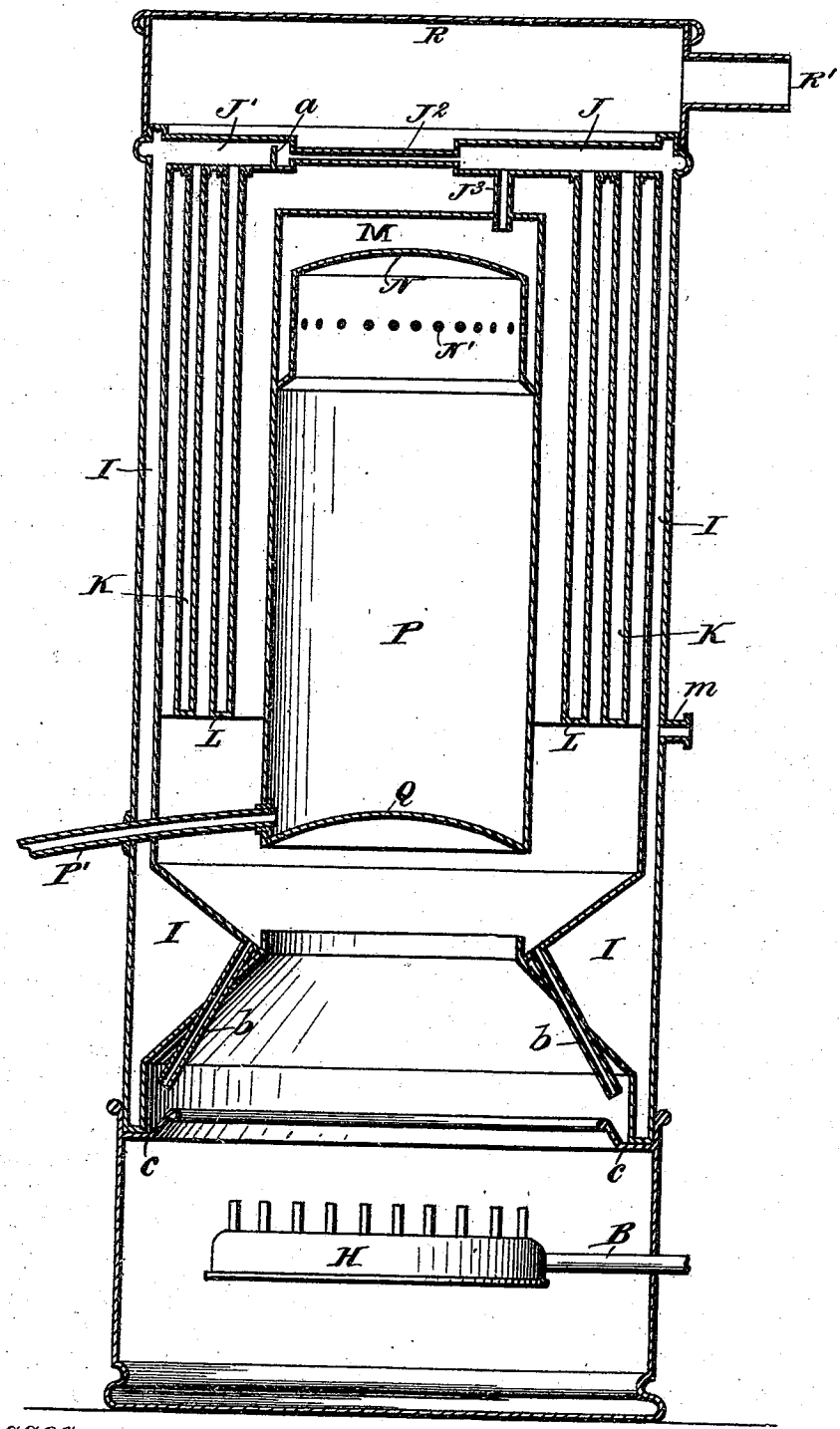
(No Model.)

J. WINTERFLOOD.

WATER HEATER.

No. 500,987. Patented July 4, 1893.



Witnesses.
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UNITED STATES PATENT OFFICE.

JOSEPH WINTERFLOOD, OF LONDON, ENGLAND.

WATER-HEATER.

SPECIFICATION forming part of Letters Patent No. 500,987, dated July 4, 1893.

Application filed May 8, 1893. Serial No. 473,350. (No model.) Patented in England March 12, 1888, No. 3,785.

To all whom it may concern:

Be it known that I, JOSEPH WINTERFLOOD, a subject of the Queen of Great Britain, and a resident of 39 Thornhill Road, Barnsbury, London, England, have invented certain new and useful Improvements in Water-Heaters, (patented in Great Britain March 12, 1888, No. 3,785,) of which the following is a specification.

This invention relates to improvements in apparatus for rapidly heating water.

The invention consists of a vessel of great depth as an exterior water chamber conical shaped on the interior near the lower part for contracting that part to within range of a ring of gas flame. The upper interior part of the above water vessel which is of cylindrical shape has a series of concentric water chambers between the first named and a central vessel termed the boiler, said boiler being partitioned near its upper end by an internal dome which has a perforated wall for the passage of water in fine streams which flow and trickle down in sheet form within the boiler for collection at the bottom to be drawn off as required. The water vessels and the boiler are connected by a transverse branch pipe with a smaller central part and having in one part a check plate to establish water circulation in the vessels.

The annexed drawing is a sectional elevation of the water heating apparatus.

The water heater is composed of three cylindrical vessels I. K. L. The cylinder I is of about double the depth of K. L and near its lower part is formed conical inwardly to extend approximately within range of the flame from the ring H of gas burners, preferably fitted on a swing bracket for renewal of gas burners. The two vessels K. L are of equal height and at top are put in connection with the vessel I by transverse branch pipes J. J′, these being connected by a smaller pipe J^2. J′ having a check plate *a* to prevent a too sudden rush of water from J to J′ whereby the inflowing water must first enter the vessels K. L from the pipe J and then by circulation rise up into J′ after the vessel I has filled. The pipe J has a depending branch J^3 dipping into the crown M of the boiler P so that water in passing falls on the dome N of the partition N′ and thence by the perforations streams down the inside of the boiler P in thin sheet form in which boiler it accumulates to be drawn off by the pipe P′. The bottom Q of the boiler P is dished upwardly for the better distribution of the flame heat under it.

b. b. are drain pipes for conveying any condensed water from the flue passages, said pipes *b. b.* leading the condensed water into the tray *c* on which the heating apparatus stands. The vessels K. L. and also the boiler P are at a distance apart and between spaces serve for the products of combustion to pass up, a portion impinging against the transverse tubes J. J′. J^2. before entering the chamber formed by the roof R and to which the flue R′ is affixed. The water enters at A and the gas at B.

The action of my apparatus is as follows: Water enters at A and as soon as all the vessels I. K. L. M. P. are charged which can be tested by drawing off a small quantity from the outlet P′. the gas is turned on and the burners lighted. In a few minutes by the area of the surfaces exposed to the heat of the flame and the products of combustion the water in P is raised to boiling point and as it is being drawn off a fresh inflow from L which has been heated almost to boiling point takes its place and the heating is completed. The same may be said of the water in K and I, each column being heated on its travel until it passes to the boiler P so that after the first boiling a continuous supply of boiling water can be obtained from the apparatus.

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

In a water heating apparatus the combination of many cylinder casing I. K. L. lower conical belly to cylinder I. boiler P with upper chamber M and connecting pipe J. J′. J^2. J^3. putting all the cylinders in connection, as set forth and substantially as shown.

In witness whereof I have hereto signed my name, in the presence of two subscribing witnesses, this 20th day of April, 1893.

JOSEPH WINTERFLOOD.

Witnesses:

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