

(No Model.)

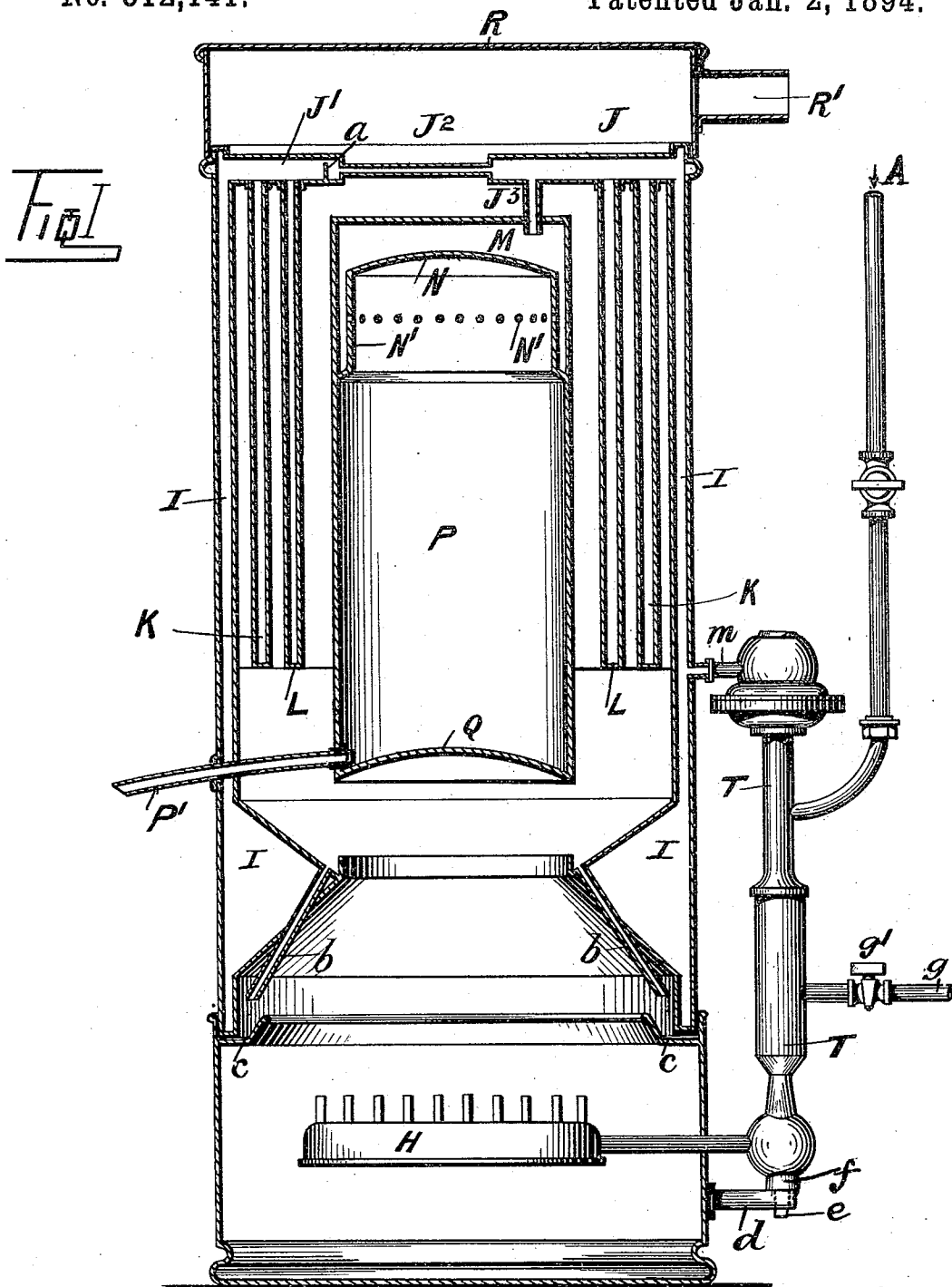
2 Sheets—Sheet 1.

J. WINTERFLOOD.

AUTOMATIC GAS VALVE MECHANISM FOR WATER HEATERS.

No. 512,141.

Patented Jan. 2, 1894.



Witnesses:

Thos. A. Green
Albert Emmett

Inventor:

Joseph Winterflood.

By

James L. Torrey
Atty.

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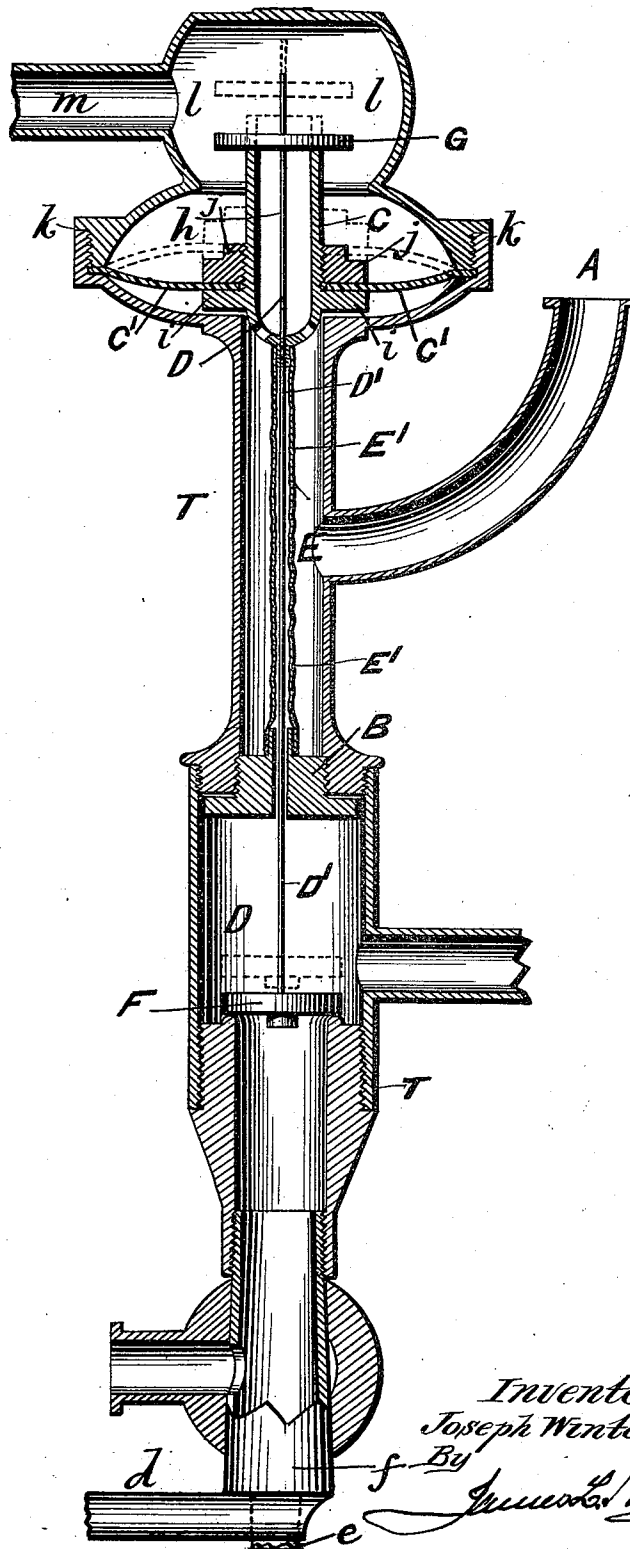
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Fig II



Witnesses:
Thos. A. Green
Robert G. Smith

Inventor,
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UNITED STATES PATENT OFFICE.

JOSEPH WINTERFLOOD, OF LONDON, ENGLAND.

AUTOMATIC GAS-VALVE MECHANISM FOR WATER-HEATERS.

SPECIFICATION forming part of Letters Patent No. 512,141, dated January 2, 1894.

Application filed January 21, 1893. Serial No. 459,203. (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 Automatic Gas-Valve Mechanism for Water-Heaters, (patented in Great Britain, No. 3,785, dated March 12, 1888,) of which the following is a specification.

This invention relates to apparatus for heating water, and has for its object to provide a new and improved automatic gas valve mechanism for heating the water heater, whereby the supply of gas to the burner is automatically closed or shut off if the water supply to the heater be stopped from any cause.

To accomplish this object my invention consists in the features of construction, and the combination or arrangement of devices hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a vertical sectional view of a water heater, showing my improved gas valve mechanism in side elevation; and Fig. 2 is a vertical sectional view of the gas valve mechanism on an enlarged scale.

In order to enable those skilled in the art to make and use my invention, I have illustrated a particular construction of water heater, but do not confine myself to any particular construction.

The heater illustrated constitutes the subject-matter of a separate application for patent, filed May 6, 1893, Serial No. 473,350, and is composed of three cylinders, or cylindrical vessels I, K, and L, the cylinder I being of about double the depth of the cylinders K and L, and near its lower end formed conical to extend approximately to within range of the flame from the gas burner. 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 J², 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 J³ 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 stream 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 dishd 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 and 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 the spaces between serve for the products of combustion to pass up a portion impinging against the transverse tubes J, J', J², before entering the chamber formed by the roof R, and to which the flue R' is affixed.

The stand on which the heater is placed has a projection *d* for the gas and water post T to rest upon and into which the end *e* of the gas plug *f* is stepped, the burner H being of the swing kind on the plug *f* for convenience of lighting and renewal of burner nipples as desired. *g* is the gas supply leading to the chamber D said chamber having a seating for the valve F to sit on. This valve is affixed to a rod D' which is screwed at its upper end into an inverted thimble C from which another rod *h* is carried upwardly to a desired height to serve as a guide to another yet loose valve G. The thimble C is provided with holes at its lower part and a downwardly projecting nozzle to which one end of a short length of india rubber tubing E' is affixed the opposite or lower end being secured to the nozzle of a socket piece B screwed in to close the chamber D except to the entry of gas which however is prevented escaping to the water chamber E by the closure of the thimble and the rod D'. The thimble has an annular flange *i* for the attachment of a leather or rubber diaphragm C' by the screw nut *j* the outer edge of the diaphragm being fixed between the cup shaped portion *k* constituting a chamber in which the diaphragm has an up and down motion for opening and closing the gas valve F. The upper valve G sits on the thimble C within the chamber *l* which with the pipe *m* forms the water communication to the heater vessels I, K, L, P,

the water entering the post T by the branch A from any source of supply.

The action of my apparatus is as follows:—
 5 Water turned on at A enters chamber E, passes through holes in thimble and lifts valve G simultaneously the diaphragm C rises by the pressure of water; this rising lifts the valve F and opens the gas passage. As soon as all the vessels I, K, L, M, P, are charged, which
 10 can be tested by drawing off a small quantity from the outlet P' the gas top *g'* is turned 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
 15 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 completed; the same may be said of the water in K and I.
 20 Each column is 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.

Should the water from the branch A be
 25 stopped from any cause the diaphragm C' is no longer held up; consequently it will fall and also the valve G. The rod D' falling with the diaphragm causes valve F to shut off the gas.

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

1. The combination with a water heater, of a gas burner, an automatic valve regulating the flow of gas to the burner, and opened by the action of the water flowing to the heater 35 for permitting the passage of gas to the burner, and means for automatically closing the gas valve when the water ceases to flow to the heater, substantially as described.

2. The combination with a water heater, of a gas burner for heating said heater, and an automatic gas valve mechanism controlled by the water flowing into the heater, substantially as described. 40

3. The combination with a suitable water 45 heater, of a gas burner, a valve for controlling the flow of gas to the burner, a diaphragm connected with the gas valve, and operated by water flowing to the heater to open the valve, and thereby permitting gas 50 to flow to the burner, and means for closing the valve when the water ceases to flow to the heater, substantially as described.

In witness whereof I have hereunto signed my name, in the presence of two subscribing 55 witnesses, this 22d day of December, 1892.

JOSEPH WINTERFLOOD.

Witnesses:

GEORGE EWART,

ERNEST BROWNHILL,

Both of 346 Easton Road, London, N. W.