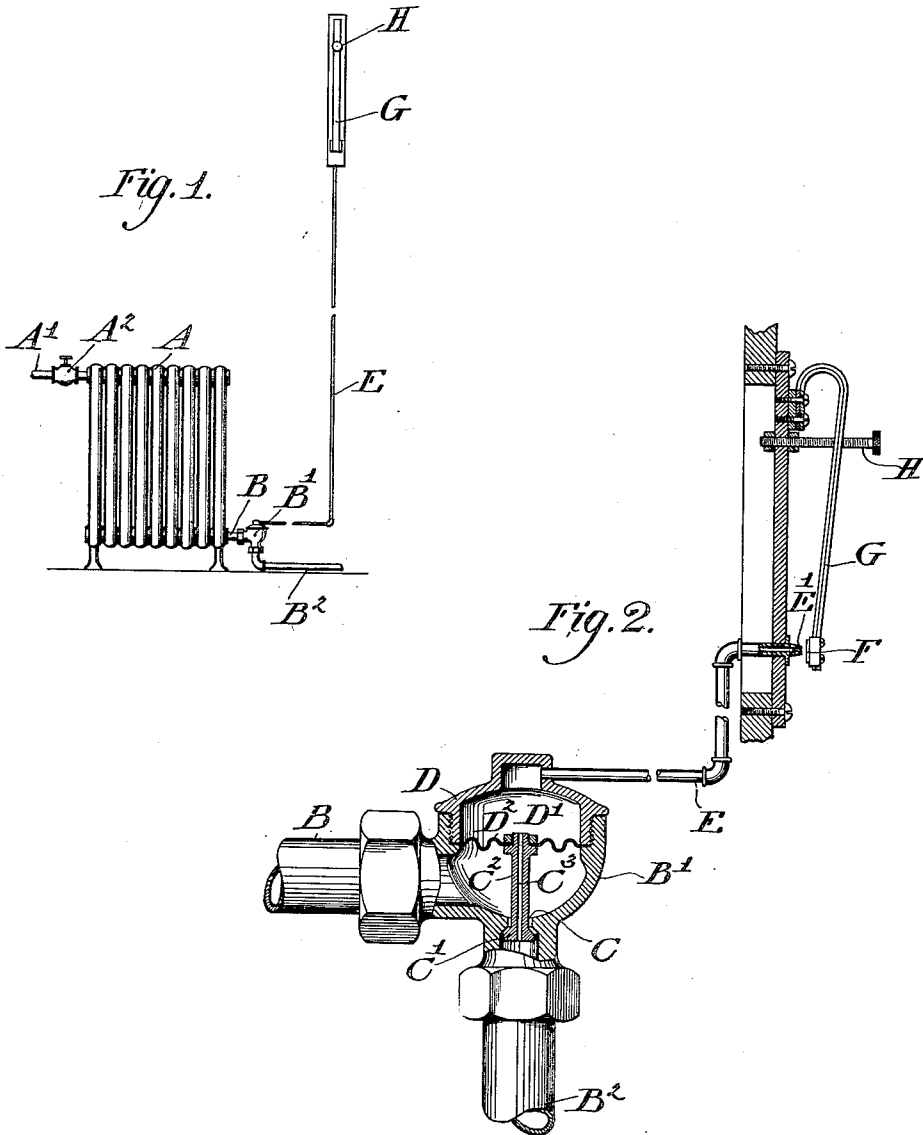


H. C. MALLORY.
HEATING SYSTEM.
APPLICATION FILED JUNE 8, 1905.

954,532.

Patented Apr. 12, 1910.



WITNESSES:

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954,532.

Specification of Letters Patent.

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Application filed June 8, 1905. Serial No. 264,205.

To all whom it may concern:

Be it known that I, HARRY C. MALLORY, a citizen of the United States of America, residing in the city and county of New York, in the State of New York, have invented a certain new and useful Improvement in Heating Systems, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

My invention relates to that class of heating systems known as the vacuum system, in which a pump or exhauster is used to remove the air or air and water from the radiator, or to produce a partial vacuum therein.

The invention consists in providing the radiator with a controlling valve, said controlling valve being provided with a fluid pressure motor for actuating said valve, then connecting the fluid pressure motor by means of a thoroughfare or passage with the return or exhaust pipe and then providing the fluid pressure chamber with a thermostatically controlled air leak independent of the return or exhaust pipe.

The accompanying drawing illustrates a form of the improved apparatus in which the radiator is supplied with steam at or near the top and a control valve is placed in the return pipe leading from the bottom of the radiator, said control valve being so designed as to open thereby discharging the water of condensation and admitting steam responsive to the fall of temperature of the air in the room, or to close when the temperature of the air in the room rises above a predetermined temperature, causing the water of condensation in the radiator to accumulate and thus control the supply of steam to the radiator. This is the best form of my apparatus, but the control valve may be attached to any part of the system, as in any of the well known systems now operated by means of a return pipe.

Figure 1, is a diagrammatic view showing one form of the apparatus by which the invention may be utilized. Fig. 2, is an enlarged view in part section showing my controlling valve system.

A, is the radiator having a steam pipe A', shown as provided with a valve A².

B, is the outlet or drain pipe connecting through a valve chamber B', with a low pressure pipe B². The connection of chamber B', with pipe B², is through a port C,

controlled by a valve C', having a stem C², which as shown, is formed with a restricted passage C³, extending through it.

D, is a cap screwing in the top of the valve chamber and down on a diaphragm D², forming above the diaphragm what I call the fluid motor chamber D'; the movable part of the motor being the diaphragm to which the valve stem C², is attached, the chamber being in communication with the low pressure pipe through the passage C³. The motor chamber is adapted to be placed also in communication with the atmosphere through a conduit E, and an air port E', which is opened and closed by a valve F, the motion and position of which is controlled by a thermostatic device of any convenient kind. As shown, such a device is indicated at G, H, being a regulating screw.

In operation the thermostatic actuating device moves the valve F, to open the air port E', when the temperature falls below a fixed point, the air then fills the motor chamber at full atmospheric pressure, the escape through the passage C³, being disregarded. The air pressure moves the diaphragm downward and opens the connected valve C', permitting the escape of the water in the radiator, and a consequent inflow of steam. When, on the other hand, the temperature rises the valve F, closes the port E', whereupon the air in the motor chamber is exhausted through the orifice C³, until the pressure falls to that in the low pressure pipe and the consequent upward movement of the diaphragm closes the valve C', and cuts off further escape of water or steam from the radiator. It is advisable to employ a diaphragm having a certain amount of spring which will aid in the movement of the valve, acting for instance to hold it open when the radiator is not in use.

Having now described my invention what I claim as new and desire to secure by Letters Patent is—

1. In a heating system comprising a radiator connected to a steam supply and to a low pressure outlet pipe, the combination with said low pressure pipe of a valve controlling its connection to the radiator, a fluid pressure motor operatively connected to said valve and independent of the accumulation of water of condensation in said radiator, a restricted passage directly and permanently connecting the low pressure pipe to the motor chamber irrespective of

the position of the valve, an air port also connected to the motor chamber and a thermostatically controlled valve operating in connection with said air port to open and
5 close the same.

2. In a heating system comprising a radiator connected to a steam supply and a low pressure return pipe, the combination
10 of a valve casing located between the radiator and said return pipe, a valve in said casing controlling communication between the radiator and the return pipe, a diaphragm in said casing to which the valve is connected, and forming with the casing wall

a fluid motor pressure chamber independent 15 of the accumulation of water of condensation in said radiator, said chamber being directly and permanently connected to said return pipe irrespective of the position of the valve by a restrictive passage located within 20 said casing, an air port leading to said chamber, and a thermostatically controlled valve operating in connection with said air port to open and close the same.

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Witnesses:

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