

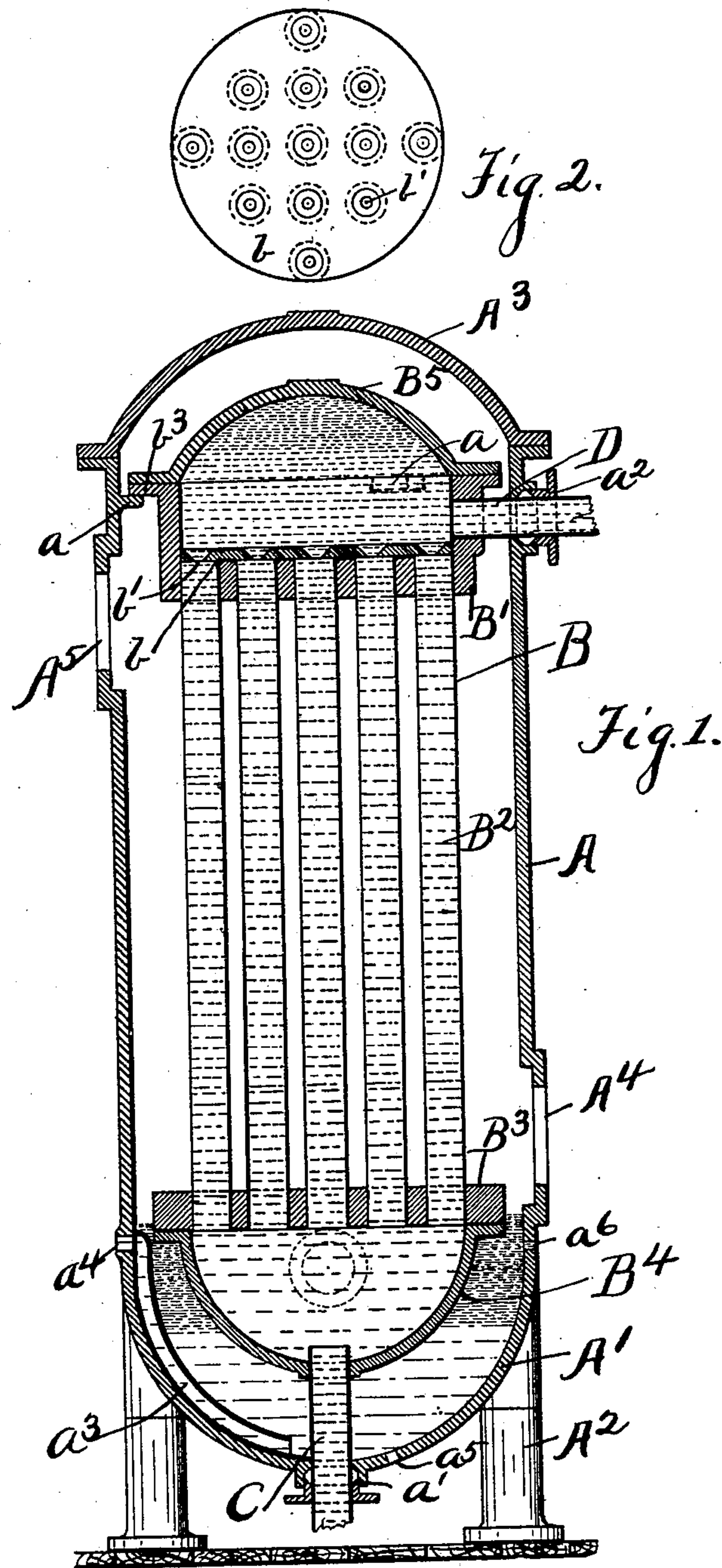
No. 677,798.

Patented July 2, 1901.

G. E. RIBLET.
HEATER.

(Application filed May 18, 1900.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

GEORGE E. RIBLET, OF ERIE, PENNSYLVANIA.

HEATER.

SPECIFICATION forming part of Letters Patent No. 677,798, dated July 2, 1901.

Application filed May 18, 1900. Serial No. 17,112. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. RIBLET, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania; have invented certain new and useful Improvements in Heaters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it ap-
16 pertains to make and use the same.

This invention relates to heaters; and it consists in certain improvements in the construction thereof, as will be hereinafter fully described, and pointed out in the claims.

15 The invention is peculiarly adapted for feed-water heaters, and, as shown, is arranged for this purpose.

Figure 1 shows a vertical section through the center of the heater; Fig. 2, a plan view
20 of the reducing-plate in said heater.

A marks the steam-drum, and B the water or liquid chamber arranged in the drum. The steam-drum A is provided with the bottom A', which may be made integrally with the
25 side or drum portion A and also the removable cover A³. The heater is supported by the standards A². The lugs *a* are arranged around the top of the drum portion A, and the water-chamber B is suspended from these
30 lugs. The water-chamber comprises the top head B', bottom head B³, the connecting-pipes B², which pass through these heads, a bottom cap B⁴, and the cover B⁵. A flange *b*³ on the top head rests on the lugs *a* and
35 supports the chamber, as before stated. The entrance-pipe C is secured to the cap B⁴ and extends through the stuffing-box *a*¹ in the bottom A' of the steam-drum. The outlet-pipe D is secured in the head B' and extends
40 out laterally through the stuffing-box *a*², arranged in the drum A. The steam entrance and discharge openings are at A⁴ and A⁵.

Arranged over the tops of the pipes B² is a plate *b*, having the openings *b*¹ in register
45 with the pipes B². The total area of the openings *b*¹ is approximately the area of the entrance-pipe C. Heretofore in devices of this character in order to get a sufficient heating-surface the pipes B² have been of
50 much greater capacity than the entrance-pipe of the heater. The communication through some of these pipes has been much more di-

rect than in others, and in consequence nearly all the water passing through the heater has been forced through these particular pipes; 55 so that the other pipes of the heater have produced little effect on the capacity of the device. By reducing the outlet area of the pipes B² by means of the plate *b* a movement of practically all the liquid through 60 any one pipe is prevented and the movement is distributed through all the pipes, so that the greatest possible efficiency is secured. I prefer to make the opening *b*¹ beveled, with the sharp edge of the bevel on the bottom. 65 By this means when shale forms in the opening it will be forced out after acquiring some thickness by the water working under the lower edge.

By suspending the water-chamber all the 70 expansion takes place from that point. The pipe C is secured at the center of the chamber, so that there is no tendency of lateral movement, and as it extends in the line of expansion it simply moves through the stuff- 75 ing-box *a*¹ without straining any of the parts. It will be noted that this manner of suspension forms a means of support at one place in the chamber, allowing free relative expan- 80 sive movement between the other parts of said chamber and the drum. The pipe D passes out laterally from the chamber through the drum at the point of support, so that whatever action there is at this point is in line with the pipe. 85

By removing the covers A³ and B⁵ the entire mechanism is exposed, so that the pipes B² may be cleaned, if desired. By arranging the outlet and inlet pipes below these covers 90 no change is necessary relatively to these pipes when the covers are removed. If, however, a more thorough cleaning or repairing is desired, the pipes D and C may be removed and the chamber B lifted from the drum A.

The cap B⁴ is arranged in the receptacle 95 formed by the bottom A'. This receptacle catches the water produced by condensation and also forms a separator to separate the oil from the water. The pipe *a*³ extends to the bottom of this receptacle and carries the 100 water, which naturally settles at the bottom, off through the opening *a*⁴. The openings *a*⁵ and *a*⁶ are arranged to draw off the oil from the water and may be controlled by small

cocks. (Not shown.) It will be noted that the water entering through the pipe C is held in the cap B⁴ in its coldest state, and the receptacle forming the oil-separator surrounds this cap B⁴, and its heat is conducted to the water to be heated into the cap B⁴, and the water in the cap B⁴ tends to cool the water in the receptacle, so as to produce a more rapid separation of the oil and water.

What I claim as new is—

1. In a heater, the combination of a steam-drum; a water-chamber comprising pipes unobstructed throughout the greater part of their length through which the water passes; and a reducer for said pipes to induce a flow in all the pipes.

2. In a heater, the combination of the steam-drum; a water-chamber arranged in said steam-drum comprising a series of water-pipes; an entrance leading to said water-pipes; and a reducer for reducing the capacity of said water-pipes to approximately the capacity of said entrance to induce a flow in all the pipes.

3. In a feed-water heater, the combination of a drum; a water-chamber in said drum, comprising a series of pipes; a reducer for said pipes, having a beveled opening with the sharp edge of the bevel toward the entrance end for the purposes described.

4. In a heater, the combination of a drum; a water-chamber arranged in said drum; means for supporting said chamber in said drum, said means being arranged to allow free relative expansive movement of said chamber and drum; and a water-pipe passing through said drum into said chamber at a point remote from said securing means, said pipe being arranged in the line of the expansive movement of the chamber at the point of connection.

5. In a heater, the combination of a drum; a chamber in said drum; means for securing said chamber at one end in said drum, said chamber being arranged to have free expansive movement away from said securing

means; and a water-pipe passing through said drum into said chamber at a point remote from said securing means, said pipe being arranged in line with the expansive movement of said chamber at the point of connection.

6. In a heater, the combination of an upright drum; a water-chamber suspended from the top in said drum and arranged to have free expansive movement from the point of suspension; and an upright entrance-pipe extending through the bottom of the drum into the bottom of the chamber and connections between said pipe, chamber and drum, arranged to allow relative movement between the bottom of the chamber and the bottom of the drum.

7. In a heater, the combination of a drum, having a receptacle for receiving condensation; a water-chamber arranged in said drum, having the entrance or initial part of said chamber arranged in said receptacle; and a pipe leading from the bottom of said receptacle to a point near the top of said receptacle for carrying off the surplus supply of water.

8. In a heater, the combination of the drum, A, having the bottom, A', cover, A³, inlet and outlet openings, A⁴ and A⁵; a water-chamber comprising the heads, B' and B³, pipes, B², cap, B⁴ and cover, B⁵; means for suspending said chamber in said drum from a point near the top of said drum; the entrance-pipe, C, passing through the stuffing-box, a', into the bottom of the chamber; the outlet-pipe, D, extending from the head, B', laterally through the stuffing-box, a², out of the drum; and the reducing-plate, b, having the opening, b', of a total area approximating the area of the pipe, C, said opening, b', being arranged to register with the pipes, B².

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

GEORGE E. RIBLET.

Witnesses:

CLARK OLDS,
GEO. E. GIBSON.