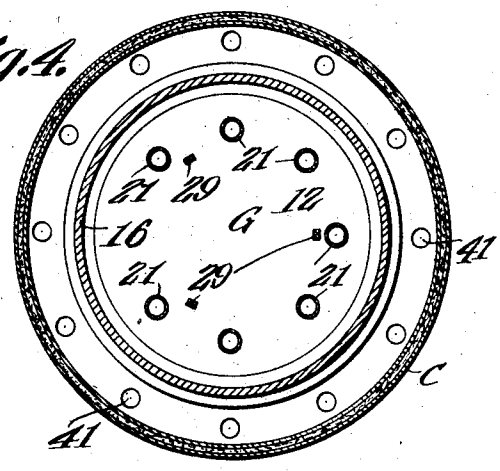


Fig. 4.



Witnesses

J. H. Garner

L. H. Wilcox.

John H. Garner,
Inventor

by C. A. Snow & Co.
Attorneys

J. H. GARNER.

HOT AIR HEATER.

APPLICATION FILED AUG. 5, 1911.

1,037,894.

Patented Sept. 10, 1912.

2 SHEETS—SHEET 2.

Fig. 5.

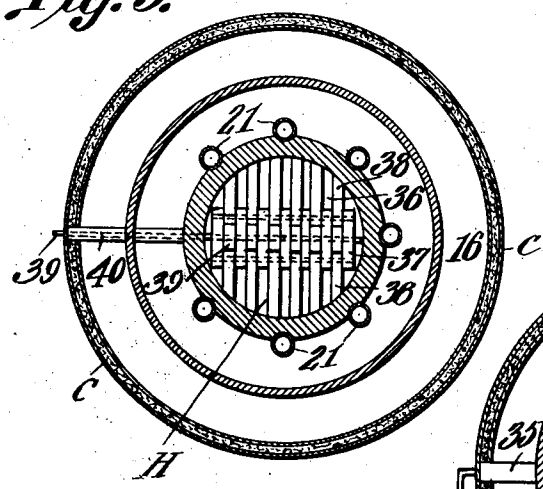


Fig. 6.

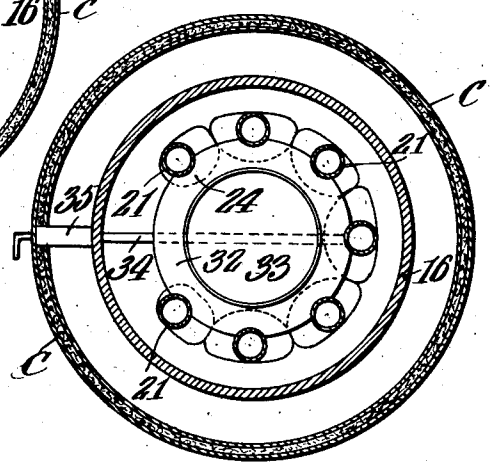


Fig. 8.

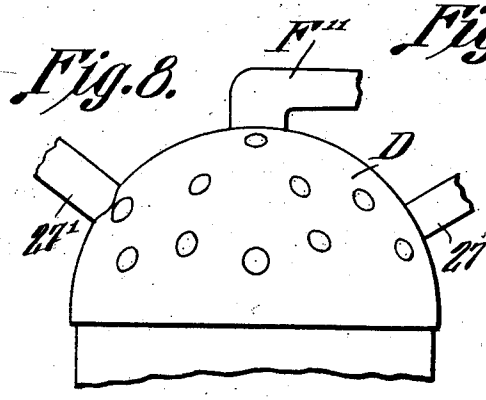
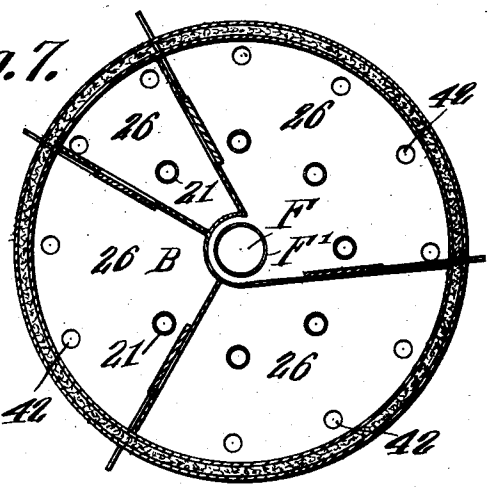


Fig. 7.



Witnesses

J. Towers

L. H. Wilson

John H. Garner,

Inventor

by C. A. Snow & Co.

Attorneys

UNITED STATES PATENT OFFICE.

JOHN H. GARNER, OF KINGWOOD, WEST VIRGINIA.

HOT-AIR HEATER.

1,037,894. Specification of Letters Patent. Patented Sept. 10, 1912.

Application filed August 5, 1911. Serial No. 642,514.

To all whom it may concern:

Be it known that I, JOHN H. GARNER, a citizen of the United States, residing at Kingwood, in the county of Preston and State of West Virginia, have invented a new and useful Hot-Air Heater, of which the following is a specification.

The present invention relates to improvements in hot air heaters, the primary object of the invention being the provision of a hot air heating apparatus to be used either as a central heating plant for a house or for a heater for a single room, the same being so constructed as to permit the cool fresh air to be heated and distributed to be supplied from an outside source or taken from the surrounding air at the lower portion of the heater, where a series of air heating and conducting tubes are vertically disposed to be incased by a combustion chamber and in themselves form a means for causing the heat generated therewithin to circulate about said tubes to heat the air and permit it to be supplied to the desired location.

A further object of the present invention is the provision of a hot air heater which will give off the maximum heat with the minimum fuel consumption, the particular construction herein set forth and shown permitting the utilization of all available area for permitting air to be drawn in from the lower portion of the heater, heated and to be finally conducted to the desired place, a peculiar construction and arrangement of fire-box, combustion chamber, and surrounding casing permitting this.

With the foregoing and other objects in view, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings:—Figure 1 is a front elevation of the complete heater. Fig. 2 is a vertical section taken on line 2—2 of Fig. 1. Fig. 3 is a cross-section taken on line 3—3 of Fig. 2. Fig. 4 is a similar view taken on line 4—4 of Fig. 2. Fig. 5 is a similar view taken on line 5—5 of Fig. 2. Fig. 6 is a similar view taken on line 6—6 of Fig. 2. Fig. 7 is a similar view taken on line 7—7 of Fig. 2. Fig. 8 is a side elevation of the upper portion of the heater when used to heat a single room or an assembly hall.

Referring to the drawings, the numeral 1 designates the base ring of the heater, having the countersunk portion 2, which when the base is upon a suitable foundation is in communication with a fresh air conduit 3, the grid 4, having mounted thereon the damper 5, whose stem 6, is operably exposed through the slot 7, in the base, so that the admission of the outside air to the heater may be regulated as desired.

Mounted within the rim 8, of the base is a band or ring 9, having the air-inlet apertures 10, the upper edge of this ring fitting about the reduced portion 11 of the disk or plate 12, which constitutes the bottom of the ash pit, and the top of the fresh air admission chamber A, the inner concentric ring 13 being mounted within and in slidable relation to the ring 9, so that its apertures 14, by the manipulation of the operating handle or knob 15 may be caused to register or not, with the apertures 10 of the ring 9, and thus regulate the amount of air admitted in this manner to the chamber A.

The disk 12 is provided with the concentric groove 12′, formed by two concentric ridges, for the reception of the lower edge of the cylindrical casing 16, which as shown here is made in one piece, but which in practice, and according to the size of the heater, is to be made in interlocking sections. At the upper end of this casing 16, is a peripheral socket or recess 17, having the mineral wool packing 18, held in place by the rim 19 of the top closure disk 19′, the same having the central main smoke outlet F, to which is connected the smoke pipe F′.

The disks 12 and 19′ are provided with a series of openings 20 and 20′, respectively, for the removable reception of the air conduits or tubes 21, whose lower ends 22, gradually increase in area as at 23, providing the inner shoulder 24 and finally tapering as at 25, thus providing a series of communicating means between the chamber A and the chamber B, which constitutes the dome of the heater, being divided into a series of compartments 26, from which lead the hot air conducting pipes 27.

A ring 28 is supported upon legs or standards 29, which rest upon the disk 12, within the tubes 21, thus providing the ash-pit G, and the fire-box or combustion chamber H,

a door controlled channel or duct 30 being disposed to permit the cleaning out of the ash-pit, while the door controlled coal inlet duct 31, is in communication with the fire-box.

Supported at the top of the combustion chamber upon the shoulders 24, is a ring or in reality a cover 32, having the damper 33, controlling the same, so that when the heater is filled, the damper may be opened to permit a direct draft from the ash-pit through the smoke outlet pipe F′, the rod 34, passing through the sleeve 35, permitting the damper to be operated exteriorly of the heater.

Mounted on the ring 28 is a grate 36, having the central rocking members 37, and the oscillating arms 38, so that as the shaft or rod 39 is oscillated, the rocking members 37 impart to their respective arms a shaking movement, to cause the ashes to sift through into the ash pit. The rod 39 passes through the sleeve 40 and is therefore accessible from the exterior of the outer casing C of the heater. The outer casing C, forms an auxiliary air supplying and heating chamber, the air being admitted through the apertures 41, and exhausted through the apertures 42 into the dome to commingle with the air heated in the tubes 21 and be distributed through the pipes 27 to the desired location. Between the concentric sheets forming the outer casing, is a packing of mineral wool which does not harden as cement and thereby provides a tight, yet easily removable packing and heat-insulating medium at these points of the heater.

From the foregoing description taken in connection with the drawings, it is evident that by providing a hot air heater with the air chamber A, and the vertically disposed air conducting tubes 21, arranged to surround the fire-box, that the same will secure from the fuel the maximum amount of heat units, and that air may be supplied to the heater as desired, and either from the outside, or from the room at the base of the heater.

In the form of heater shown in Fig. 8, the casing C is not used, and in lieu of the dome B, the dome D, with the smoke pipe F″, is employed, this form of heater being used in rooms, and also permitting the base ring with the rotatable damper to be dispensed with, and thereby only employ the apertured rings 9 and 13.

It is evident that the heater may be made in various shapes and sizes both for appearances and utility.

What is claimed, is:—

1. In a heater, a lower air supplying chamber, the wall of which consists of a stationary ring and an oscillatory nested ring, both of which rings are apertured to provide air admitting ports to the chamber, means to oscillate one of the rings to regulate the admission of air to the chamber, a casing disposed above the air supplying chamber, a series of vertically disposed tubes having their lower ends in communication with the chamber, and their body portions within the casing, a dome having a concentric smoke outlet mounted above the casing and having the upper ends of the tubes disposed therein to cause communication therewith and the chamber, each of said tubes being shouldered upon their inner face near their upper ends, a ring mounted upon said shoulders, a damper mounted to control the opening in said ring, and a fire-box disposed within the lower end of the casing and also within the tubes.

2. In a heater, a lower air supplying chamber, the wall of which consists of a stationary ring and an oscillatory nested ring, both of which rings are apertured to provide air admitting ports to the chamber, means to oscillate one of the rings to regulate the admission of air to the chamber, a casing disposed above the air supplying chamber, a series of vertically disposed tubes having their lower ends in communication with the chamber, and their body portions within the casing, a dome having a concentric smoke outlet mounted above the casing and having the upper ends of the tubes disposed therein to cause communication therewith and the chamber, each of said tubes being shouldered upon their inner face near their upper ends, a ring mounted upon said shoulders, a damper mounted to control the opening in said ring, and a fire-box disposed within the lower end of the casing and also within the tubes, and a mineral wool packing at the ends of the tubes, casing, and between the walls of the casing.

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

JOHN H. GARNER.

Witnesses:
FRANK B. OCHSENREITER,
M. E. GEIER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."