

No. 696,096.

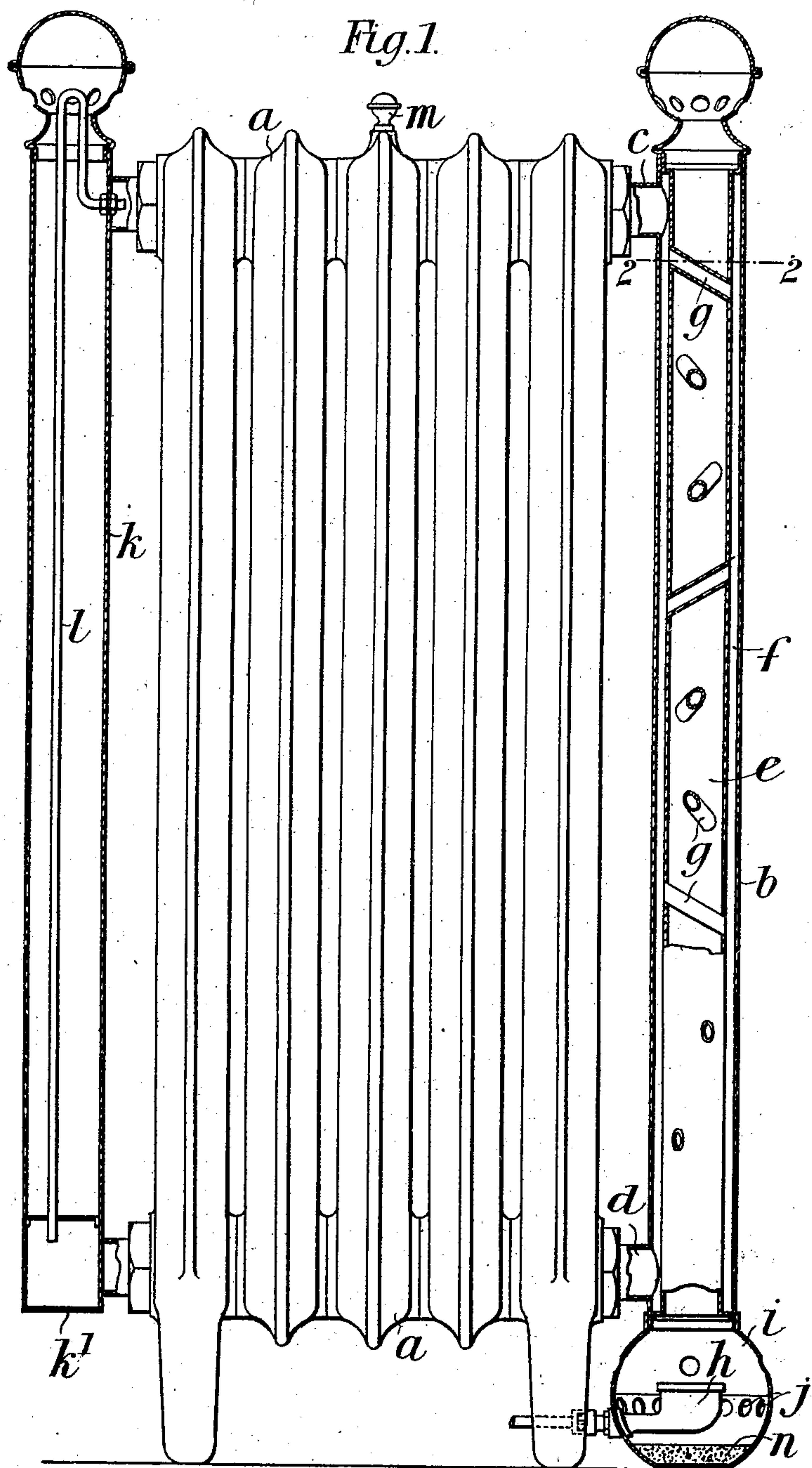
Patented Mar. 25, 1902.

J. W. EWART.

HOT WATER RADIATOR OR HEATING STOVE.

(Application filed Nov. 26, 1901.)

(No Model.)



Witnesses.

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Inventor:

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UNITED STATES PATENT OFFICE.

JOHN WILLIAM EWART, OF LONDON, ENGLAND.

HOT-WATER RADIATOR OR HEATING-STOVE.

SPECIFICATION forming part of Letters Patent No. 696,096, dated March 25, 1902.

Application filed November 26, 1901. Serial No. 83,723. (No model.)

To all whom it may concern:

Be it known that I, JOHN WILLIAM EWART, a subject of the King of Great Britain, residing at 46 Dartmouth Park Hill, London, England, have invented new and useful Improvements in Hot-Water Radiators or Heating-Stoves, of which the following is a specification.

This invention relates to improvements in hot-water radiators or heating-stoves of the self-contained or independent type, the improvements chiefly relating to the means adopted for heating the water which circulates through the radiator.

According to the invention I adapt to one end of the radiator an elongated boiler comprising an outer jacket or shell and a central tube or flue, at the bottom of which is a burner for supplying heat thereto. The space between the two tubes is in connection with the water-space of the radiator, so that when the hot gases are passing through the boiler or flue the water is heated and is caused to circulate in the usual manner. To increase the heating power of the boiler, I advantageously provide cross-tubes passing through the flue and through which the water can also circulate. At the other end of the radiator I provide a pipe, which is closed at its lower end and in which there is arranged a small tube in connection at its top end with the upper end of the water-space of the radiator and extending down, so that its lower open end nearly touches the stopped bottom of the pipe. A filling-hole is provided in the radiator for supplying it with water.

To enable the invention to be fully understood, I will describe it by reference to the accompanying drawings, in which—

Figure 1 is a sectional elevation of a radiator having my improvements applied thereto. Fig. 2 is a section on the line 2 2, Fig. 1.

a is the radiator, which in the example shown is of an ordinary and useful type, although it can be of any other suitable known form, and *b* is the outer tube or shell of the boiler, the said shell being connected to the water-space of the radiator by the nipples *c* and *d* at the upper and lower ends, respectively.

e is the flue, which is fitted inside the shell *b*, thereby leaving the space *f* between the

said shell and the flue, which said space is in communication with the water-space of the radiator by the connections *c* and *d* aforesaid.

g g are the cross-tubes, which are provided in the flue *e* for the purpose of increasing the heating-surface, and thereby the efficiency, of the boiler. These tubes are placed spirally with respect to the flue and are inclined, as shown, by which arrangement a more efficient circulation of the flue-gases is obtained.

h is the burner, (here shown as a gas-burner,) which is fitted in the bulbous extremity *i* of the boiler, this extremity being furnished with inlet-holes *j j* for providing the necessary air for the flame.

k is the pipe, which is fitted to the other end of the radiator, but which is not in communication with the water-space thereof, said pipe extending above and below the top of the radiator and being closed at its lower end and open at its upper end.

l is the small tube, the upper end of which is connected to the water-space of the upper end of the radiator, while the lower end passes nearly to the closed bottom *k'* of the pipe *k*. A portion of the tube *l* is carried above the top of the water-space within the radiator, as shown, to prevent the water from flowing out of the radiator except during the expansion of the water.

m is the filling-screw, which normally closes the opening through which the radiator is filled with water.

To absorb any moisture which may be condensed from the steam given off from the gas or other flame used for heating the boiler, I may provide in the bottom of the bulbous extremity *i* of the boiler a plug or block *n*, of fire-clay or other suitable absorbent material, although this is not necessary in practice, as it will be found that such condensing moisture becomes again vaporized on the reheating of the apparatus.

With this construction of radiator, assuming it to be filled with water and that the burner be lighted, the water is gradually heated, and as it is heated it expands and overflows through the small pipe *l*, down which it passes into the closed lower end of the pipe *k*. While the heat is still applied the water circulates through the radiator and radiates its heat to the surrounding atmos-

phere in the usual manner. When the gas-burner or other source of heat is cut off, the whole apparatus cools down and the water contracts in volume, so that that which has collected in the pipe *k* passes back through the tube *l* into the water-space of the radiator.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. The combination with a hot-water radiator, of an overflow-receptacle immediately adjacent thereto, closed at the bottom and open at the top, said receptacle extending above and below the top of said radiator and an overflow-tube connected to said radiator adjacent to the top of the same and having its discharge end opening into said receptacle adjacent to the bottom thereof, substantially as described.

2. The combination with a hot-water radiator, of an overflow-receptacle immediately adjacent thereto and supported thereby, said receptacle extending above and below the top of the radiator and being closed at its lower end and open at its upper end, and an overflow-tube connected to said radiator ad-

jacent to the top thereof and its lower end discharging into said receptacle adjacent to the bottom thereof, a portion of said tube extending above the top of the water-space within said radiator, substantially as described.

3. The combination with a hot-water radiator, of a vertical shell connected thereto adjacent to its upper and lower ends, an inner shell within said first shell forming a water-space between said shells, a plurality of inclined water-conducting pipes communicating with said water-space and extending across said inner shell, a heater below said shells, an overflow-pipe supported by said radiator and extending above and below the top of said radiator, said overflow-pipe being closed at its lower end and open at its upper end, and an overflow-tube connected with the radiator adjacent to the upper end thereof and having its other end discharging within said overflow-pipe adjacent to the bottom thereof, substantially as described.

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Witnesses:

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