No. 626,660. Patented June 13, 1899.

E. & V. P. ADAMS.

HOT AIR AND HOT WATER HEATER.

(Application filed Mar. 16, 1898.)

(No Model.) 2 Sheets—Sheet 1.

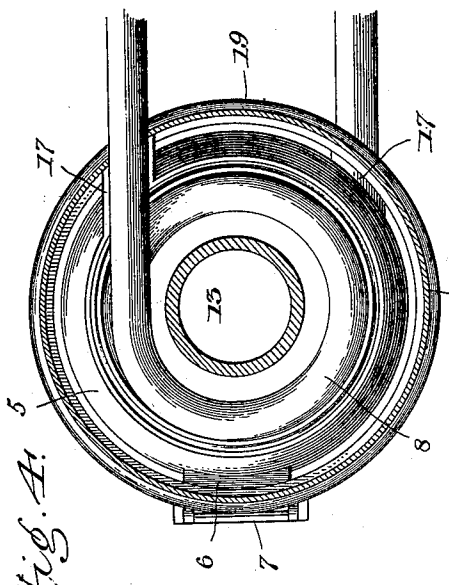

Fig. 4.

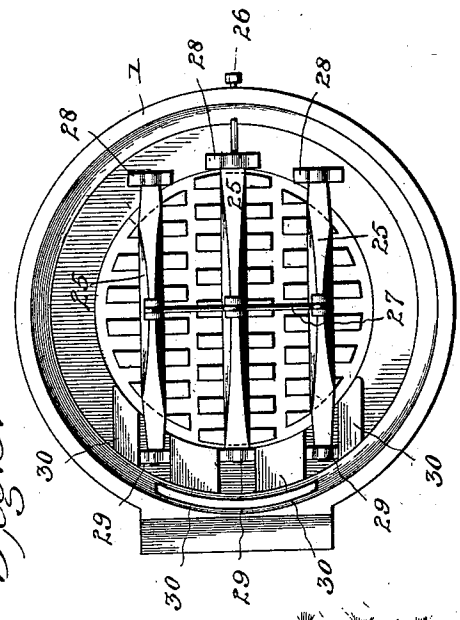

Fig. 5.

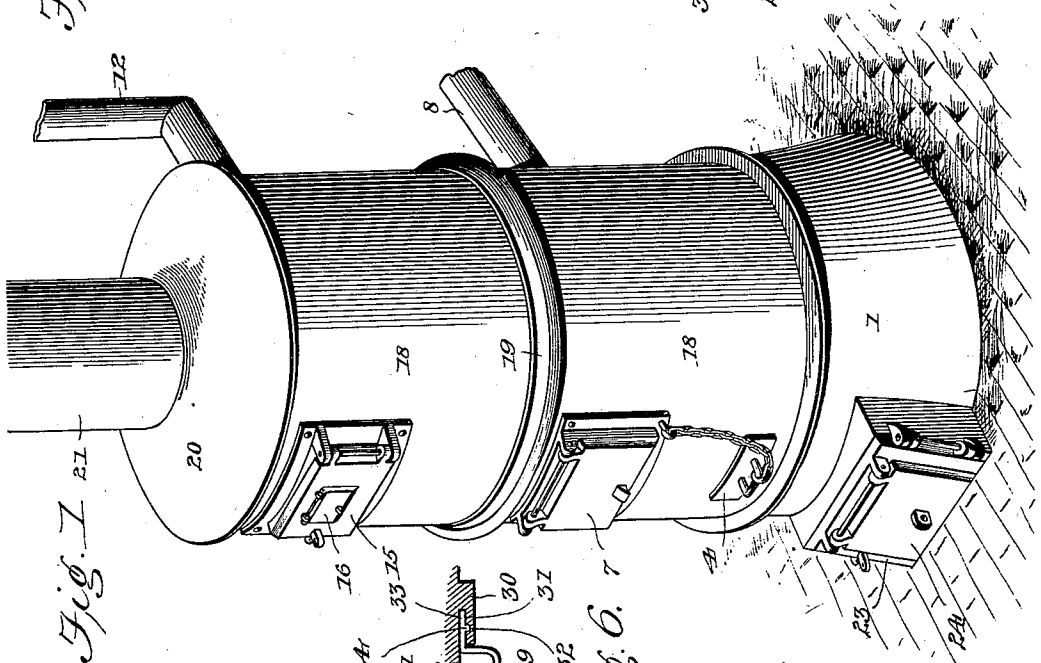

Fig. 7.

Fig. 6.

Witnesses
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HOT AIR AND HOT WATER HEATER.

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(No Model.) 2 Sheets—Sheet 2.

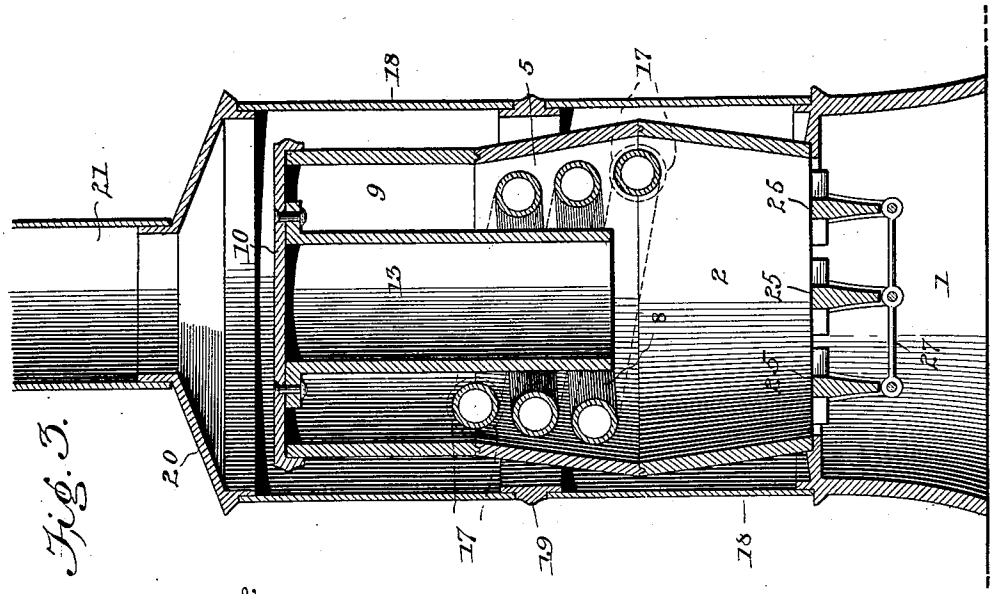

Fig. 3.

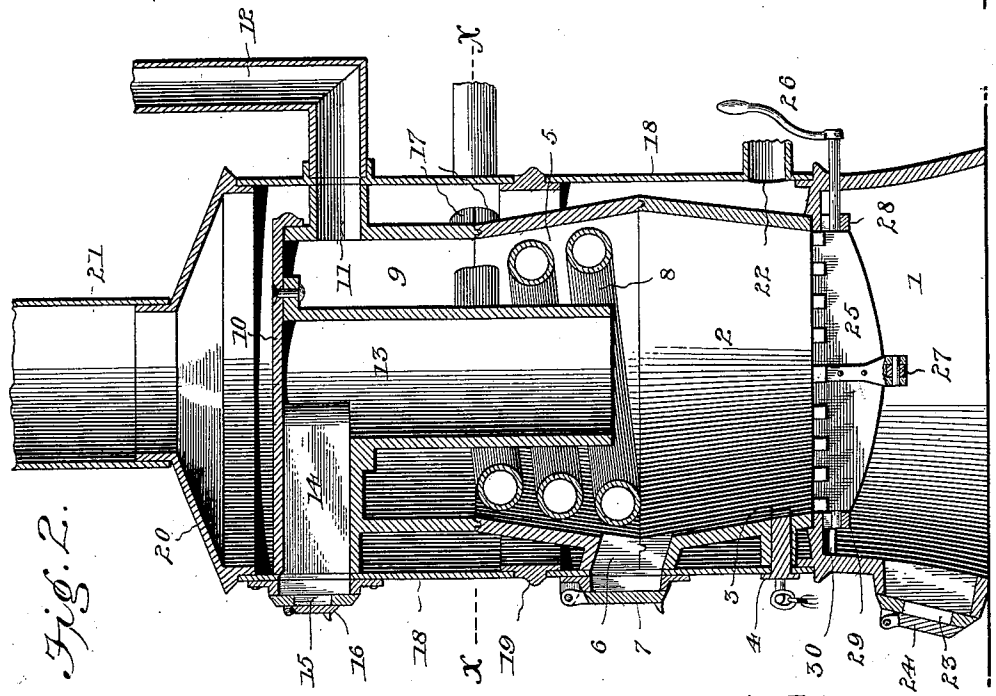

Fig. 2.

Witnesses
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Edwin Adams
Vernon P. Adams Inventors

By their Attorneys.

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UNITED STATES PATENT OFFICE.

EDWIN ADAMS AND VERNON P. ADAMS, OF BINGHAMTON, NEW YORK.

HOT-AIR AND HOT-WATER HEATER.

SPECIFICATION forming part of Letters Patent No. 626,660, dated June 13, 1899.

Application filed March 16, 1898. Serial No. 674,113. (No model.)

To all whom it may concern:

Be it known that we, EDWIN ADAMS and VERNON P. ADAMS, citizens of the United States, residing at Binghamton, in the county of Broome and State of New York, have invented a new and useful Hot-Air and Hot-Water Heater, of which the following is a specification.

This invention relates to heating apparatus of the type that provide for heating and circulating hot air and water; and it has for its object to effect certain improvements in the construction, arrangement, and the manner of assembling the different parts of the heater, whereby a strong and durable structure is produced and which will insure economy in the consumption of fuel and the utilization of a maximum amount of heat.

For a full understanding of the merits and advantages of the invention reference is to be had to the accompanying drawings and the following description.

The improvement is susceptible of various changes in the form, proportion, and the minor details of construction without departing from the principle or sacrificing any of the advantages thereof, and to a full disclosure of the invention an adaptation thereof is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of a heater for attaining the objects of this invention. Fig. 2 is a vertical central section thereof. Fig. 3 is a vertical section at right angles to Fig. 2. Fig. 4 is a plan section about on the line X X of Fig. 2. Fig. 5 is a view of the base portion of the heater inverted. Fig. 6 is a detail section showing the movable bearing for a grate or fuel bar.

Corresponding and like parts are referred to in the following description and indicated in the several views of the drawings by the same reference characters.

The body portion of the heater is composed of sections and is mounted upon a base 1 of annular form and inclosing the ash-pit and forming a rest for the grate-bars. The several sections are fitted together by a tongue-and-grooved joint, which is cemented to prevent the escape of gas. The bottom section 2 constitutes the fire-pot and has an opening 3 near its lower edge, through which a poker or like instrument is thrust for removing clinkers and enabling the fire to be stirred. This clinker-opening 3 is closed by a door 4, which also closes an opening formed in the outer shell in line with the clinker-opening. The bottom section flares toward its upper end in order to give a swell to the body portion of the heater. The middle section 5 tapers toward its upper end and has its lower end of a diameter equal to the diameter of the upper end of the bottom section. An opening 6 is formed in the meeting edges of the sections 2 and 5 and is closed by a door 7, applied to the outer shell, and the purpose of the opening 6 is to admit of the fire being lighted and inspected and also to control the temperature of the hot water circulating through the heating-coil 8. The opening 6 is about in the plane of the lower end of the heating-coil, and upon opening the door 7 the cold air from the outside passing into the heater through the opening 6 cools the heating-coil and at the same time checks the draft, thereby quickly reducing the temperature of the water circulating through the coil, and consequently lowering the temperature of the apartments heated thereby. The top section 9 is closed at its upper end by a cover 10 and is provided with a stovepipe-collar 11, to which the smoke-pipe 12 is fitted for carrying off the smoke and gases. The magazine or feeder 13 is secured to the cover 10 and opens through a side of the section 9 by means of a chute 14, which is closed at its outer or receiving end by means of a door 15, applied to the upper portion of the inclosing shell. A small door 16 closes an opening formed in the door 15 and is designed to provide for the escape of any gas which may accumulate in the magazine, thereby obviating danger from explosion. In connection with this construction it is to be observed that the upper section 9 of the inner body of the heater is not only formed with the stovepipe-collar 11, but is also constructed with a horizontal offset feed-chute 14, which is open at its upper side, and with a centrally-arranged pendent magazine-flue 13. This magazine-flue is joined at its front wall directly with the flat bottom or floor of the flue at the inner end of the latter, while the rear wall portion of the magazine-flue is provided with a

flanged upper end disposed flush with the top edge of the body-section 9, so as to afford a fastening-seat for the cover-plate 10. This cover-plate 10 is flanged, so as to embrace the peripheral edge of the body-section 9 and not only completely covers the upper end of this body-section, but also the open side of the feed-chute 14 and the upper end of the magazine-flue 13. The said cover-plate is fastened directly to the flange at the upper end of the magazine-flue, and thereby dispenses with the use of bolts and ears, which commonly are employed to fasten the parts of stoves together, while at the same time by fastening the central portion of the cover-plate to the upper end of the magazine-flue such cover-plate is prevented from warping or buckling out of position.

The heating-coil 8 is located in the middle section 5 and surrounds the lower end portion of the magazine and receives the full benefit of the heat from the fire without liability of being burned. The end portions of the coil are disposed in planes corresponding with the joints between the middle and end sections of the body and pass through tubular extensions formed by parts 17, cast with the respective sections, said parts being semitubular and unitedly forming the tubular extension through which the end portions of the heating-coil pass. It will therefore be observed that the said tubular extensions 17 constitute clamp-sleeves for the straight tangential end or terminal portions of the pipe-coil to provide for rigidly holding the coil in place when the interlocking sections of the inner body are assembled together. Furthermore, by reason of thus clamping the straight terminals of the pipe-coil between the interlocking edges of the sections when such sections are taken apart the pipe-coil is also free to be readily removed. The construction described, therefore, greatly expedites the operation or assembling and taking apart the several sections of the heater. It will also be noted that the said tubular extensions 17 not only constitute clamp-sleeves for the pipe ends, but also extend across the space between the inner body portion and the exterior casing to form protective coverings for the pipe ends in this space, and, furthermore, serve as spacing projections to properly space apart said inner body portion and the exterior casing.

The outer shell 18 is constructed of sheet metal and incloses the body portion of the heater and is formed of sections which are separated by a cast-metal ring 19, by means of which the shell 18 is stiffened and braced. The several doors are hinged to frames which are bolted or riveted to the sections or parts comprising the shell 18. The cover 20, closing the upper end of the shell 18, has an opening to which is fitted a pipe 21 for conveying the hot air to a room or apartment to be heated. The cold air is admitted to the lower portion of the shell 18 by means of a pipe 22.

The base 1 incloses the ash-pit and has an opening which is closed by a door 23, by means of which the ashes can be removed from time to time. An opening is provided in the door 23 and is closed by a door 24, which is opened more or less, according to the draft required. The fuel-bars 25 (illustrated in the drawings) are of the rocking type and are supported about on a level with the upper portion of the base and are adapted to be operated by means of a handle 26, fitted to an extension of one of the fuel-bars, said bars being connected in series by means of a rod 27 in any of the usual ways. Bearings 28 are cast with the base 1 and receive the journals at one end of the fuel or grate bars. Similar bearings 29 for the opposite journals of the grate-bars have detachable connection with the base, thereby admitting of the fuel-bars being removed and changed with the utmost ease and despatch. Lugs 30 are cast with the base and are spaced apart and have their inner edge portion rabbeted, as shown at 31, and grooved, as shown at 32, forming guideways in which are slidably fitted the outwardly-extending ends 33 of the removable bearings 29, said ends 33 having ribs 34 to enter the grooves 32, thereby preventing binding of the bearings 29 when slid into or out of position. Should it be required to remove any one of the grate or fuel bars, it is only necessary to remove the bearing 29 thereof, so as to clear the journal of the said grate-bar, when it can be replaced, the bearing being moved into engagement with the new bar when placed in position.

While the grate and its operating mechanism have been specifically described and are preferably associated with the improvements sought to be covered by the present application, it is to be understood that said grate and its operating mechanism form no part of the invention and are not claimed herein.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a heater, the combination with the exterior casing, of an inner body portion formed of a plurality of matching sections, the intermediate and adjacent sections being provided at their contiguous meeting edges with offstanding registering semitubular clamp-sleeves projecting beyond the exterior of the inner body portion and extending entirely across the space between the latter and the exterior casing, and an inner heating-pipe coil located entirely within the intermediate body-section and having straight tangential upper and lower terminals seated within and held by the said clamp-sleeves when the sections of the body are assembled, substantially as set forth.

2. In a heater, the combination with the exterior casing, of the inner body portion composed of a plurality of matching interlocking sections, the upper of said sections being formed with an offset feed-chute open at its upper side, and with a central pendent mag-

azine-flue joined at its front wall directly with the flat bottom of the chute at the inner end thereof, the rear wall portion of said magazine-flue being provided with a flanged upper end disposed flush with the top edge of the body-section, a flanged cover-plate completely fitting over the top edge of the body-section, the open upper side of the feed-chute, and the magazine, and a fastening connection between the cover-plate and the flanged upper end of the magazine-flue, substantially as set forth.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

EDWIN ADAMS.
VERNON P. ADAMS.

Witnesses:
JAMES N. AYRES,
EMERSON OSBORN.