

F. WALTER.
 APPARATUS FOR HEATING BUILDINGS BY HOT WATER.
 APPLICATION FILED AUG. 8, 1910.

1,005,378.

Patented Oct. 10, 1911.

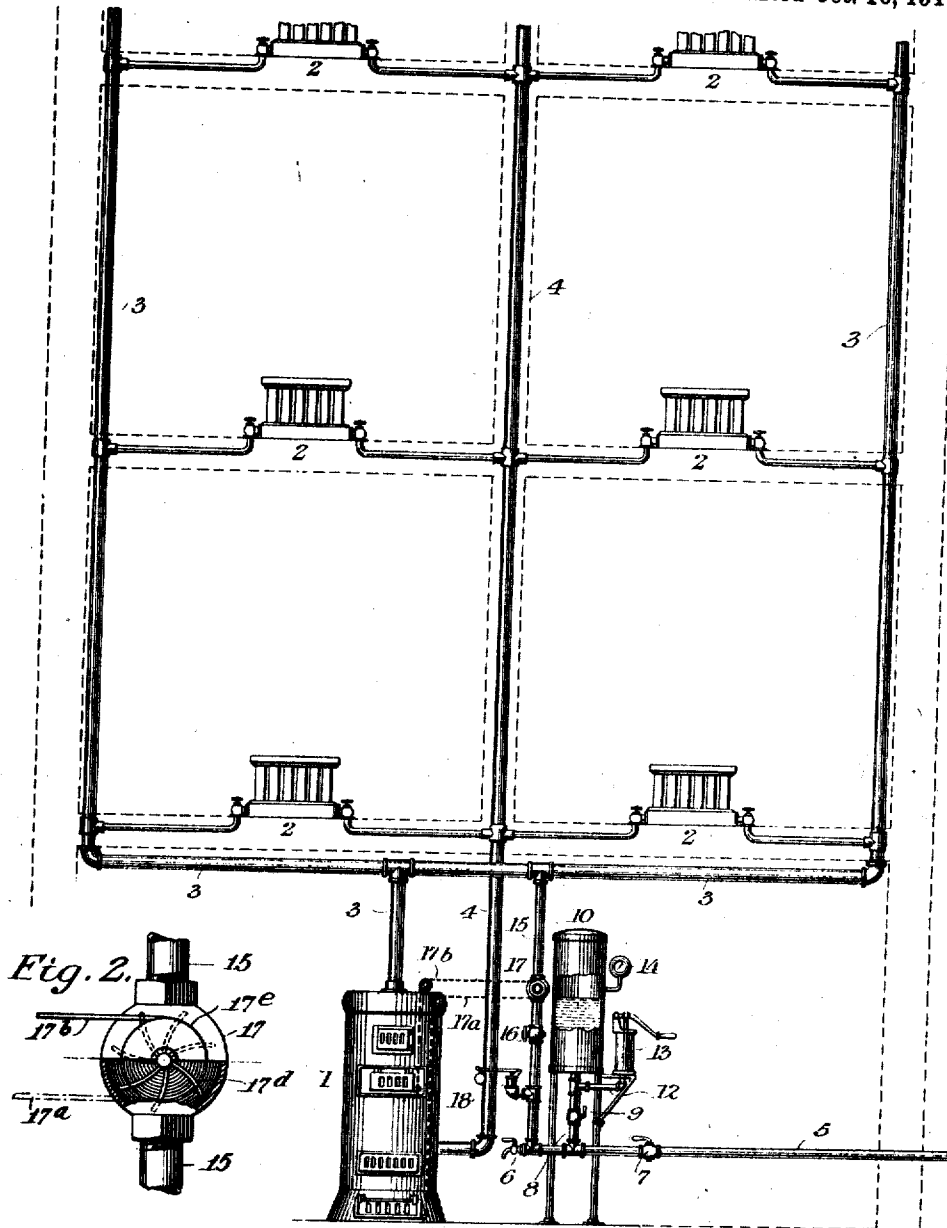


Fig. 2.

Fig. 1.

WITNESSES
Raymond F. Barnes.
Charles Leslie Howard.

INVENTOR
Felix Walter.
 by *W. M. F. M. M.* Attorneys.

UNITED STATES PATENT OFFICE.

FELIX WALTER, OF HIGHFIELD, MARYLAND.

APPARATUS FOR HEATING BUILDINGS BY HOT WATER.

1,095,378.

Specification of Letters Patent.

Patented Oct. 10, 1911.

Application filed August 8, 1910. Serial No. 576,023.

To all whom it may concern:

Be it known that I, FELIX WALTER, a citizen of the United States, residing at Highfield, in the county of Washington and State of Maryland, have invented new and useful Improvements in Apparatus for Heating Buildings by Hot Water, of which the following is a specification.

My invention relates to an apparatus for heating buildings by hot water in which is employed a combined retainer and expansion tank the construction, location and functions of which are hereinafter more fully described, and in which apparatus is included a reversible motor and its adjuncts whereby to regulate the heat radiated, this being accomplished by automatic action through the medium of said motor upon the draft and check.

In the accompanying drawing Figure 1 is a view of a hot water system embodying my improvements as applied to a building. Fig. 2 is a fragmentary view in vertical section showing the reversible motor.

1 is a water heater of any suitable pattern, and preferably one having a water jacket surrounding the fire pot. The special construction of the heater is immaterial, it, except in general combination with other features herein described, not constituting a part of my invention. The heater is preferably placed in the cellar as shown, the radiators, indicated by 2, being in the several stories of the building above the heater.

3 is the pipe which conducts the hot water to the radiators 2, and 4 the return pipe that leads water back to the lower portion of the heater after it has passed through the radiators and given off part of its heat.

5 is the initial water supply pipe, which may lead from any suitable source of pressure, and at the end near the heater 1 it is provided with a cock or faucet 6 through which water or surplusage may be discharged. Interposed in the length of the supply pipe 5 is a hand valve 7 which may be used for turning on or shutting off the initial water. Connected by a T-joint in the supply pipe is a vertical pipe 8 having a valve 9, which pipe leads to what I term a combined retainer and expansion tank 10. From the pipe 8 projects a horizontal branch 12 on which is mounted a hand-manipulated air-pump 13. The combined retainer and expansion tank 10 is fitted with a pressure gage 14. The location of the combined re-

tainer and expansion tank 10 is substantially in the plane of or above the heater 1, as shown in the drawing.

Rising from the supply pipe 5 is a pipe connection 15 which unites with the hot water conducting pipe 3, such pipe connection having a hand valve 16, a reversible motor 17 and a safety valve 18. The reversible motor acts through suitable connections, as 17^a and 17^b, upon the draft and check. Fig. 2 shows the interior of the motor casing 17^c and the motor proper 17^d, the latter consisting of a wheel having a series of preferably curved wings as shown. This wheel is mounted in the casing upon a horizontal axis together with the sheave 17^e around which the chain connections 17^a and 17^b pass. It will be understood that when the water is heated it expands and that a certain amount must pass through the motor, turning the wheel in order to reach the expansion tank. Furthermore, when the water cools it must return from the expansion tank through the motor and to the system. Therefore the action of the reversible motor is to move the chains 17^a and 17^b which pass over sheaves as shown, the draft and check to which the chains are connected being thus automatically operated.

One function of the combined retainer and expansion tank 10 is to receive and compensate for any excessive pressure of water, there being a cushion of air above the water, the device acting in the nature of an air vessel. The air pressure is made known by the gage 14, and, for any purpose whatsoever, a pressure in excess of the natural one may be placed on the water in the combined retainer and expansion tank 10 by manipulating the air pump. Excessive pressure is prevented by means of the safety valve.

The object of placing the combined retainer and expansion tank 10 between the cold water inlet and the heater is obvious when the operation is considered. It will be remembered that when the system is first to be put into use it, including the heater, pipes and radiators, but excluding the combined retainer and expansion tank, is filled with water, the communication between the latter and the inlet being closed by means of the valve 9.

Supposing the whole system to be cold and empty, the cock 7 is opened and the valve 9 closed. The cold water flows through the

pipe 3 into the heater and through the pipe 4 to the entire system and radiators. The valve 9 is then opened, air having been pumped into the retainer to a certain pressure as indicated by the gage 14. The system having been put in operation, a certain amount of water will enter the retainer therefrom, the valve 7 being still closed. Then in the event of there being any slowness in the circulation, the air in the tank will tend to restore the circulation by creating a balanced pressure. To effect this result it is obvious that the retainer and heater should be practically on the same level, and that the former must be interposed between the supply and the heater. Apart from this, the combined retainer and expansion tank must be in convenient proximity to the heater in order that the attendant may have it under control.

Having thus described my invention, I claim:—

1. In an apparatus for heating buildings by hot water, the combination of a heater having draft and check devices, radiators, water conducting and return pipes connecting the heater and radiators, an initial cold water supply pipe connected with the main conducting pipe, a combined retainer and expansion tank also in communication with said initial cold water supply pipe and interposed between the supply and the heater, an air pump therefor, a reversible motor in-

terposed in the initial cold water supply pipe between the main conducting pipe and the combined retainer and expansion tank, and connections between the reversible motor and the draft and check devices of the heater, substantially as set forth.

2. In an apparatus for heating buildings by hot water, the combination of a heater having draft and check devices, radiators, water conducting and return pipes connecting the heater and radiators, an initial cold water supply pipe connected with the main conducting pipe, a combined retainer and expansion tank also in communication with said initial cold water supply pipe and interposed between the supply and the heater, an air pump therefor, a reversible motor interposed in the initial cold water supply pipe between the main conducting pipe and the combined retainer and expansion tank, connections between the reversible motor and the draft and check devices of the heater, a safety valve in communication with the initial cold water supply pipe, and suitable valves in said pipe and its branches, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

FELIX WALTER.

Witnesses:

C. B. BULL,

CHARLES LOWELL HOWARD.