

No. 618,556.

Patented Jan. 31, 1899.

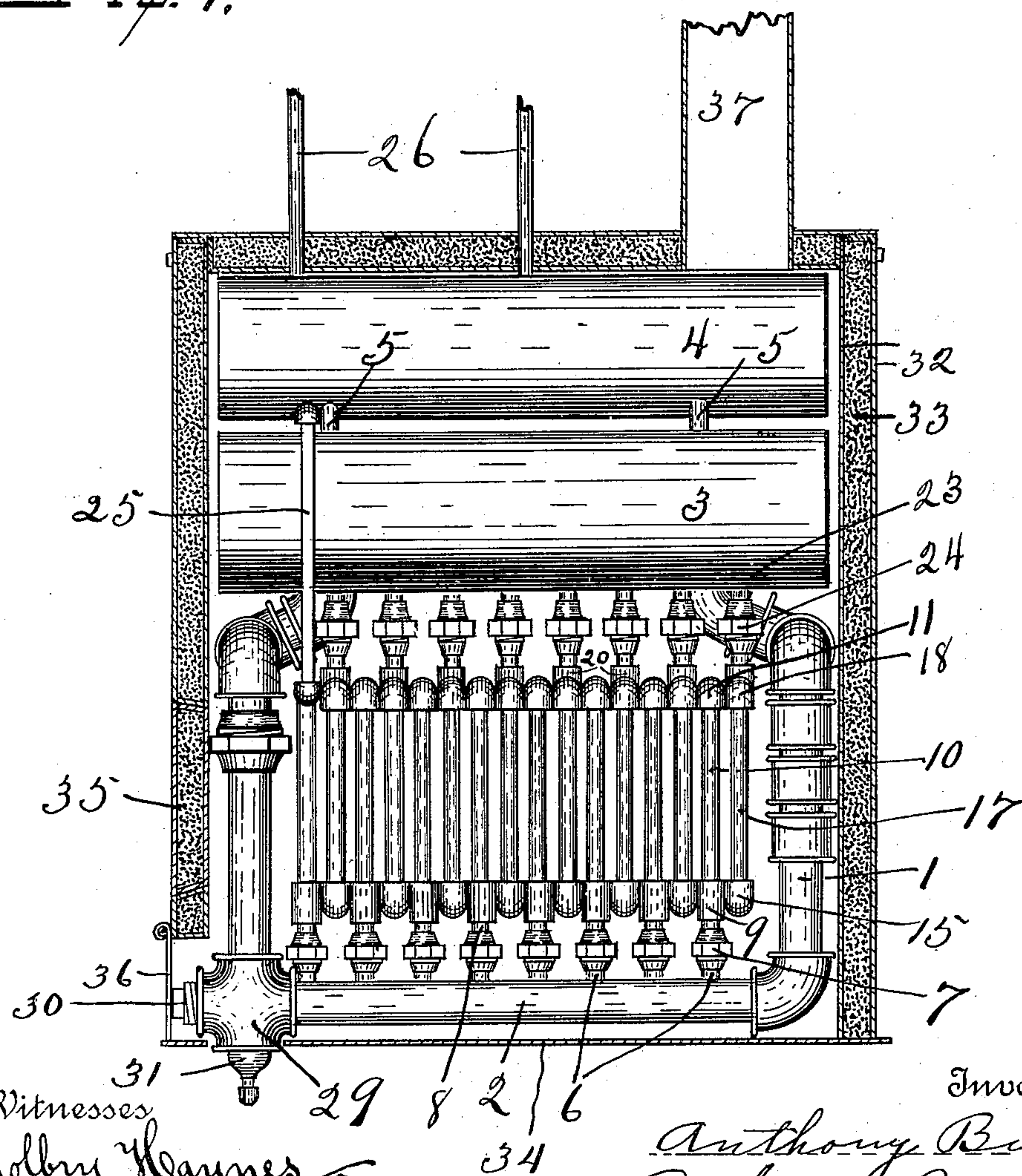
A. BINK.
TUBULAR BOILER.

(Application filed May 4, 1898.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



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2 Sheets—Sheet 2.

Fig. 2.

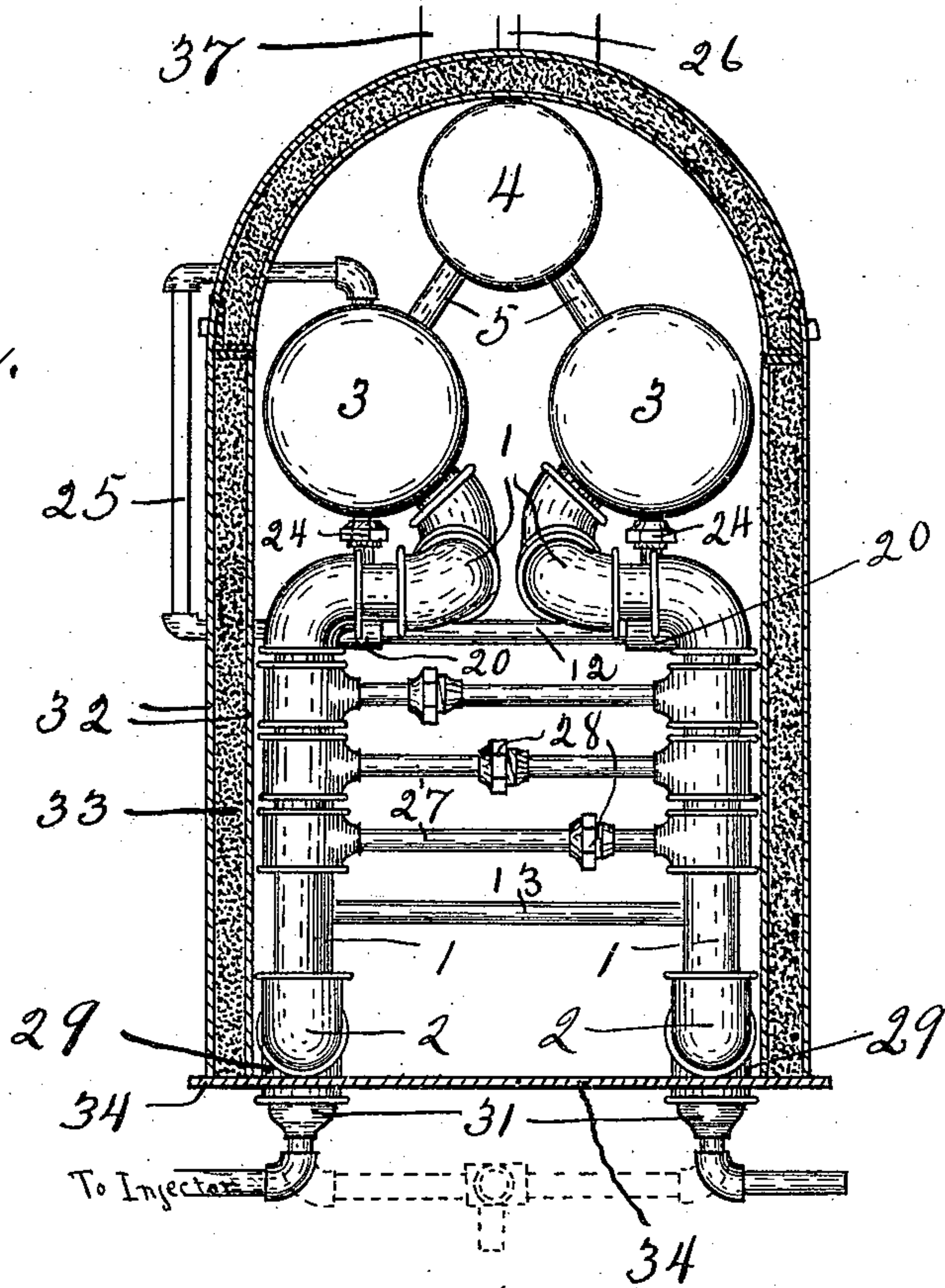
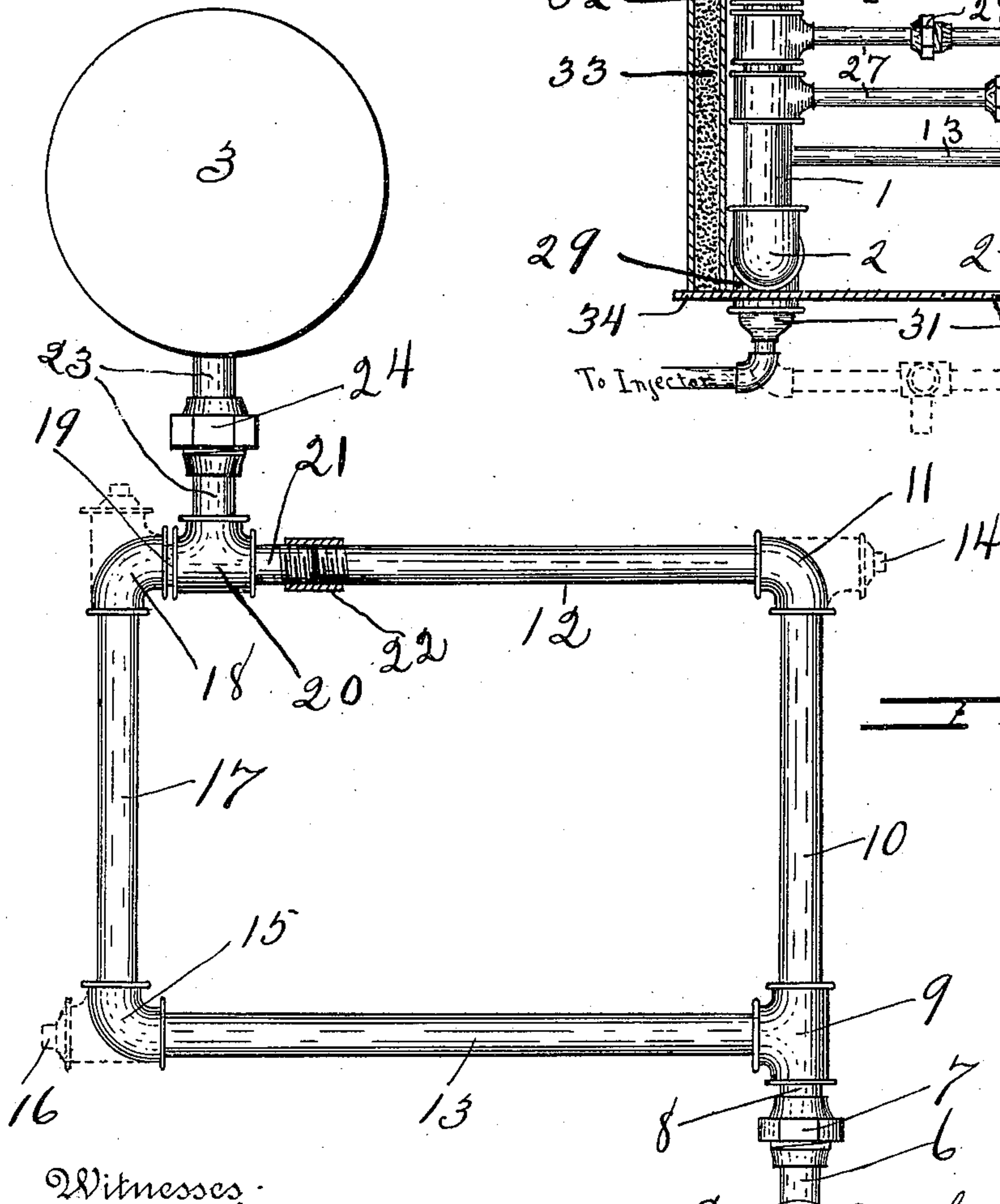


Fig. 3.



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UNITED STATES PATENT OFFICE.

ANTHONY BINK, OF STOCKTON, CALIFORNIA.

TUBULAR BOILER.

SPECIFICATION forming part of Letters Patent No. 618,556, dated January 31, 1899.

Application filed May 4, 1898. Serial No. 679,713. (No model.)

To all whom it may concern:

Be it known that I, ANTHONY BINK, a citizen of the United States, residing at Stockton, in the county of San Joaquin and State of California, have invented certain new and useful Improvements in Tubular Boilers; and I do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to that class of boilers which are composed of tubes wherein the water is contained; and my object is to furnish a boiler having a large heating-surface, a perfect circulation, and which is durable of construction and easily cleaned inwardly and repaired.

My boiler consists in the peculiar construction, novel combination, and adaptation of parts hereinafter described, and particularly pointed out in the claims hereunto annexed, reference being had to the accompanying drawings, in which—

Figure 1 is a right-hand side elevation of my improved boiler with the jacket in section. Fig. 2 is a rear end elevation of the same, showing the jacket in section. Fig. 3 is a detached detail view of one of the sectional pipes, showing the method of connection.

Similar figures of reference indicate corresponding parts in the several views.

A pipe 1, of suitable dimensions, is arranged vertically at each corner of the space wherein the fire-box is contained. The said pipes 1 are connected at each side of the boiler by a pipe or drum 2, which extends longitudinally below the side of said fire-box. Drums 3 are arranged one on either side above the pipes 1, and said pipes 1 at their upper ends are attached to and communicate with the said drums 3 at either end of the same. A steam-drum 4 is mounted above the drums 3 and communicates with each of said drums 3 by means of pipes 5, which may be inserted in any approved manner.

The fire-box of my boiler is composed of pipes of a lesser diameter than the pipes 1 and 2, arranged in upright frames, as shown in Fig. 3, and located transversely and side by

side beneath the drums 3, said frames each having a nipple 6 inserted in an opening in the pipe 2, which nipple is adapted to receive the parts of a union-coupling 7. A nipple 8, which is attached in one end of a T-joint 9, is adapted to receive the parts of the union-coupling 7, thereby rendering the joint complete. A pipe 10 is arranged vertically in the T 9, and its other end has a T 11 attached thereon, which receives a pipe 12, arranged horizontally therein, said T being arranged with a plug 14 in its free opening opposite the pipe 12 for the purpose hereinafter set forth. The other opening of the T 9 is adapted to receive a pipe 13, arranged horizontally beneath and parallel with the pipe 12, said pipes 13 of all of the sections when arranged in position forming the bottom or grate of the fire-box, said pipe 13 having a T 15, with a plug 16 therein, similar to the T 11, attached on the end of the same. A vertical pipe 17 is inserted in the T 15 and arranged parallel with the pipe 10. The upper end of the pipe 17 has a T 18, having a plug in one of the openings thereof, attached on its free end, said T 18 being adapted to receive a nipple 19, on which a T 20 is arranged, with a nipple 21 inserted in its opposite opening. The ends of the pipe 12 and nipple 21 are arranged together and adapted to receive a sleeve 22 thereon. The T 20 has a pipe 23 arranged vertically from the same, said pipe 23 having a union-coupling 24 suitably arranged thereon and being inserted in the opening in the under side of the drum 3.

The above-described pipe-sections are arranged with the nipple 6 of each section inserted alternately in the pipe 2 on either side, and the pipe 23 of each section is inserted in the drum 3, opposite to the pipe 2, in which the nipple 6 of that particular section is inserted, thereby providing a circulation of the water in the pipes from the pipe 2 on each side to the drum 3 on the opposite side.

The water-glass 25 may be attached in any approved manner. I provide a number of pipes 26 from the steam-drum 4, which may be used for attaching steam-gage, &c.

The rear end of the fire-box is composed of horizontal pipe-sections 27, attached to the pipes 1 by means of T-joints, and are provided with union-couplings 28. At each

junction of the pipes 1 and 2 in front a four-way joint 29 is arranged with a plug 30 in the opening opposite the pipe 2, and the opening in its under side has a reducer 31 inserted therein, to one of which reducers suitable pipe connection may be established to the injector, (not shown,) and to the other reducer 31 suitable pipes may be connected and used to withdraw the contents of the boiler.

10 If preferred, the two reducers 31 may be connected together by suitable pipes, as shown in dotted lines, Fig. 2, and fitted with suitable stop-cocks.

My boiler is incased in a jacket composed of two thicknesses of sheet metal 32, arranged with a suitable space between the same and a heat non-conducting material 33, inserted in said space. The bottom 34 is composed of sheet metal bolted to the sides and ends. A suitable door 35 is arranged in the front end of the jacket opposite the fire-box for the admission of fuel. A door 36 is arranged below the door 35 for the purpose of removing the ashes and providing a draft. 37 represents the smoke-stack, which may be of any approved type. The casing or jacket of my boiler may be built and I prefer to build the same, especially on large boilers, in sections, so that any section may be removed, thereby facilitating the repairing of any part needing attention without removing the entire casing or jacket.

The advantages of my improved boiler are that the pipes 1 and 2 present less heating-surface by reason of their greater diameter and distance from the fire. Consequently the water flows downwardly from the drums 3 through the pipes 1 into the pipes 2, where it may be distributed through the nipples 6 and 8 into the sections composing the fire-box. As will be seen, the intense heat communicated to the pipes 12, 10, 13, and 17 causes an upward flow of the water through the pipes 23 into the drum 3, from where it flows into the pipe 1, making a continuous circulation. Another advantage of my boiler is that any section of the fire-box may be removed by means of the union-couplings 7 and 24 and by the use of the T-joints 9 11 15 18, arranged at the angles of the pipe-sections composing the fire-box. Should the pipes become corroded or clogged, the plugs may be withdrawn from said T-joints and suitable instruments inserted to withdraw the obstruction. Any sediment that may collect in the pipes 2 may be withdrawn by removing the plugs 30 and inserting a suitable instrument therein.

By having the fire-box composed entirely of pipe all heat is utilized.

I am well aware that boilers have been con-

structed of tubes adapted to hold water, and I therefore do not claim that feature broadly; but

What I do claim as new, and desire to secure by Letters Patent, is—

1. In a water-tube boiler, the combination of upper and lower drums, and a plurality of upright transversely-arranged frames formed by connected pipes and connected with the upper and lower drums; the said frames being disposed side by side and forming the grate, top and sides of a fire-box, substantially as specified.

2. In a water-tube boiler, the combination of the upper and lower longitudinal drums, pipes connecting the ends of each upper drum with the ends of the lower drum below it, and a plurality of upright, transversely-arranged frames formed by connected pipes; the said frames being disposed side by side and forming the grate, top and sides of a fire-box, and each frame being connected with a lower longitudinal drum at one side of the boiler and with the upper drum at the opposite side of the boiler, substantially as and for the purpose set forth.

3. In a water-tube boiler, the combination of a suitable casing, upper and lower longitudinal drums arranged in the casing at opposite sides of the longitudinal center thereof, corner-pipes connecting the ends of each upper drum with the ends of the lower drum below it, a plurality of horizontal pipes connected to the rear corner-pipes at intervals in the length thereof and forming the rear wall of a fire-box, and a plurality of upright, transversely-arranged frames formed by connected pipes; the said frames being disposed side by side and forming the grate, top and sides of the fire-box, and each frame being connected with a lower longitudinal drum at one side of the boiler and with the upper drum at the opposite side of the boiler, substantially as specified.

4. In a water-tube boiler, the combination of upper and lower drums, and a plurality of upright, transversely-arranged, rectangular frames formed by pipes connected at the corners of the frame by joints having removable plugs coincident with the pipes; the said frames being connected with the upper and lower drums and being disposed side by side and forming the grate, top and sides of a fire-box, substantially as specified.

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

ANTHONY BINK.

Witnesses:

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JOSHUA B. WEBSTER.