No. 663,025. Patented Dec. 4, 1900.

A. T. HENDERSON.

SECTIONAL BOILER.

(Application filed Mar. 19, 1900.)

(No Model.)

Fig. 2.

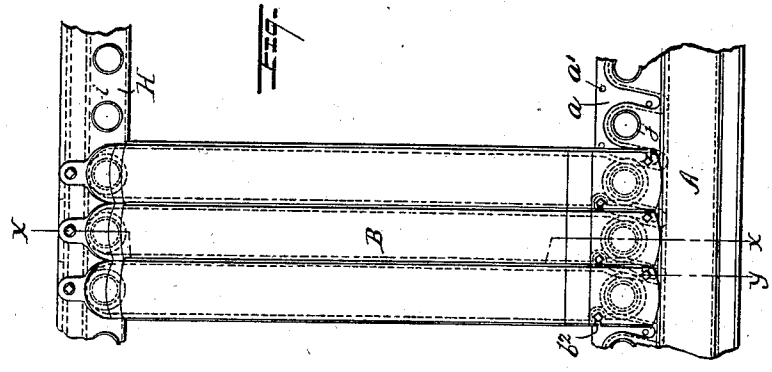


Fig. 3.

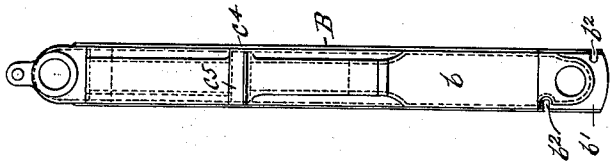
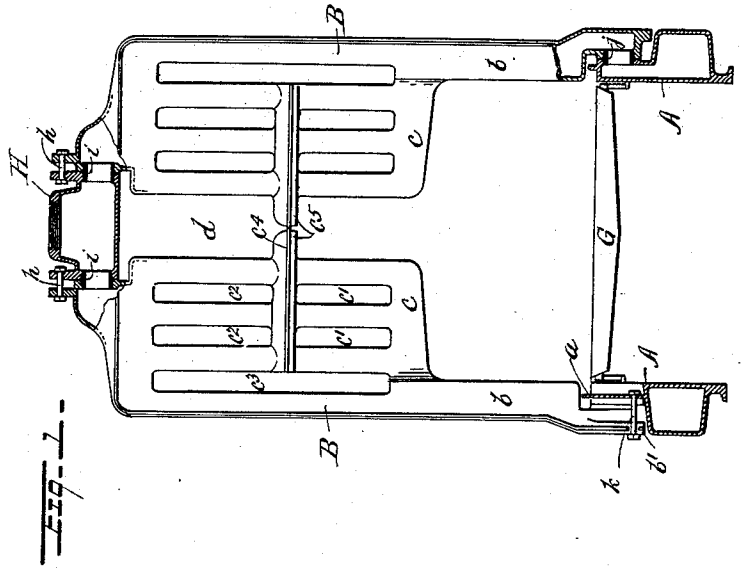


Fig. 1.



Witnesses
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UNITED STATES PATENT OFFICE.

ALEXANDER T. HENDERSON, OF READING, PENNSYLVANIA.

SECTIONAL BOILER.

SPECIFICATION forming part of Letters Patent No. 663,025, dated December 4, 1900.

Application filed March 19, 1900. Serial No. 9,178. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER T. HENDERSON, a citizen of the United States of America, and a resident of Reading, in the county of Berks and State of Pennsylvania, have invented certain new and useful Improvements in Sectional Steam or Hot-Water Heaters, of which the following is a specification.

My invention relates to that class of steam or hot-water heaters which are built up in sections; and my main object is to simplify the construction and erection of the parts, so as to reduce the cost both of manufacture and of repairs.

The invention is fully described in connection with the accompanying drawings, which show only so much of the heater construction as is required to make clear the present improvements.

Figure 1 is a vertical cross-section of a heater embodying my invention, taken on the line *x x* of Fig. 2, except as to the left-hand section of the water-base, which is taken on the line *x y*. Fig. 2 is a partial side elevation showing several heater-sections connected to the water-base side and to the top header. Fig. 3 is an inner edge view of one of the sections.

A A represent the sides of the water-base, B B the heater-sections, mounted in opposing series thereon, and H the top header, to which the upper ends of the sections B B are connected.

G represents the grate.

The front and rear portions of the heater are not shown, as they have no special bearing on my invention.

The heater-sections B B are arranged close together upon the base sides, as indicated in Fig. 2, and comprise water-legs *b b*, forming the side walls of the fire-chamber, and inwardly-overhanging portions *c c* above said fire-chamber, which are provided with openings c', c^2, and c^3, arranged to furnish proper heating-surface and passage-ways for the products of combustion, and with horizontal ribs c^4 and projections c^5 on each section adapted to contact with those of adjacent or opposite sections, so as to deflect the products of combustion laterally outward to the elongated side openings c^3 and thence inward above said ribs and projections to the central flue or chamber *d*, from which latter they pass to the chimney. The longitudinal top header H is located between the upper ends of the opposite series of sections B and forms the roof of the chamber or flue *d*.

The connections between the sections B and the top header H and base sides A are made by means of parallel horizontal push or slip nipples *i* and *j*, adapted to permit the easy and independent insertion or removal of each section, the nipples *i* fitting tightly in lateral openings in the header H and in corresponding lateral openings in the upper ends of the sections B, arranged to register therewith, and the lower nipples *j* in like manner fitting similar registering openings in the base sides A and the bottom of the legs *b*. These connections are made tight by means of bolts *h* and *k*, by which the parts are firmly drawn together in erecting the heater. These connections, it will be seen, are made by a parallel horizontal movement of the whole body of each section B into nipple engagement with the top header and base sides, respectively, which parallel inward movement both at top and bottom is intended to insure perfect parallelism of the nipple connections and the avoidance of distorting strains thereon tending to render the connection unsatisfactory, in view of the rigid form of the annular water-base. This construction requires that the sides A of said water-base shall be inside of the sections B, as is the header H, which, however, would naturally draw said base sides closer together, and thereby reduce the width of the ash-pit and tend to prevent the free admission of air to the sides of the grate G and also the free escape of ashes, &c., from these portions of the grate, both of which are objectionable effects. In order to avoid them and at the same time to provide for the use of convenient clamping-bolts lying entirely outside of the water-space of the heater, I give to the lower ends of the legs *b* and to the water-base side A the special forms indicated in the drawings, where it will be seen that the inner face of the base side A is on line with the inner face of the section-leg *b*, thus giving a width of ash-pit equal to the width of the fire-box. This I secure by placing the base sides A directly underneath the legs *b* and locating the slip-nipple *j* midway of the

width of the united parts, the water-space in the lapping portions of both the legs *b* and the base side being reduced, as shown, so as to maintain approximately a uniform outer as well as inner face. To provide for clamping the parts together without passing the bolts into the water-space, and thereby incurring the danger of leakage and rusting incident to such connections, I reduce the water-space so as to leave merely the inner wall or plate *a* of the water-base A between the section-legs *b* and bolting-flanges *b'* on the said legs, thus permitting the passage of the bolts *k* through holes *a'* in said plate and b^2 b^2 in said flanges and avoiding the necessity for any water-joints for said bolts.

The ease and economy with which the parts may be satisfactorily erected or sections independently removed will be readily understood.

I am aware that Patent No. 641,468, granted January 16, 1900, to John A. Rathbone, shows and describes some of the features of construction herein shown, and I desire to disclaim all such features as specifically set forth in the several claims of said patent.

What I claim is—

1. A steam or water heater comprising a water-base, a top header, a series of hollow sections arranged side by side, and parallel nipples extending from the same side of each section and connecting respectively with said top and bottom headers, said bottom header being arranged directly under the heater-sections and vertically overlapping the offset lower ends of the latter substantially as set forth.

2. In a steam or hot-water heater the combination of a water-base and a series of vertical heater-sections having their connecting legs offset to vertically overlap said water-base and form an inner wall substantially in line with the inner wall of said water-base, said overlapping portions of the sections and water-base being provided with horizontal nipple connections.

3. In a steam or hot-water heater the combination of a water-base and a series of vertical heater-sections having their connecting legs offset to vertically overlap said water-base and form an inner wall substantially in line with the inner wall of said water-base, said overlapping portions of the sections and water-base being provided with horizontal nipple connections and perforated bolting plates or flanges outside of the waterways for the passage of horizontal clamping-bolts.

Signed by me at Reading, Pennsylvania, this 16th day of March, A. D. 1900.

ALEXANDER T. HENDERSON.

Witnesses:
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