No. 791,911. PATENTED JUNE 6, 1905.

J. HURLEY.

WATER HEATING APPARATUS.

APPLICATION FILED MAY 23, 1903. RENEWED NOV. 1, 1904.

FIG. 1.

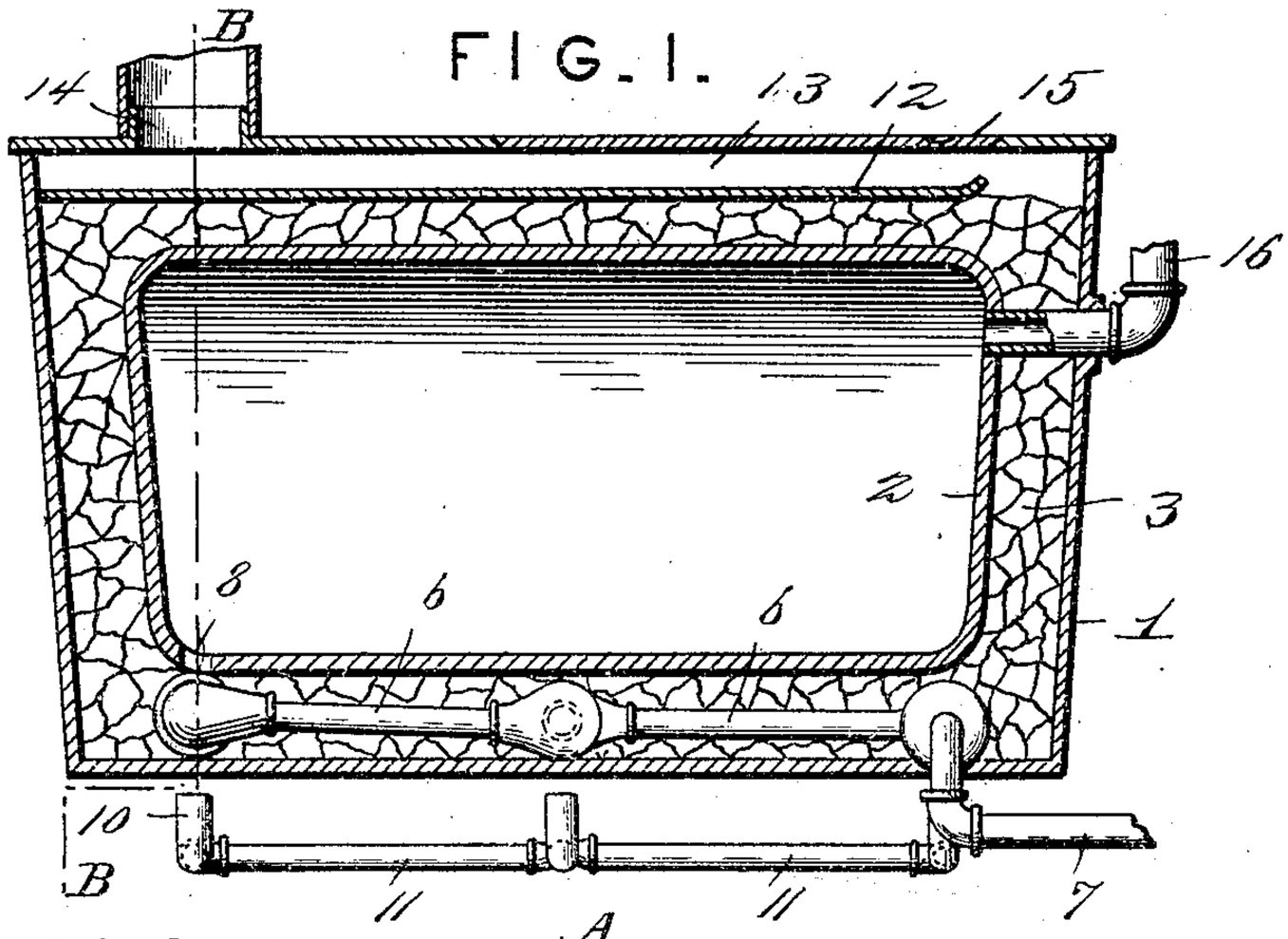


FIG. 2.

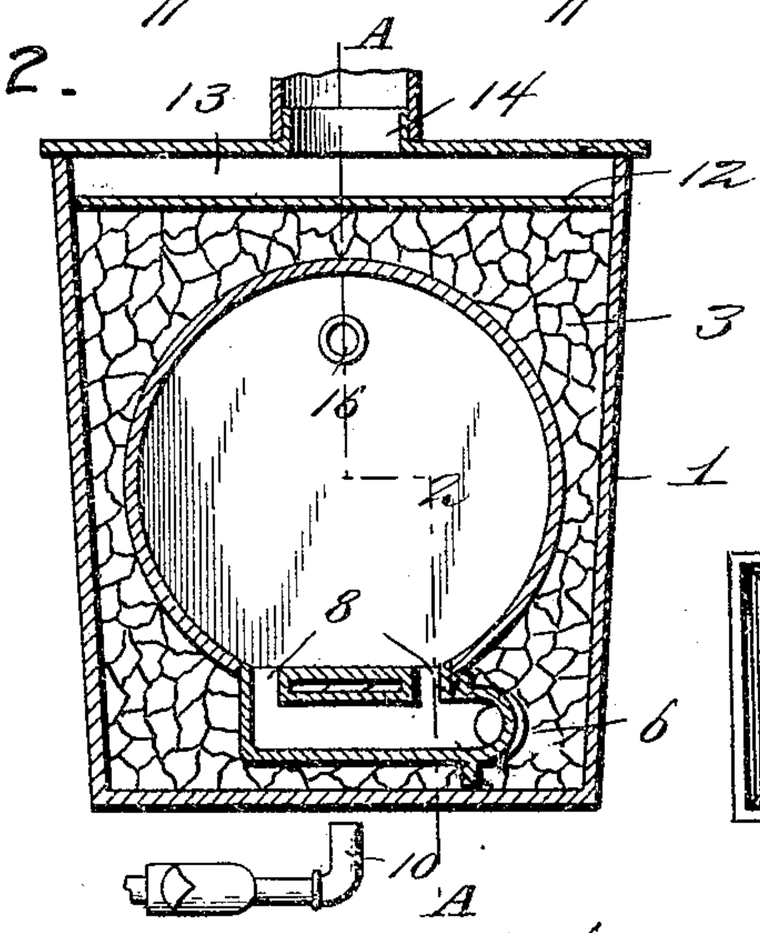


FIG. 4.

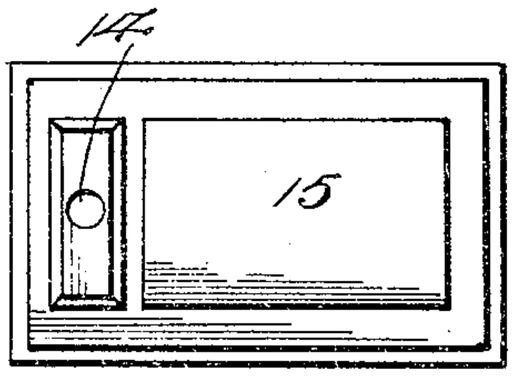


FIG. 5.

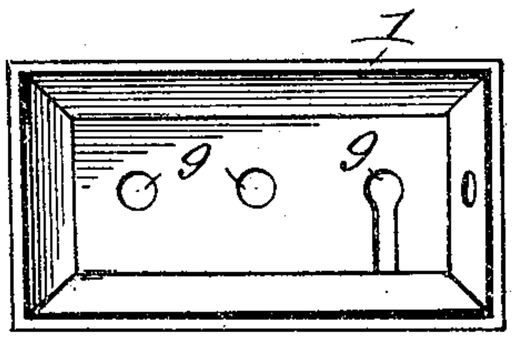
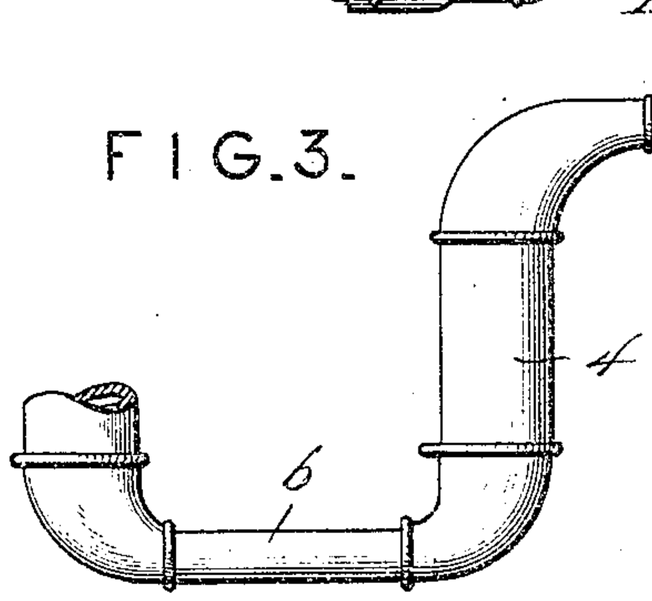


FIG. 3.



Witnesses

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No. 791,911. Patented June 6, 1905.

UNITED STATES PATENT OFFICE.

JAMES HURLEY, OF CHICAGO, ILLINOIS.

WATER-HEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 791,911, dated June 6, 1905.

Application filed May 23, 1903. Renewed November 1, 1904. Serial No. 230,966.

To all whom it may concern:

Be it known that I, JAMES HURLEY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Water-Heating Apparatus, of which the following is a specification.

My invention relates to new and useful improvements in hot-water heating apparatus; and its object is to provide a simple and inexpensive apparatus which may be readily installed in an apartment and which is provided with a heater of novel construction, by means of which the temperature of water discharged thereinto may be quickly raised.

With the above and other objects in view the invention consists in providing a heater having a receptacle therein which is packed in brick or other similar absorbent material. Arranged within the hopper and below the receptacle is a water-conducting pipe of novel construction, and suitable burners are arranged below this pipe whereby the water passing therethrough may be quickly heated.

The invention also consists in the further novel construction and combination of parts hereinafter more fully described and claimed, and illustrated in the accompanying drawings, showing the preferred form of my invention, and in which—

Figure 1 is an enlarged vertical longitudinal section through the heater and on line A A, Fig. 2. Fig. 2 is a vertical transverse section therethrough on line B B, Fig. 1. Fig. 3 is a plan view of the conducting-pipe. Fig. 4 is a plan view of the hopper, and Fig. 5 is a similar view thereof with the receptacle and porous material removed.

Referring to the figures by numerals of reference, 1 is a casing formed of any suitable material, such as heavy sheet metal, and arranged therein is a preferably cylindrical receptacle 2. Interposed between this receptacle and the casing 1 is packing 3, formed of broken brick or other porous earthen material. Within this packing and between the bottom of casing 1 and the lower surface of receptacle 2 is a water-conducting pipe of novel construction, which comprises parallel pipe-sections 4, which are connected, by means of reduced elbows 5, to intermediate pipes 6, which are much smaller in diameter than the pipes 4. One of the end pipes 4 is connected to a water-inlet pipe 7, while the section 4 at the opposite end of the water-conducting pipe has outlets 8, which open into the bottom of the receptacle 2. The bottom of the casing 1 is preferably cut away, as shown at 9, so as to permit flames from burners 10 to contact with the pipe-sections 4. These burners may be of any suitable form for burning either gas, oil, or other fuel and are preferably connected, by means of pipes 11, with a suitable supply. (Not shown.) A baffle-plate 12 is arranged within casing 1 and upon the packing 3, and this plate extends over all of the packing with the exception of a portion thereof at one end of the casing. A passage 13 is formed between the baffle-plate and the top of casing 1, and the hot gases leaving the packing are adapted to pass from this passage and through an outlet 14, which may be connected in any suitable manner to a chimney. A lid 15 may be arranged upon the top of casing 1, so as to permit access to the interior of the heater. An outlet-pipe 16 extends from one end of receptacle 2, near the top thereof, and is adapted to conduct water to radiators 17, and these radiators are also connected in any desired manner to the return or inlet pipe 7. A tank 18 is preferably arranged within the radiators 17 of the system and is adapted to keep said radiators filled with water.

In using the apparatus herein described the burners 10 are lighted and the receptacle 2, radiators 17, and pipes 7 and 16 are filled with water. This water will be quickly heated within the pipe-sections 4 and will pass upward into receptacle 2 and thence outward through the pipe 16 through the radiators connected thereto. Water will, as is obvious, be first heated in the pipe-section 4, connected to the inlet-pipe 7, and it will then flow through the reduced elbow 5 into the adjoining pipe-section 6. The flow of the water will thus be retarded, and the water will therefore be thoroughly heated before being completely discharged from the end pipe-section 4. When the water passes into the intermediate pipe-section 4, it will be superheated and will also

be retarded in this pipe in view of the fact that the outlet end of the pipe-section is reduced and communicates with a small pipe-section 6. The water will finally pass from the last pipe-section 4 into receptacle 2 and, as before stated, will pass therefrom through pipe 16. The packing within the heater will be heated to a high temperature by the burners and will maintain the high temperature of the water after it passes into receptacle 2. Any hot gases generated within the packing will pass outward into passage 13 and thence to outlet 14. Any suitable safety appliance may be employed for preventing the bursting of the receptacle 2.

In the foregoing description I have shown the preferred form of my invention; but I do not limit myself thereto, as I am aware that modifications may be made therein without departing from the spirit or sacrificing any of the advantages thereof, and I therefore reserve the right to make such changes as fairly fall within the scope of my invention.

Having thus described the invention, what is claimed as new is—

1. In heating apparatus of the character described, a heater comprising a casing, a receptacle therein, porous ceramic material interposed between the receptacle and casing, conducting-pipes within said material and communicating with the receptacle and a supply, and a heater below the casing and the conducting-pipes.

2. In heating apparatus of the character described, the combination with a casing; of a receptacle therein, porous ceramic packing interposed between the receptacle and casing, a conducting-pipe of varying diameter within the packing and communicating with the receptacle, and burners for heating the conducting-pipe.

3. In heating apparatus of the character described, the combination with a casing; of a receptacle therein, porous ceramic packing interposed between the casing and the receptacle, a conducting-pipe within the packing, said pipe comprising sections of different diameters, and burners for directing flame upon the large sections of the conducting-pipe.

4. In heating apparatus of the character described, a heater comprising a casing, a receptacle therein, porous ceramic packing inclosing the receptacle, a baffle-plate upon the packing and forming a passage within the casing, a conducting-pipe communicating with the receptacle and embedded within the packing, said pipe comprising sections of different diameters, and burners for directing flames upon the pipe-sections.

5. In heating apparatus of the character described, the combination with a casing; of a receptacle therein, porous ceramic packing inclosing the receptacle, a baffle-plate within the casing and upon the packing, a conducting-pipe arranged within the packing and communicating with the receptacle, said pipe comprising sections of different diameters, and burners for directing flames upon the large pipe-sections.

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

JAMES HURLEY.

Witnesses:
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