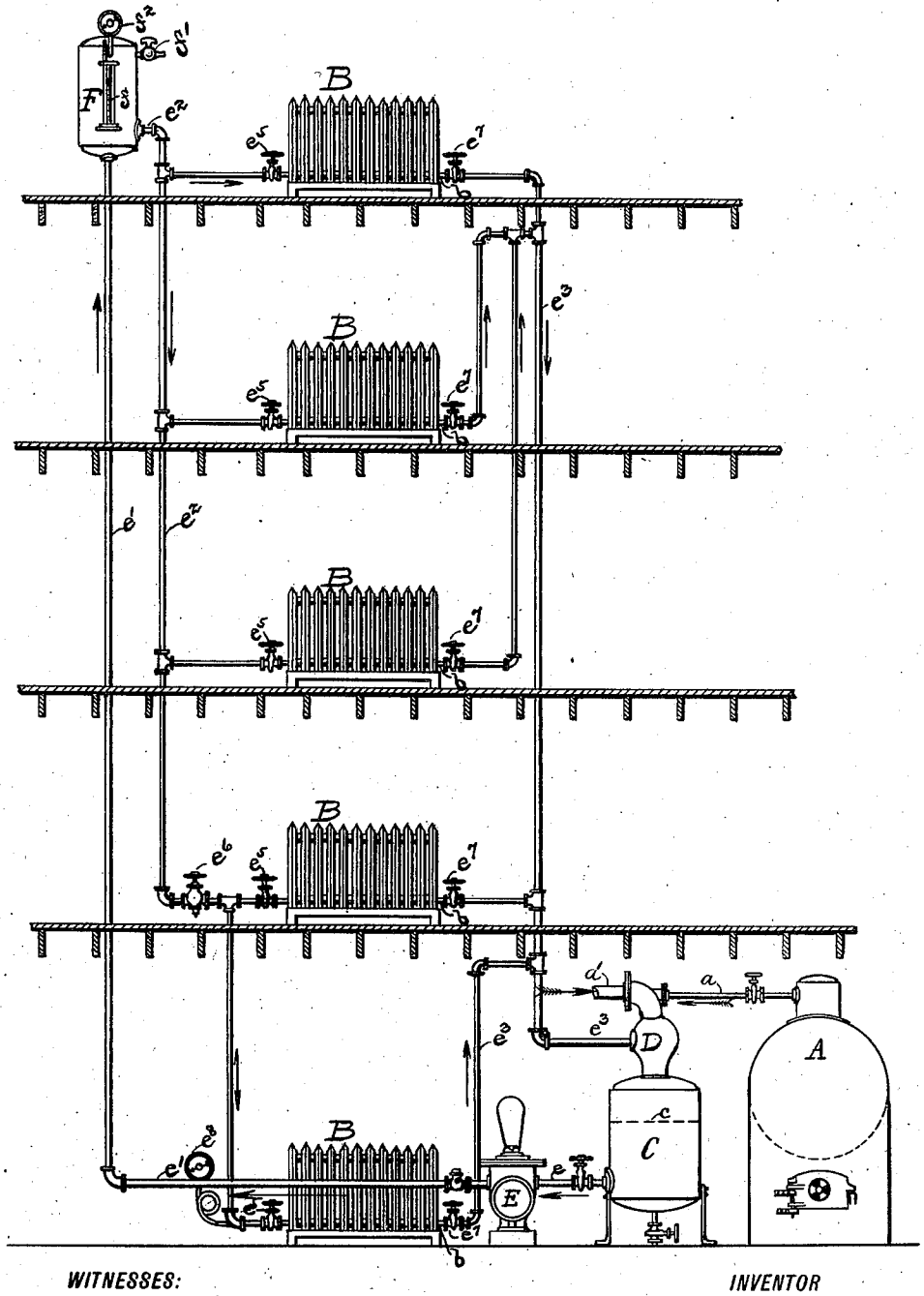
C. C. PECK.

HOT WATER HEATING SYSTEM.

APPLICATION FILED JULY 1, 1904.

996,129. Patented June 27, 1911.



WITNESSES:

William W. Whitmore,

Charles L. Whitmore

INVENTOR

Cassius Carroll Peck

UNITED STATES PATENT OFFICE.

CASSIUS CARROLL PECK, OF ROCHESTER, NEW YORK.

HOT-WATER HEATING SYSTEM.

996,129. Specification of Letters Patent. Patented June 27, 1911.

Application filed July 1, 1904. Serial No. 214,973.

To all whom it may concern:

Be it known that I, CASSIUS CARROLL PECK, residing at Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Hot-Water Heating Systems, of which the following is a specification sufficient to enable others skilled in the art to which it appertains to make and use the same.

My invention relates to that class of hot water heating apparatus which is employed for heating rooms, or buildings, and in which the water for heating has a forced circulation through the heating circuit of pipes and radiators, in distinction from a natural, or gravity, circulation.

The drawing is a diagrammatic elevation of a heating system embodying the present invention.

In the drawing, A is a steam boiler of any convenient form.

B, B, are radiators of any form suitable for hot water.

C is a tank which is partly filled with water of the heating circuit. The water in this tank may be heated by a coil in the tank, or by injection of steam into the body of water below the water level, or with the return water of the heating circuit as it passes through the condenser D, live steam entering through the pipe a, and exhaust steam at the connection marked a'.

E is a steam pump which symbolizes any pulsatory means for forcing water through the heating circuit, e being the suction pipe which conducts heated water from the tank C to the pulsatory pump E, and e' the delivery pipe from the pump which delivers the water into the receiver F. The receiver F is supplied with a water gage f, an air valve f', which may be automatic or otherwise for discharge of any air which accumulates in the receiver, and a pressure gage f^2. A pipe e^2 conducts the hot water to the radiators B, B, and a return pipe e^3 carries it back to the tank C. The receiver F effects the double object of separating air from the water and of cushioning the stroke of the pump E so as to avoid jar and noise and strain on the elements of the heating circuit. The supply pipe e^2 delivers the circulation water from the receiver F to the radiators B, B, through a branch pipe to each radiator having a controlling valve e^5 to govern the amount of circulation as desired for the separate radiators. An additional valve, as e^6, can also be used to control circulation for a group of radiators.

In the preferred form of my invention, I carry the return pipes for one, two, or more floors below the upper floor up to nearly the same level or height as the return pipe from the upper floor, and at this point connect with the main return pipe of the heating circuit. This part of my invention is clearly shown where the branch return pipes from the two floors below the top are carried upward from said floors to nearly the height of the upper floor and there enter the main return pipe e^3; the branch return pipe from each radiator being preferably provided with a valve e^7 which can be used to control the flow through each radiator, and to entirely cut off the flow.

The pump E should be operated at such a rate as to produce a nearly even pressure in the supply pipe e^2, as indicated by the pressure gage e^8. The flow of water through the several radiators will then continue uniform for any given opening of the valves e^7. By carrying the return pipes of radiators on the lower floors to the height of the upper floor, the total pressure of water in the radiators below the upper floor is increased in proportion to the height of the column of water above the radiators, but the force for effecting flow of water through the radiators remains practically the same for all the floors,—an end which it is otherwise difficult to attain.

With the balanced circulation so far described there may be combined independent circuits, as illustrated by the radiators and their connections shown on the two lower floors. Flow of water through these radiators is wholly governed by the supply valves e^5, or by delivery valves e^7, or by both, and the force causing circulation is pressure of the column of water in supply pipe e^2 plus excess of pump pressure over pressure of the column of water in pipe e^1, while in case of the three upper floors the force effective for causing circulation through the radiators is only the excess of pump pressure over pressure of the column of water in supply pipe e^1.

What I claim is:—

1. In a hot-water heating system, a circuit comprising an elevated source of supply of hot water, a plurality of radiators located at different levels below the source of supply,

inlet connections between the radiators and the source of supply, and outlet connections from the radiators rising to a common discharge point near the level of the source of supply, so as substantially to equalize the difference in head between the inlet and the outlet connections for the several radiators regardless of their differences in level.

2. In a hot-water heating system, a circuit comprising an air-tight elevated receiver, means for heating water located below the receiver, a pipe connecting the heating means and the receiver, a plurality of radiators located at different levels between the receiver and the heating means, connections between the receiver and the radiators for supplying hot water to the latter, the outlet for said connections being below the top of the receiver so as to leave a body of air in the upper portion of the receiver, return connections between the radiators and the heating means, said connections rising from the radiators to a point near the level of the receiver and then descending to the heating means, and a pump for forcibly circulating the water through the circuit defined.

CASSIUS CARROLL PECK.

Witnesses:

WILLIAM W. WHITMORE,

CHARLES L. WHITMORE.