No. 641,468. Patented Jan. 16, 1900.

J. A. RATHBONE.

STEAM OR HOT WATER HEATER.

(Application filed Feb. 1, 1899.)

(No Model.)

Fig. 1.

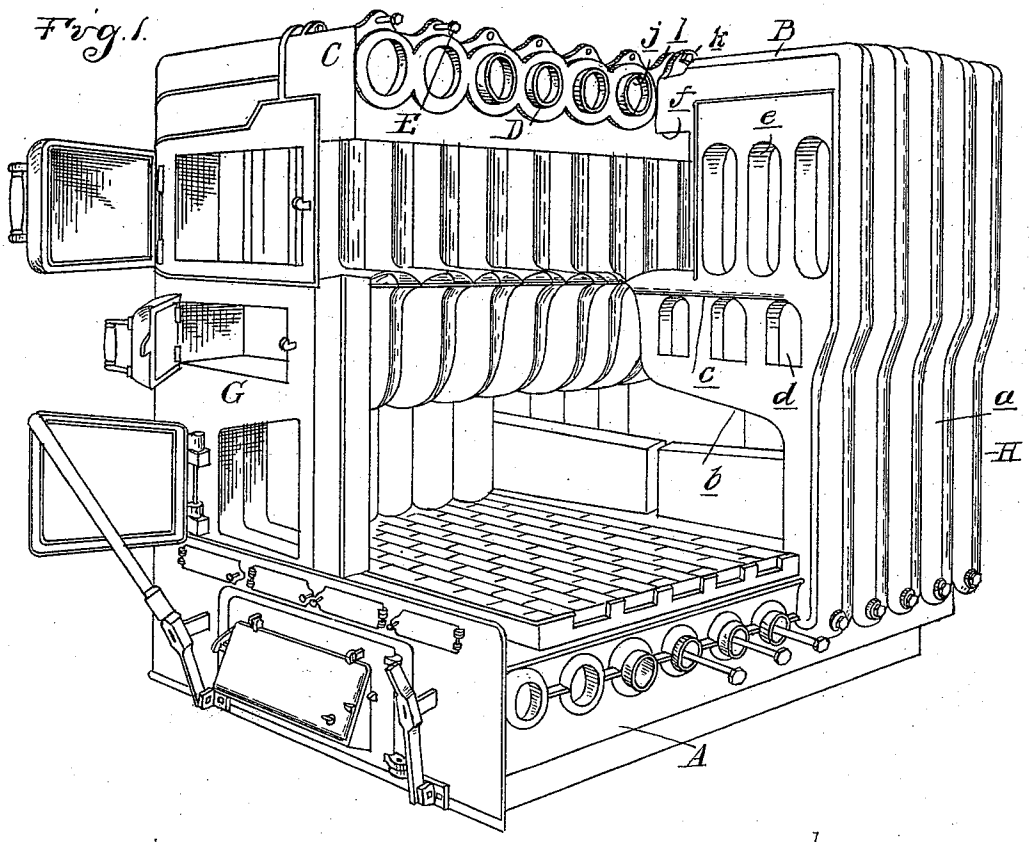


Fig. 3

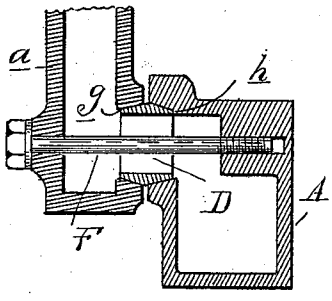
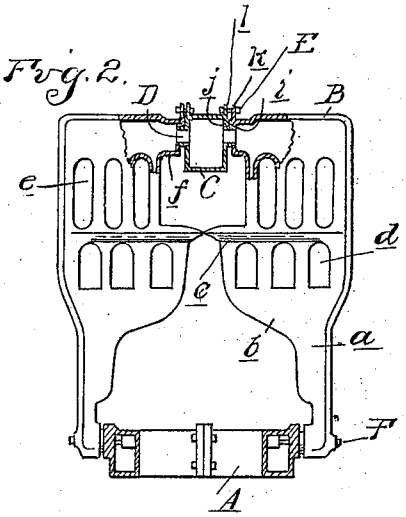


Fig. 2.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN A. RATHBONE, OF DETROIT, MICHIGAN.

STEAM OR HOT-WATER HEATER.

SPECIFICATION forming part of Letters Patent No. 641,468, dated January 16, 1900.

Application filed February 1, 1899. Serial No. 704,153. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. RATHBONE, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Steam or Hot-Water Heaters, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates more particularly to the construction of a sectional steam or water heater; and it is one object of my invention to reduce the cost of manufacturing by simplifying the construction of parts and reducing the labor required in assembling said parts.

It is a further object to obtain a construction in which the sections may be independently removed for repair without the necessity of dismounting other portions of the heater.

The invention consists in the peculiar construction and combination of parts, as more fully hereinafter described and claimed.

In the drawings, Figure 1 is a perspective view of my heater with some of the sections removed. Fig. 2 is a vertical cross-section thereof, showing the sections in elevation. Fig. 3 is an enlarged section of the lower end of one of the heater-sections, showing the manner of securing the same to the water-base.

A is a water-base preferably of annular form and comprising two sections united at the center and forming a support for the grates A'. Above this base are arranged the heater-sections B, which are placed side by side upon opposite sides of the base and form side walls of the furnace-chamber. Each of the sections B comprises a water-leg *a*, which extends upward from the side of the base, and the laterally-extending overhanging portion *b*, which is adapted to centrally abut against the corresponding portion of the opposite section. Upon the portion *b* is the horizontal rib *c*, adapted to abut against the corresponding rib on the adjacent section, while the portion below said rib is reduced in thickness sufficiently to permit of a free circulation therearound. Said portion is also provided with a series of apertures *d*. Above the horizontal rib *c* the section is provided with a series of apertures *e* and at its inner end is cut away at *f*.

At their lower ends the sections B are provided with apertures *g*, adapted to register with corresponding apertures *h* in the side of the base, and at their upper ends are provided with apertures *i*, adapted to register with a series of apertures *j* in the top header C. This header extends longitudinally between the upper portions of the opposite sections and forms a top or cover for the passage formed by the cut-away portions *f*.

Each section B is connected to the base and top header by laterally-extending nipples D, which I shall designate as "slip-nipples," for the reason that instead of having a threaded engagement with the registering apertures in the headers and heater-sections they are adapted to be slipped into said apertures and seated therein, while the sections are clamped to the headers by bolts E and F. The bolts E at the upper ends of the sections preferably pass through ears *k* and *l*, formed, respectively, upon the sections B and the header C, and the bolts F at the lower end of the sections preferably pass centrally through the nipples D and engage with suitable screw-threaded sockets formed within the base.

With the construction as thus far described it will be understood that the parts may be readily assembled by successively connecting the sections B to the base and header C and firmly clamping them thereto by the bolts E and F. When thus secured in position, the top of the furnace-chamber will be formed by the portion of each section in line with the horizontal ribs *c*, and the reduced diameter of the portion below said ribs, as well as the apertures *d* therein, will permit a free circulation of the flame and products of combustion therearound.

The front of the heater is formed by sections G, similar to the section B, but extending across to the center of the base and provided with suitable openings for the fuel and smoke doors. The back of the heater may also be formed by sections H, extending across to the center of the base and abutting against each other, so as to form a water-back. Provision is also made at the rear ends for a con-

nection between the furnace-chamber and the apertures *e* above the horizontal ribs *c*, which may be accomplished by cutting away said rib in the sections adjacent to the water-back. The apertures *e* will thus form a return-flue, through which the products of combustion pass to the forward end of the heater and are then returned again to the rear end through the central flue or passage formed by the cut-away portion *f* and the header C.

It will be readily understood that the labor required in assembling the parts of a heater of this construction is greatly reduced, for each section may be independently connected to the header and base, the parallel slip-nipples D permitting each section to be slipped laterally into position. It is also evident that if for any reason it is necessary to remove one of the sections this may be done without disturbing any of the others.

What I claim as my invention is—

1. A steam or water heater comprising a water-base having side headers, a series of hollow heater-sections, a horizontal slip-nipple connection between the bottom of each section and the water-base, a top header between the upper ends of the sections and forming a complementary part of the heater-casing, and slip-nipple connections between the top of each section and said header.

2. In a steam or water heater the grates, headers at each side of the grates, a series of hollow heater-sections extending over the grates and a water-leg on each section extending down beside said headers said sections forming the heater-walls or casing, a slip-nipple connection between said legs and headers, exteriorly-extending clamping means for such slip-nipple joints, a header between the nipple ends of the sections, forming a part of the top header-wall, slip-nipple connections between each section and said header, arranged parallel to the lower slip-nipple joint thereof and exterior clamping means for such upper joints.

3. In a steam or water heater, water-sections forming the walls of the heater, overhanging the grate, and forming the side portions of the top of the combustion-chamber, a header closely fitting between the tops of the sections and forming the middle portion of the top of such casing.

4. In a heater the combination with a water-base of hollow sections connected to said base and arranged side by side adjoining each other upon opposite sides thereof, said opposite sections having abutting overhanging portions forming the top of the furnace-chamber and being cut away above to form a return-flue, and a header interposed and closely fitting between and connected to the upper ends of said sections and forming the top of said return-flue.

5. The combination with an annular water-base of a series of hollow sections B connected thereto each consisting of the water-leg *a* extending down outside the base, the inwardly-extending portion *b* abutting the opposite section and the horizontal rib or enlargement abutting the adjacent section, the portion *b* being provided with the apertures *d* and *e* below and above the horizontal rib, and being cut away at *f;* a header C interposed between the upper ends of the sections, parallel slip-nipples connecting said sections to said header and base respectively and clamping-bolts for securing them thereto.

6. In a steam or water heater, sections forming the walls of the heater and overhanging the grate, the upper ends of such sections being separated, a header closely fitting between and forming with the sections, a closed top of the combustion-chamber, slip-nipple joints between the sides of such headers and each section, and exterior clamping means for such slip-nipple joints.

7. In a steam or water heater, a water-base, a top header, a series of hollow heater-sections arranged side by side, parallel slip-nipples extending from the same side of each section and connecting respectively with said top and bottom headers, and exterior clamping means for securing said sections to said headers.

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

JOHN A. RATHBONE.

Witnesses:

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H. C. SMITH.