

No. 618,770.

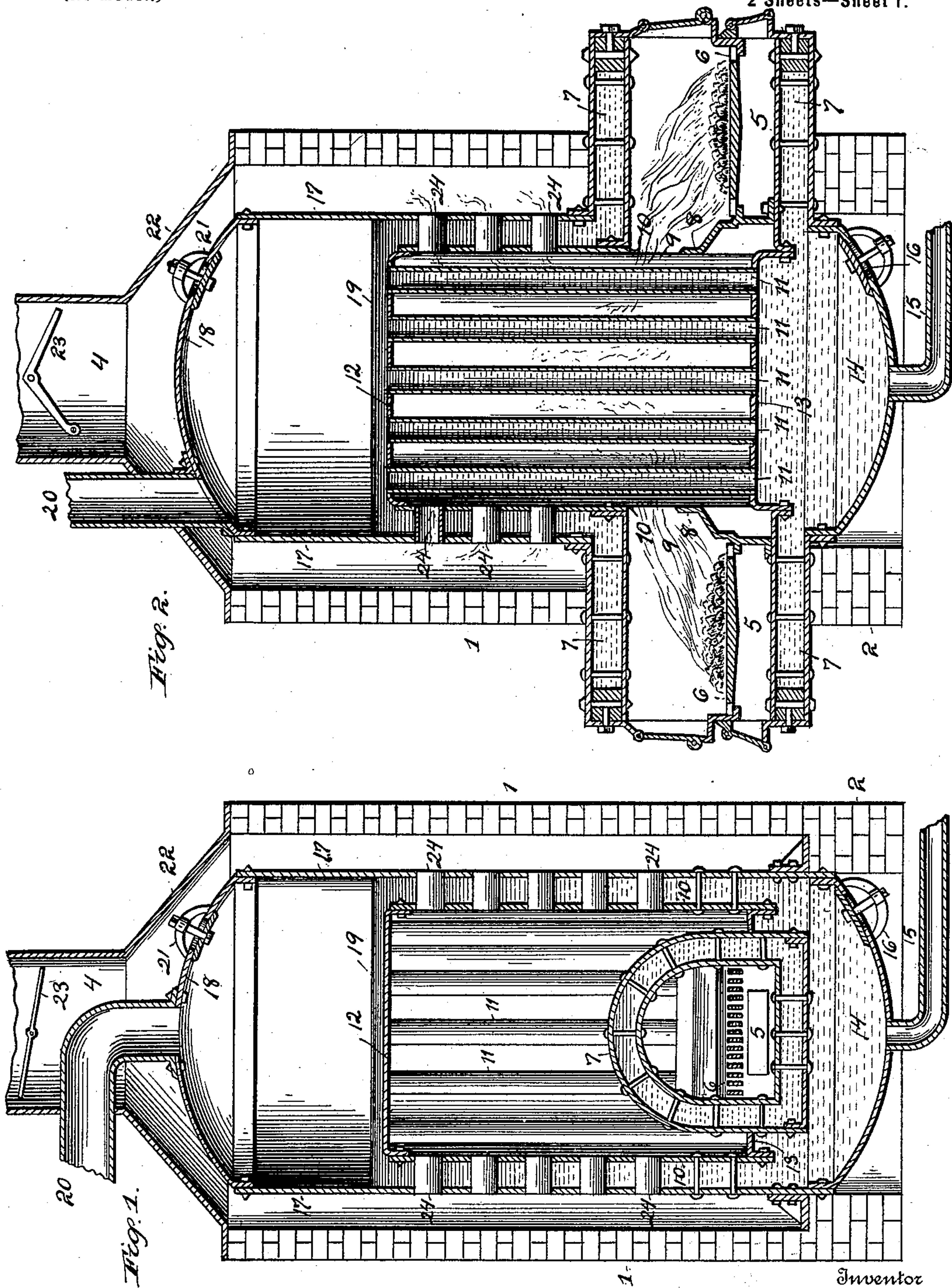
Patented Jan. 31, 1899.

G. BAUMANN.
BOILER.

(Application filed Jan. 4, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

Victor J. Evans.
Harry L. Amer.

George Baumann.

by V. S. Shockbridge
his Attorney.

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(No Model.)

2 Sheets—Sheet 2.

Fig. 4.

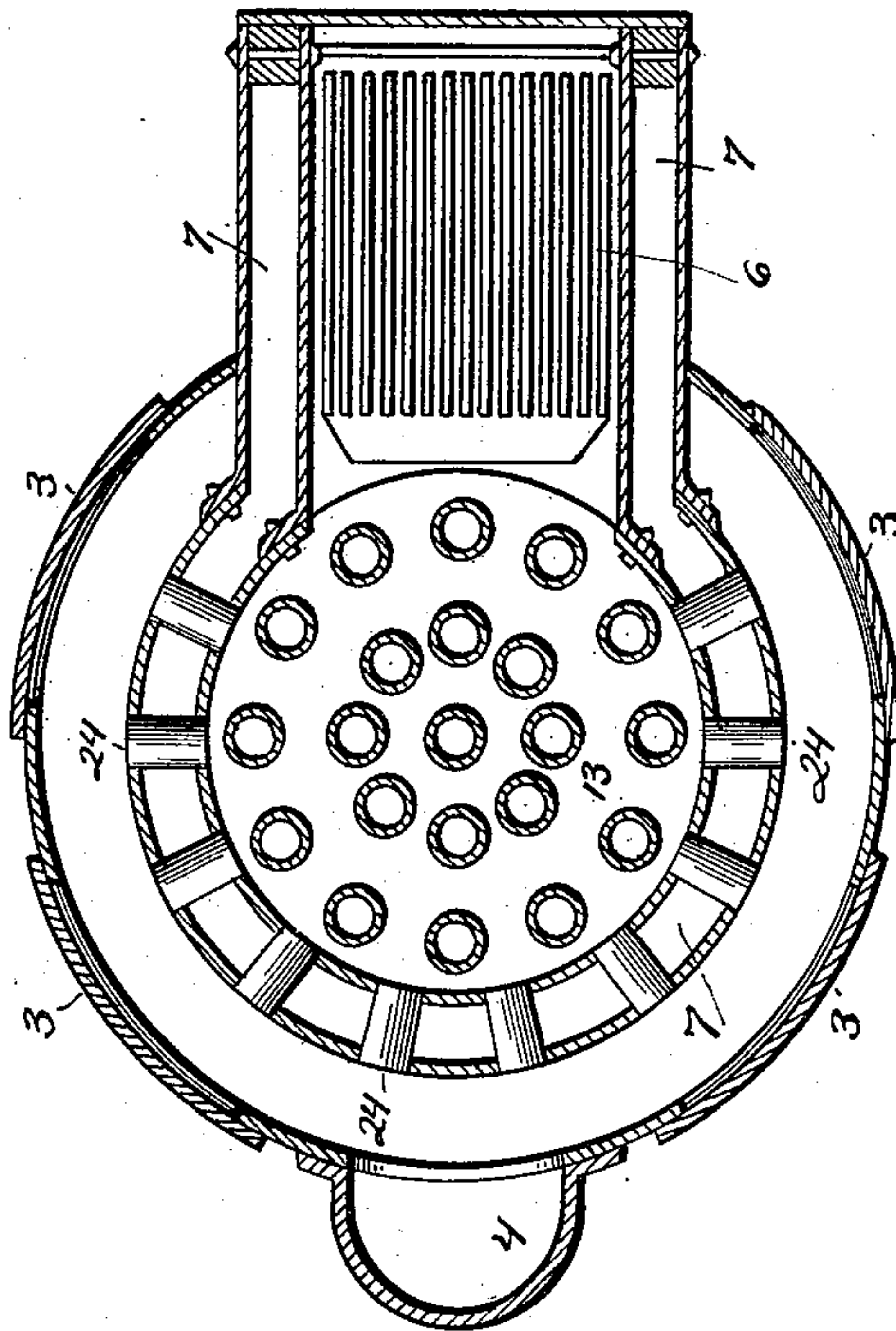
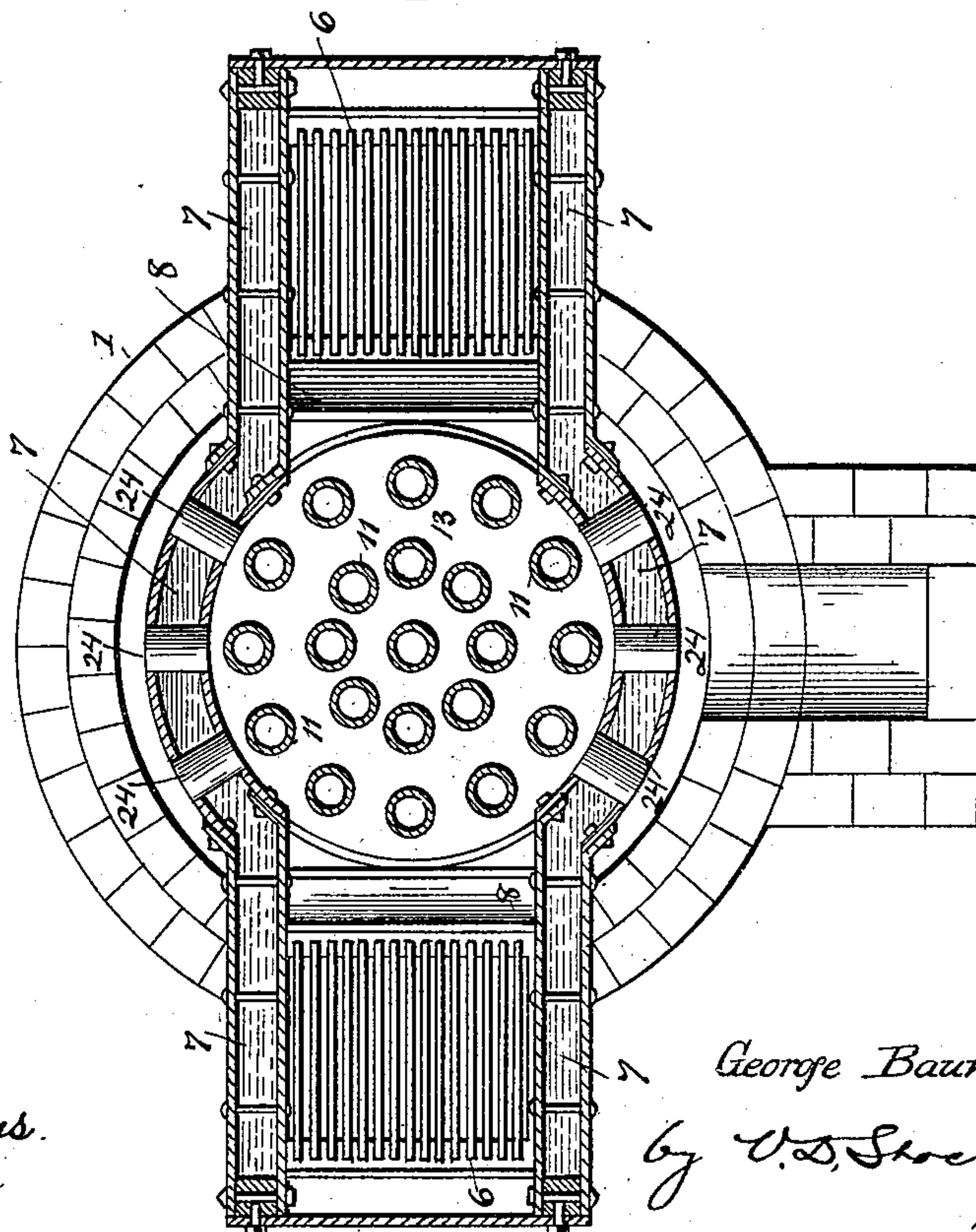


Fig. 3.



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UNITED STATES PATENT OFFICE.

GEORGE BAUMANN, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO
HENRY D. TROEGER, OF SAME PLACE.

BOILER.

SPECIFICATION forming part of Letters Patent No. 618,770, dated January 31, 1899.

Application filed January 4, 1898. Serial No. 665,517. (No model.)

To all whom it may concern:

Be it known that I, GEORGE BAUMANN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Boilers; 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 appertains to make and use the same.

The invention relates to water-tube boilers, the object of the same being to simplify and otherwise improve the construction of this class of devices, whereby greater efficiency from a given amount of fuel is attained.

The invention consists of a series of water-tubes communicating with a water-space surrounding the compartment in which they are located, a fireplace communicating with said compartment, and a water-jacket surrounding the fireplace and communicating with said water-space.

The invention also consists in other details of construction and combinations of parts, which will be hereinafter more fully described and claimed.

In the drawings forming a part of this specification, Figure 1 is a vertical sectional view of a boiler constructed according to my invention. Fig. 2 is a similar view taken at right angles to Fig. 1. Fig. 3 is a horizontal section. Fig. 4 is a similar view illustrating the device constructed of sheet metal.

Like reference-numerals indicate like parts in the different views.

The outer casing 1 may be constructed of masonry or formed of sheet metal and, as shown, is mounted upon the base 2.

The boiler may be either single or duplex—i. e., it may have one, two, or more fireplaces; but in either form the operation will be the same, it being of course understood that where a plurality of fireplaces are employed the steam will be more rapidly generated.

The casing 1 communicates with a smoke-stack 4, and each fireplace employed is similarly constructed, so that a description of one will be sufficient to set forth the relative arrangement thereof and the parts within the boiler. Each fireplace comprises an ash-pit 5, grate-bars 6, and a surrounding water-

jacket 7, which is extended upwardly from the rear lower end of the fireplace to form a fire-wall 8, an opening 9 being left between the upper end thereof and the adjacent portion of the water-jacket. The arched portion of the water-jacket 7 communicates with a water-jacket 10, surrounding a series of vertically-disposed separated water-tubes 11, the space between and around said tubes being in communication with the fire-box through the opening or openings 9. The water-tubes 11 are supported by the upper and lower tube-sheets 12 and 13, and below the lower tube-sheet 13 is a water drum or reservoir 14, with which the jackets surrounding the various parts also communicate and which has a blow-off pipe 15 for cleaning the same, as well as a manhole 16, covered by a suitable cap.

When only one fireplace is employed, the water-jacket 10 communicates on one side directly with the water drum or reservoir 14; but when a number of fireplaces are used the water-jacket 10, surrounding the upper ends of the water-tubes, communicates with the water-jackets surrounding the fireplaces, and thus an increased circulation and greater water-space is provided close to the fire, with the advantage of quick heating facilities. The outer portions or walls of the water-jacket 10 extend some distance above the upper tube-sheet 12, as at 17, and has connected thereto a dome or arch 18, which above the water-line or level 19 forms with the surrounding parts a steam-space having a distributing-pipe 20 leading therefrom. The said dome or arch 18 is also provided with a manhole 21, having a suitable cover, and the upper part of the surrounding casing 1, when it is formed of brickwork, has an outer metallic or other suitable cover 22 applied thereto and leading to the smoke-stack above the dome or arch 18. Within the smoke-stack is a suitable regulating-damper 23, for a purpose which will be readily understood.

The cover 22 and the casing 1 form, with the adjacent wall of the water-jacket and with the dome or arch 18, a surrounding flue which has communication with the space in and about the water-tubes 11 by means of

short horizontally-disposed flue-tubes 24, extending through the water-jacket. These tubes enable the products of combustion passing therethrough to heat the water in the water-jacket.

In operation water is supplied to the water-jacket until its level reaches the line 19. The fire is then started in the fireplace or fireplaces, as the case may be, and the products of combustion pass through the opening or openings 9 into the space about the water-tubes 11, thence through the horizontal tubes 24 into the flues formed between the outer casing 1 and the outer wall of the water-jacket, and out through the smoke-stack. It will be observed that the water in the jacket 7 is rapidly heated, as well as the water in the tubes 11 and the jacket 10, and steam is quickly generated, occupying the space above the water line or level 19. The sediment in the water falls to the drum or reservoir 14 and can be readily removed through the blowpipe 15. The water-jacket surrounding the fireplace or fireplaces is braced and strengthened by suitable bolts and has a front cover, as shown in Fig. 1, completely surrounding the fire-door, the same being arched at the top or otherwise shaped to conform to the contour of the fireplace. Angle-irons and other braces may be interposed at such points as may be found necessary to strengthen the several parts of the boiler, and other appurtenances—such as steam-gages, water-columns, and safety-valves—may be employed, as found necessary.

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

1. A boiler comprising a series of water-tubes separated one from the other, a fireplace communicating with the inclosure in which said tubes are located, a water-jacket extending around the top, bottom and sides

of the fireplace, a water-space surrounding the water-tubes and communicating with said jacket, a drum or reservoir also communicating with the water-jacket and the water-space, a steam-dome, and tubes passing through said water-space and establishing an outlet for the products of combustion to a flue and stack.

2. In a boiler, the combination of a series of vertically-disposed water-tubes inclosed within a space, a fireplace opening into the said space, water-jackets surrounding the fireplace and water-tubes, a lower drum or reservoir supplied with blow-off pipes and a manhole, a steam-drum above the water-tubes, an annular flue surrounding the upper portion of the water-tubes and leading to a smoke-stack, and a series of horizontal tubes passing through a portion of the water-jacket and communicating with the said flue, substantially as described.

3. In a boiler, the combination of a series of vertically-disposed water-tubes inclosed within a space and held by upper and lower tube-sheets, a fireplace surrounded by a water-jacket and communicating with the water-jacket around the fireplace, a dome above the upper ends of the water-tubes, a surrounding casing at a distance from the outer wall of the water-space and dome and forming a flue, a smoke-stack leading from the said flue, and horizontal flue-tubes passing through the upper portion of the vertical water-limb and forming a means of communication of the tube-space with the surrounding flue, substantially as described.

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

GEORGE BAUMANN.

Witnesses:

DAVID SULLIVAN,
ADAM J. KRUMM.