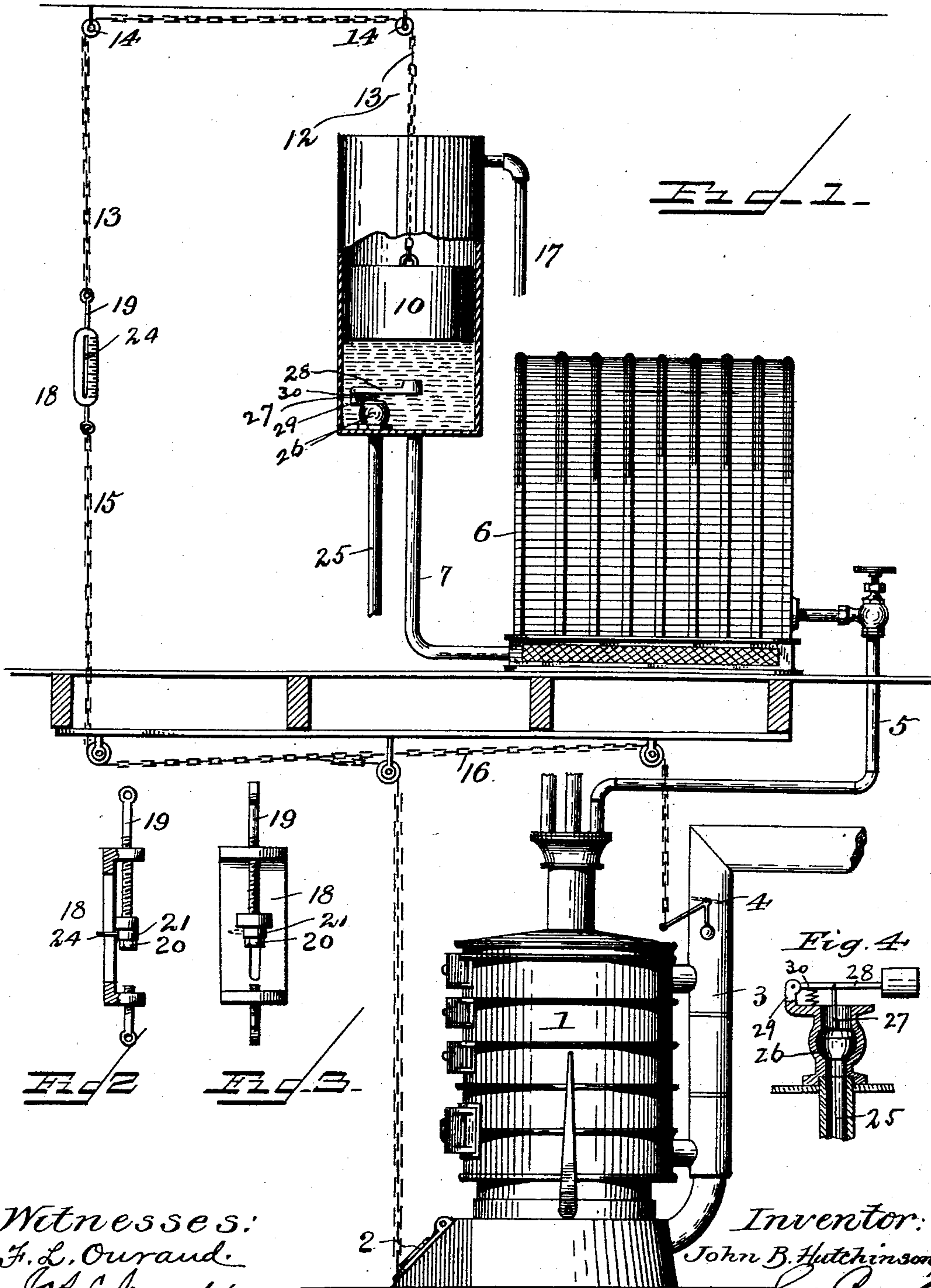


(No Model.)

J. B. HUTCHINSON.
DAMPER REGULATOR.

No. 570,804.

Patented Nov. 3, 1896.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN B. HUTCHINSON, OF COLUMBIA, PENNSYLVANIA.

DAMPER-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 570,804, dated November 3, 1896.

Application filed March 31, 1896. Serial No. 585,588. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. HUTCHINSON, a citizen of the United States, and a resident of Columbia, in the county of Lancaster and State of Pennsylvania, have invented certain new and useful Improvements in Damper-Regulators; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to damper-regulators for hot-water apparatus for heating buildings whereby when the pressure becomes too great or exceeds a certain predetermined limit the dampers of the furnace and the smoke-flue thereof will be automatically closed, so as to lower the temperature of the furnace, and consequently decrease the pressure, the dampers being opened as the pressure decreases, whereby a uniform and equable temperature is maintained in the building.

The object of the invention is to provide improved means for regulating the dampers of a furnace by the expansion of the water or other liquid heating medium, whereby I secure important and superior advantages with respect to efficiency in operation.

The invention consists in the novel construction and combination of parts hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 represents a sectional view of a building, showing my improvements applied thereto, partly in perspective and partly in section. Figs. 2 and 3 are detail sectional views, on an enlarged scale, of the gage. Fig. 4 is a detail longitudinal sectional view of the inlet-valve of the expansion-tank.

In the said drawings the reference-numeral 1 designates a furnace of any ordinary or suitable construction located in the cellar of the building to be heated, or any other place found convenient or desirable, and provided at its lower end with a hinged door or damper 2 for admitting air to the ash-pit below the grate, and provided at the upper end with a smoke-flue 3, provided with a weighted rotatable damper 4.

Connected with the furnace by means of a

supply-pipe 5 is a radiator 6, provided with a discharge-pipe 7, which extends up into an expansion-tank 8. Located in said tank is a float 10, with which is connected a chain 13 attached to the outer end of the rod, passed over pulleys 14, secured to the building at convenient points, and secured to an adjusting-gage, hereinafter described. To the lower end of this gage is secured a chain 15, leading to the door or damper 2 of the furnace. A chain 16, connected with chain 15, leads to and is connected with the damper of the smoke-flue.

The numeral 17 designates an overflow-pipe connected with the upper end of the expansion-tank for conducting away any excess of water should an accident happen to the inlet-valve or the expansion become too great by too great heat.

The numeral 18 designates an adjusting-gage consisting of a casing, to the lower end of which the chain 15 is secured. Passing through an aperture in the upper end of the casing is a vertically-movable rod 19. The lower end of this rod is screw-threaded, and engaging therewith is an adjusting-nut 20, provided with a sleeve or collar 21. The sleeve 21, which travels up and down with the nut, but which is non-rotatable, is provided with a pointer 24, which projects through and travels in a vertical slot in said casing. The face of the casing is graduated to indicate degrees of temperature. By moving the nut up or down the chains connected with the dampers are shortened or lengthened, so as to increase or decrease the draft of the furnace.

The numeral 25 designates a supply-pipe connected with a city supply-pipe or other source of water supply. This pipe extends up into the expansion-tank and is provided with a check-valve 26, having a stem 27, which abuts against the under side of a weighted arm 28, pivoted to a bracket 29. A coiled spring 30 is interposed between said arm and the valve-casing.

The operation will be readily understood. The hot water or other liquid will ascend from the boiler of the furnace to the radiator, passing from the latter up into the expansion-tank. The gage is then adjusted by means of the adjusting-nut, so that the pointer will indicate the temperature desired. So long as

such temperature is not exceeded in the tank the float will remain stationary and the dampers open; but should the temperature of the water or other liquid exceed the degree desired the expansion thereof will cause the float to rise and the dampers to close, which will decrease the draft to the furnace and consequently lower the temperature. If the temperature should now fall below the limit, the float will fall and open the dampers. By this means the dampers are automatically regulated, so that the temperature of the building may be kept uniform.

The inlet-pipe at the bottom of the expansion-tank is connected with the city or other supply-pipe, and the pressure of the water therein forces the valve against its seat, closing the same. Should the water in the expansion-tank become too low from leakage, evaporation, or other causes, the float will fall, and striking the arm connected with the valve will open the latter and allow water to enter until the proper level is reached; when it will be closed by the water-pressure in the pipe and the coiled spring.

While I have shown but one radiator, it is

obvious that more may be employed, if desired, connected together as usual in such apparatus.

Having thus described my invention, what I claim is—

In a hot-water heating apparatus the combination with the furnace, the damper at the lower end thereof, the smoke-flue and the damper therein, of the radiator, the expansion-tank, the pipe connecting the same with the radiator, the supply-pipe connected with the lower end of the expansion-tank, the valve at the upper end thereof, the valve-stem, the pivoted weighted arm adapted to be operated by the fall of the float to open the lever, the overflow-pipe at the upper end of said tank, the float located in said tank and the chains connected therewith and with the dampers, substantially as described.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

JOHN B. HUTCHINSON.

Witnesses:

C. G. ENGLE,
WM. B. GIVEN.