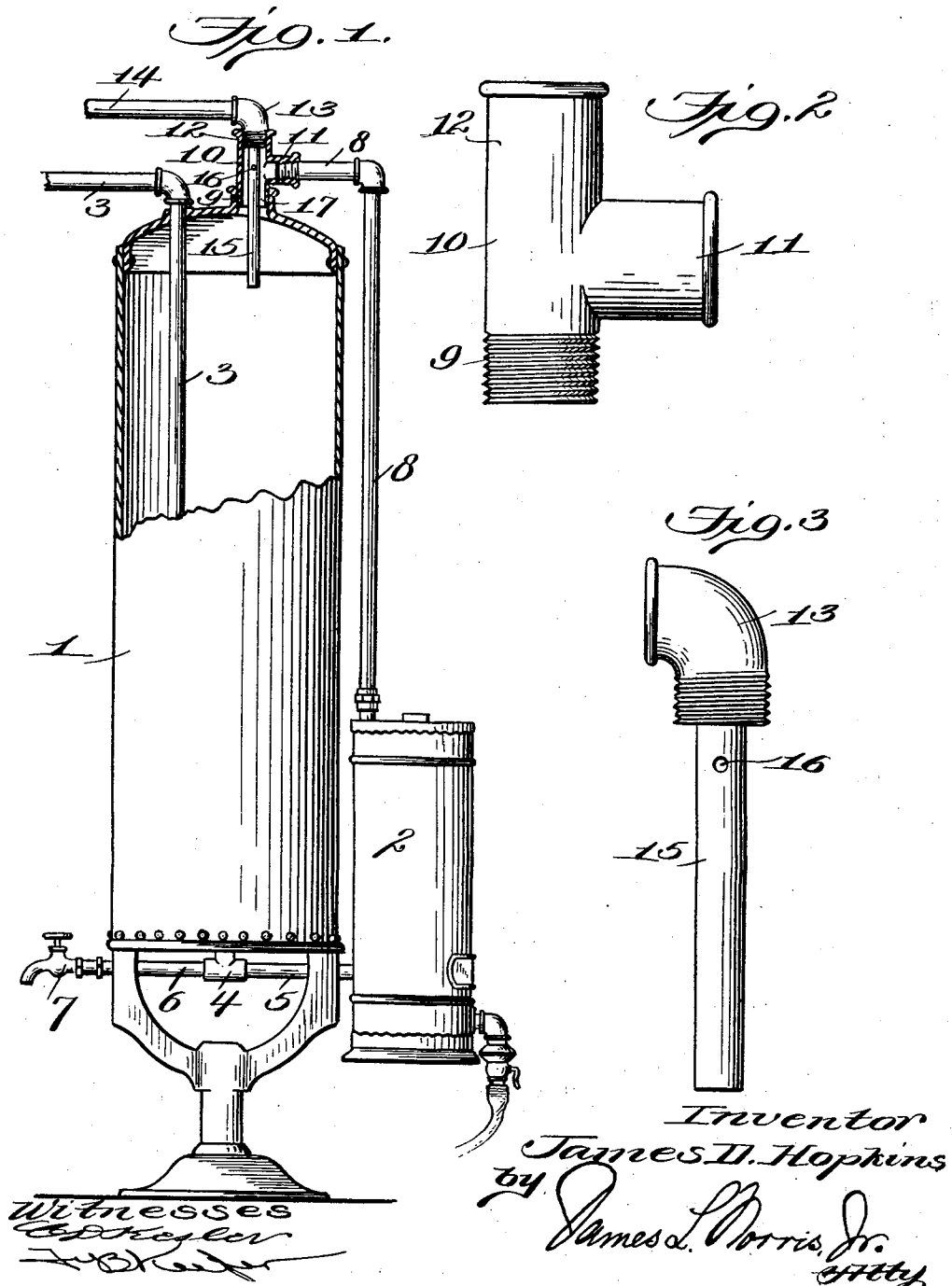


J. D. HOPKINS.  
HOT WATER HEATER.  
APPLICATION FILED AUG. 19, 1911.

1,033,588.

Patented July 23, 1912.



# UNITED STATES PATENT OFFICE.

JAMES D. HOPKINS, OF CLINTON, IOWA.

## HOT-WATER HEATER.

1,033,588.

Specification of Letters Patent.

Patented July 23, 1912.

Application filed August 19, 1911. Serial No. 645,001.

*To all whom it may concern:*

Be it known that I, JAMES D. HOPKINS, a citizen of the United States, residing at Clinton, in the county of Clinton and State of Iowa, have invented new and useful Improvements in Hot-Water Heaters, of which the following is a specification.

This invention relates to hot water heaters, and it comprehends essentially an improved attachment for the boiler part or element of such heaters whereby short-circuiting of the cold water is prevented when the faucet is opened.

In many of the forms of gas water heaters now in use, the cold water entering the heating coil passes through the latter so rapidly as to prevent its being heated, and is drawn off with the hot water from the top of the boiler, and in other forms of heater the heating of the entire contents of the boiler is necessary, thus occasioning great consumption of gas and resultant expense.

To remedy these defects by providing for a discharge of hot water only from the top of the boiler, and, also, to permit the heating of a comparatively small quantity of water, when desired, the present invention has been devised.

A structural embodiment of said invention is illustrated in the accompanying drawing, wherein—

Figure 1 is an elevation of the invention complete, the boiler being shown with parts thereof in section; and Figs. 2 and 3 are enlarged detail views, respectively, of the T attached to the top of the boiler, and of the elbow connected to the inlet end of the hot-water discharge pipe.

In said drawing, 1 indicates, generally, the boiler and 2 the gas heater, both of which parts are, in the main, of conventional type. Water is supplied to the boiler in the usual manner through a pipe 3 which enters the top of the boiler and extends downwardly in the latter to within a short distance of the bottom thereof, said bottom being furnished with a T 4 to which two pipes 5 and 6 are connected. The pipe 5 leads to the heater and communicates with the coil (not shown) therein, while the pipe 6 acts as a drainer for the boiler and is furnished with a valve 7. Under ordinary circumstances the cold water entering the boiler through pipe 3 flows from the bottom of the boiler by way of the T into pipe 5, whence it passes into the heater coil and is

returned to the top of the boiler by a pipe 8, as hereinafter described.

In the boiler top there is fitted the lower arm 9 of a second T 10 whose stem 11 is connected to the laterally bent upper portion of pipe 8. The upper arm 12 of this T has attached thereto an elbow 13 which is joined to the hot water discharge pipe 14 and is provided with a reduced extension or stem 15 that projects a suitable distance into the upper portion of the boiler and is formed adjacent its upper end with a perforation 16. The difference in the respective diameters of the T arms and the aforesaid stem is sufficiently great to produce an interposed annular chamber 17 which opens downwardly into the boiler.

The operation is substantially as follows: On lighting the heater, the water in the coil becomes heated, rises through the pipe 8, and passes into chamber 17 in T 10, whence it flows downwardly into the top of the boiler, the cold water from the bottom of the boiler flowing through pipe 5 into the coil and thus continuing the circulation. A small quantity of water, say three or four gallons, may be thus heated whenever desired and drawn off as needed through the stem 15, discharge pipe 14, and the faucet, (not shown), connected to said discharge pipe, the gas being extinguished before the faucet is opened. In this way, the heated water will remain at the top of the boiler and can be drawn off by opening the faucet, and the pressure in pipe 8 will be insufficient to force fresh water through that pipe into chamber 17 and thence into the boiler, the amount of water heated depending entirely upon the time the heater remains lighted, as will be understood. Owing to the reduced diameter of stem 15 relative to pipe 8, the discharge of water through said stem will be comparatively slow, and, in consequence, when the heater is lighted, the water will flow through the heated coil sufficiently slowly to enable it to be subjected to the full heating action of the coil walls, thus preventing the entrance of water into the boiler in a comparatively unheated state.

The perforation 16 is formed in stem 15 for the purpose of preventing the trapping of air in the laterally bent upper portion of pipe 8 when, for any reason, the water supply is cut off from the boiler and the water level in the top of the boiler falls, in which instance the trapped air would interfere

with the flow of water from said pipe into the boiler. By providing this perforation, the air in the top of the boiler is free to pass into said stem and thence into pipe 14.

5 I claim as my invention:

The combination of a boiler having cold water supply means associated therewith; a T secured to the top of the boiler, one arm of the T opening into the boiler; a hot water supply pipe having one end fitted in the stem in said T; an elbow fitted in the other arm of the T; a stem attached at its upper end to said elbow and projecting through the T arms into the boiler and provided adjacent said end with a perforation, said stem having a diameter appreciably less than

that of said arm to produce an interposed annular chamber opening at its lower end into the boiler, into which chamber the outlet end of said hot water supply pipe directly opens, said perforation communicating with said chamber to prevent trapping of air in said outlet end when the cold water supply means is shut off; and a hot water discharge pipe connected to said elbow. 20

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses. 25

JAMES D. HOPKINS.

Witnesses:

S. G. HAUSEN,  
ELLA F. GRIMES.

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