

No. 714,641.

Patented Nov. 25, 1902.

J. M. FOX.
WATER HEATER.

(Application filed Dec. 18, 1901.)

(No Model.)

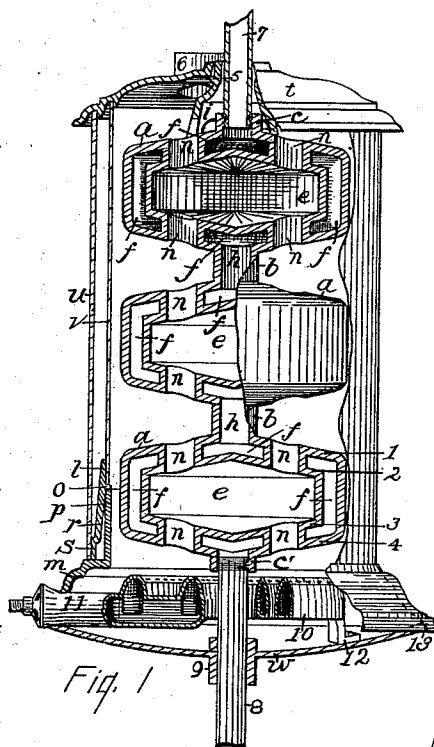


Fig. 1

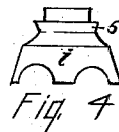


Fig. 4

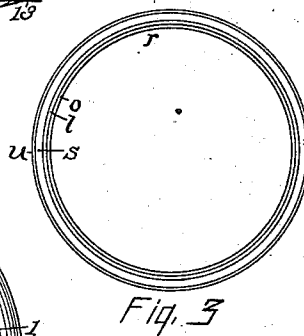


Fig. 3

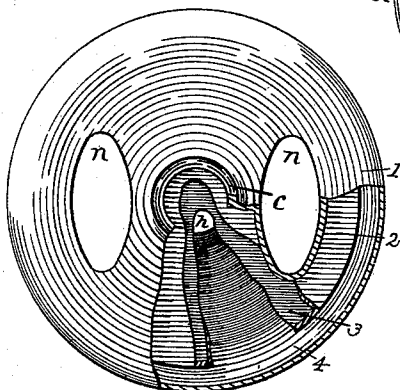


Fig. 2

Witnesses
E. D. Shepard
E. M. Chapman

By

Inventor
Joseph M. Fox
Attorney
H. C. Tinsley

UNITED STATES PATENT OFFICE.

JOSEPH M. FOX, OF PEEKSKILL, NEW YORK, ASSIGNOR TO WILLIAM M. CRAM COMPANY, OF NEW YORK, N. Y.

WATER-HEATER.

SPECIFICATION forming part of Letters Patent No. 714,641, dated November 25, 1902.

Application filed December 18, 1901. Serial No. 86,368. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH M. FOX, a citizen of the United States, and a resident of Peekskill, in the county of Westchester and State of New York, have invented a certain new and useful Water-Heater, of which the following is a specification.

This invention relates to devices for quickly heating water, and more particularly to forms of heaters made of cast metals.

It has for its object a convenient form of casting heating-surfaces that shall present areas to the action of the heat that are unusually large in proportion to the spaces occupied by the water.

The objects are attained by the means set forth in this specification and the accompanying drawings.

The drawings consist of four figures, in which like parts are designated by similar numbers and letters.

Figure 1 represents the heater in elevation and in partial section and cross-section. Fig. 2 is a plan of a heater-section viewed from the top of the heater and shown partially in section. Fig. 3 is a plan of a jacketing-ring. Fig. 4 is a view of one part of the jacketing-support.

Fig. 1 shows this heater to be composed of three water-sections *a a a*, united to each other at their centers and connected with water-pipes 7 8, a gas-burner, and a casing inclosing the said parts. The three sections are united by throats 3 and are represented as one integral casting, the form in which they are preferably made. The shape selected for representation is the circular, and the tops and bottoms of the sections slope apart toward their centers, their depth being greatest at their centers. The advantages of this shape are found in the ample air-space afforded between the sections, which improves the draft through the heater, and the flowing heat currents make as ready contact with the top of one section as with the bottom of the one next above it, and the slope given to the waterways prevents deposits from the water. Each section is provided with an inner chamber *e*, through which the heat circulates as readily as around the outside of the section, the flues *n* affording com-

munication with the chamber. The walls of the flues *n* support the casing forming the chamber, and the flues are the only obstruction to the circulation of water all around the casing. The casing is preferably made to conform in shape to the outer casing, so as to give a uniformity of water-space *f*. Water entering the sections by the pipe 7 will meet the walls of the inner chamber *e* and to reach the passage *h* to the next section must flow against the entire surface of the outer casing and also of the inner casing, part of it at the same time having contact with the walls of the flues *n*, so that in the space usually occupied by one heater-section nearly double the heating-surface is obtained. Fig. 2 further illustrates the construction of the section, the top plate 1 being cut away, revealing the inner top and bottom surfaces of the walls forming the chamber *e*. Water entering the inlet at *c* flows between the plates 1 and 2 to and between plates 3 and 4 to reach the outlet *h*. The flues *n* are limited to two in a section when several sections are cast together for obvious conveniences in molding. It is, however, plain that these sections may be made singly and be connected with nipples in the manner commonly employed for connecting heater-sections. When so made—that is, singly—the number of flues may be increased, since in that case they would not require to be molded edgewise. When the sections are mounted upon the pipe 8, a supporting-plate *w* is secured to the pipe by means of the hub 9. A gas-burner 10, annular in form and having a supply-tube 11, is secured to the plate *w*, one fastening-foot 12 being shown. A base *m* is adapted to fit upon the plate *w*, as indicated by the broken lines 13, Fig. 1. This base is provided with a rising flange *p*. Encircling said flange is a ring *r*. (Shown in plan in Fig. 3.) The upper end *l* of said ring receives a sheet metal jacket *v*, which finds lodgment upon a projection *o* on the inner side of the ring. To the lower portion *s* of the ring another jacket *u* is secured. This ring, with the jackets *u v* thus attached to it, is easily removable from the base, so that when the jacketing is completed by the attachment of the top *t* the entire jacketing may be lifted bodily from the

base. Thus easy access is given to the heater-sections for cleaning them. The top *t* is provided with an outlet 6 for the gases of combustion.

- 5 To sustain some of the weight of the jacketing and prevent its all coming upon the plate *w*, a foot-piece 7', Figs. 1 and 4, having a rim 5, rests upon the top heater-section. The cast top *t* rests at its center upon the
10 rim 5. This supporting-foot encircles the pipe 7.

Having described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

- 15 1. The combination in a water-heater composed of two or more sections one above the other integrally united to each other at their centers, of sections made with their tops and bottoms sloping from their centers to their
20 outer edges giving to the sections their greatest depth at their centers and affording air-spaces between the sections of greatest depth at their edges, a water-pipe entering the lower section, a supporting-plate secured to said
25 pipe, a base and a gas-burner attached to said plate, a jacketing comprising a top, sheet-metal sides and a ring to which said sheet-metal sides are secured, said ring and attachments removably adjusted to said base,
30 and a jacket-supporting foot-rest on the top section, substantially as herein set forth.

2. In a water-heater a section comprising an outer casing and an inner casing forming a water-space between them and an air-space
35 within the inner casing, the inner casing entirely surrounded by water except at its flue

connections, the two casings connected together with and the inner casing integrally supported by flues that afford gas-openings to the inner chamber.

3. A water-heater section comprising an outer casing and an inner casing forming a water-space between them and an air-chamber within the inner casing, the inner casing conforming to the shape of the outer casing and entirely surrounded by water except at its flue connections, the two casings united with and the inner casing integrally supported by the walls of flues that afford gas-openings to the inner chamber.

4. A heater-section consisting of an outer casing and an inner casing forming a water-space between them and an air-chamber within the inner casing, the inner casing entirely surrounded by water except at its flue connections and conforming in shape to the outer casing, the tops and bottoms of the casings sloping from the centers of the sections to the outer edges giving upward sloping water-passages throughout the section, the inner casing integrally connected with the outer casing by the walls of the flues that support the inner casing and afford gas-openings to the inner chamber, substantially as set forth.

Signed at Peekskill, in the county of Westchester and State of New York, this 11th day of December, A. D. 1901.

JOSEPH M. FOX.

Witnesses:

C. D. SHEPARD,
E. M. CHAPMAN.