No. 823,636. PATENTED JUNE 19, 1906.

C. PORTER.

WATER HEATER.

APPLICATION FILED MAY 10, 1905.

Fig. 1.

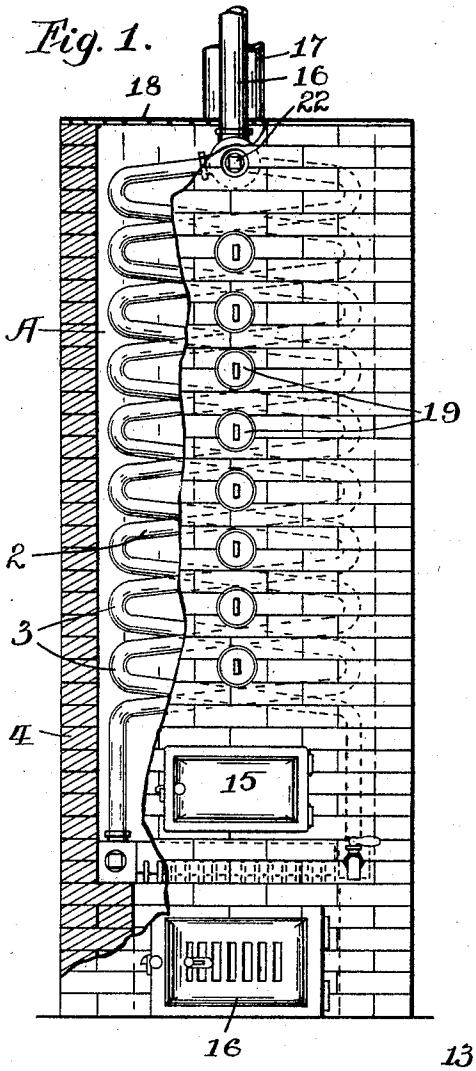


Fig. 2.

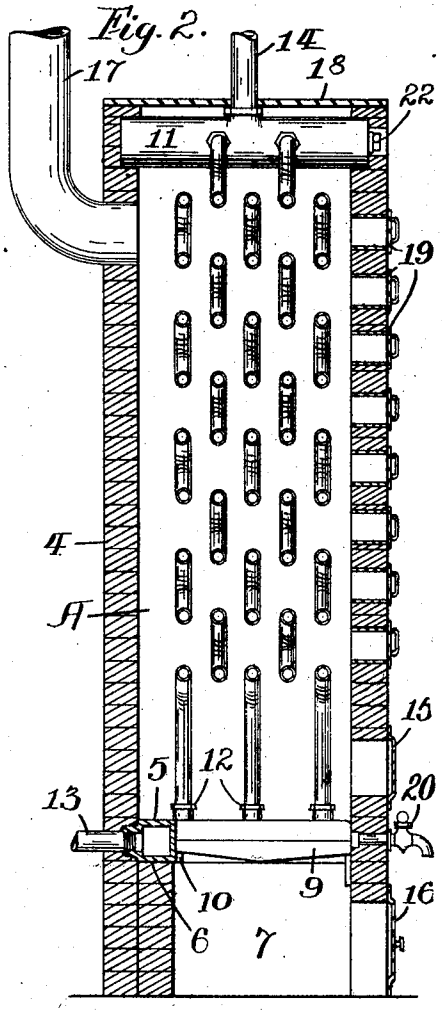
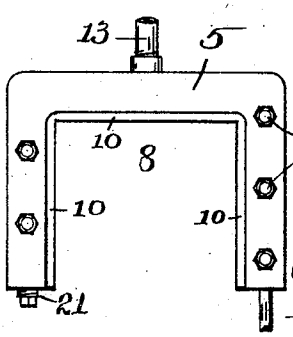


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

CHRISTOPHER PORTER, OF ST. PAUL, MINNESOTA.

WATER-HEATER.

No. 823,636. Specification of Letters Patent. Patented June 19, 1906.

Application filed May 10, 1905. Serial No. 259,672.

To all whom it may concern:

Be it known that I, CHRISTOPHER PORTER, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented a new and useful Water-Heater, of which the following is a specification.

My invention relates to improvements in water-heaters, and has for its objects to provide means which will permit ready access for renewing, repairing, and cleaning the parts of the heater and inexpensive construction.

A further object is to utilize a maximum amount of heat from the fuel and reduce the waste heat radiation to a minimum.

In the accompanying drawings, forming part of this specification, Figure 1 is a front elevation, partly in section, of my improved water-heater. Fig. 2 is a central vertical section of Fig. 1; and Fig. 3 is a detail plan view of the water-base, showing the water-tubes in section.

My invention consists of a series of water-tubes 2, each tube being reflexed at 3 a number of times. The water-tubes are arranged apart, and when viewed from one side their reflexed parts appear to intersect each other, so that their surfaces are equally distributed throughout the heating-chamber A. The heating-chamber is formed by inclosing walls 4, which may be constructed of bricks or any other suitable, though preferably poor, heat-conducting material. A water-base 5 is adapted to rest on a shoulder 6, which is formed on the walls 4 above an ash-pit 7. The water-base is hollow and has an opening 8, across which grate-bars 9 extend and rest upon shoulders 10, which are formed on the inner faces of the sides of said base. Near the top of the inclosure is a hollow head 11, which rests horizontally in recesses formed in said walls. The ends of the water-tubes are connected, as shown, with the base and head by means of nipples 12. An external water heating system (not shown) is adapted to be connected with the water-heater by means of pipes 13 and 14 at the back of said base and the top of said head. A fire-door 15 and an ash-pit door 16, respectively above and below the grate, are provided in said walls and are of ordinary construction. Near the upper end of the water-heater is a smoke-outlet 17, and on the top is placed a cover 18, which may be covered with sand or other poor heat-conducting material. A series of clean-outs 19 in the front wall of the inclosure may be removed and a suitable brush or tool inserted between the angles of the water-tubes for cleaning or repairing purposes.

In the operation of the furnace heat from the fire on the grate radiates around the water-tubes, and the smoke and gases pass out through the smoke-outlet. When it is desired to remove a water-tube, the nipples may be easily disconnected and such tube as desired lifted out through the opening made in the walls of the water-heater and a new one replaced. A faucet 20 and plugs 21 and 22 are connected with the water-base and head, and suitable openings are left in the walls of the water-heater to receive them. By removing these plugs and opening said faucet water may be drained from the tubes and the parts cleaned.

It is obvious that as many tubes may be used as desired and that a different number merely varies the length of the water-heater. It is further obvious that it is not always necessary to arrange the water-tubes in an upright position, for they may rest horizontally or incline when desired, and that the details of construction may be varied, and I do not wish to confine myself to the exact construction described.

Having described my invention, what I claim as new, and desire to protect by Letters Patent, is—

A device of the class set forth, consisting of a suitable furnace inclosure, a plurality of water-tubes in said inclosure, each tube being reflexed a number of times to present a maximum amount of heating-surface within said inclosure and their reflexed parts, when viewed from one side, appearing to intersect each other, a hollow base with which the lower ends of said tubes are connected and formed with an opening and a shoulder on its inner faces, fire-grates resting on said shoulder and across said opening, a drain-faucet connected with said base, a head with which

the upper ends of said tubes are connected, nipples between the ends of said tubes and said base and head, and clean-outs through the walls of said furnace positioned opposite the spaces between the reflexed parts of said water-tubes.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHRISTOPHER PORTER.

Witnesses:
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