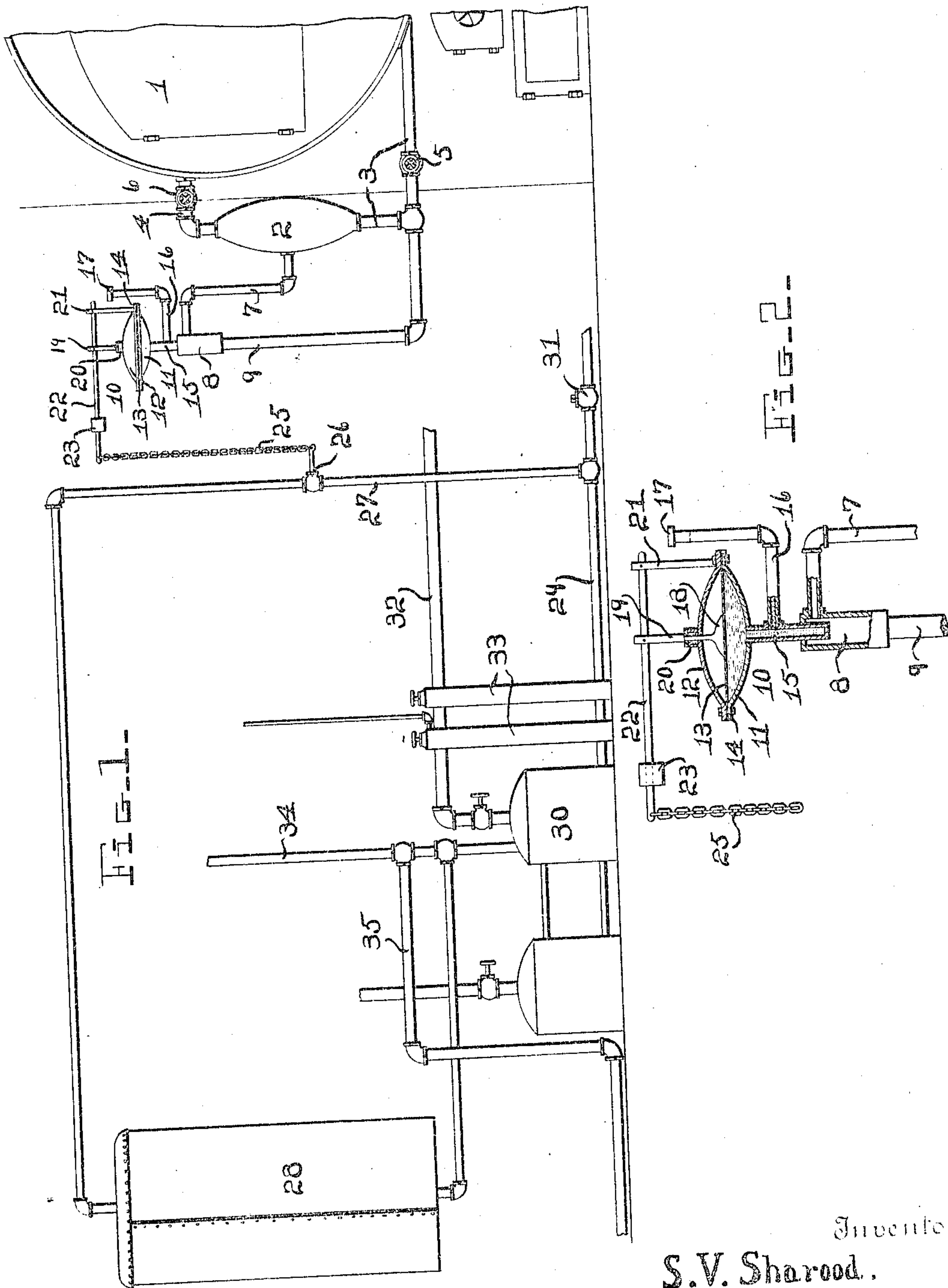


No. 875,119.

PATENTED DEC. 31, 1907.

S. V. SHAROOD.
HEATING SYSTEM.

APPLICATION FILED MAR. 8, 1906.



Witnesses

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UNITED STATES PATENT OFFICE.

SAMUEL V. SHAROOD, OF BROCKTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO LUCIUS R. CHURCHILL, OF BROCKTON, MASSACHUSETTS.

HEATING SYSTEM.

No. 875,119.

Specification of Letters Patent.

Patented Dec. 31, 1907.

Application filed March 8, 1906. Serial No. 304,888.

To all whom it may concern:

Be it known that I, SAMUEL V. SHAROOD, a citizen of the United States, residing at Brockton, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Heating Systems; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to heating systems, and one of the principal objects of the same is to provide reliable and efficient means for automatically maintaining a constant and uniform water line in the boiler of a vacuum heating system.

Another object is to provide in a single pump vacuum heating system, a uniform water level in the boiler while the pump is constantly operating, the surplus water being by-passed to a storage tank to be used over again.

A further object is to provide a governor of simple construction, which will be automatically operated when the water is low in the boiler to pump water into the boiler until the required water line has been attained and to then close a valve and by-pass the water to a storage tank.

These and other objects are attained by means of the construction illustrated in the accompanying drawings, in which:—

Figure 1 is a diagrammatic view of an automatic vacuum heating system arranged in accordance with my invention; and Fig. 2 is a side view and partial section of the governor for controlling the boiler feed.

Referring to the drawings for a more particular description of my invention, 1 designates the boiler; 2 is the combination chamber having a pipe 3 leading from its lower end into the boiler below the water line and a pipe 4 extending from its upper end into the boiler above the water line. These pipes may be provided with valves 5, 6. A pipe 7 communicates with the combination chamber 2, at a point corresponding substantially to the normal water line in the boiler, and is extended upward and connects with a controlling chamber 8 disposed above the upper end of the combination chamber and connected with the boiler through pipe 9 which communicates with one branch of pipe 3.

A thermostat governor 10, consisting of

two members 11, 12 having an intermediate diaphragm 13 and clamped together by means of face flanges 14 and suitable fastenings, is provided with a depending tube 15 closed at its bottom and opening at its upper end within the lower member 11 of the governor, said tube 15 extending into the controlling chamber 8. A filling pipe 16 is connected to the tube 15, and at its upper end said filling pipe is provided with a cap 17.

Resting upon the diaphragm 13 is a follower foot 18, the shank 19 of which extends through a stuffing box 20 or other suitable bearing. Extending upward from the governor is a support or bracket 21, through which a lever 22 extends, said lever 22 being connected to the shank 19 of the follower and provided with a suitable weight 23 for properly balancing the same. Upon the outer end of the lever 22 a chain or other suitable connection 25 extends to a valve 26 in a relief pipe 27 extending from a water supply tank 28 to the pipe 29 which leads from the pump 30 to the boiler 1. The pipe 29 is provided with a check valve 31. A vent pipe 32 is connected to the top of the pump.

Air separators 33 of the usual or any preferred construction may be utilized in the system. The water supply pipe 34 from the main extends into the pump 30 and the return pipe 35 from the heating system is connected to the pipe 34.

The operation of the controller may be described as follows:—The chamber 11 below the diaphragm 13 is filled with water through the tube 15 by removing the cap 17. When the water in the boiler falls below the pipe 7 steam enters through pipe 4 and pipe 7 to the controller chamber 8 and the steam heats the tube 15 and causes the water in the chamber 11 to expand the diaphragm 13 and raise the follower and the lever 22 carrying the chain 25 and closing the valve 26. The pump 30 then opens the check valve 31 and forces water into the boiler. The combination chamber 2 is connected at its bottom with the water in the boiler and at the top with the steam in the boiler. It will also be noted that the controller chamber 8 is placed above the water line. When the water in the boiler is below the chamber 2, steam enters the chamber 8 through pipe 7, and said water will condense the steam in the controller chamber and cause the diaphragm to fall and this will again open the valve 26 and close

the check valve 31, automatically. When the check valve 31 is closed and the valve 26 is open the water is by-passed to the water supply tank 28.

5 From the foregoing, it will be obvious that my controller or governor is of comparatively simple construction and will operate automatically to maintain a constant water level in the boiler in a steam heating system.

10 Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention, as defined by the appended
15 claims.

Having thus described my invention, what I claim as new and desire to secure by Letters-Patent, is:—

20 In a steam heating system, the combination with a pump, a source of water supply and a boiler, of a combination chamber connected at one end by a valved pipe to the

boiler below the normal water level thereof and at its other end to said boiler above the normal water level, a pipe leading from said 25 combination chamber at a point opposite the normal water level of the boiler, a controller chamber with which said pipe communicates, a pipe leading from said controller chamber and connected with the pipe leading from the 30 lower end of the combination chamber, a shell having a diaphragm therein, a closed pipe extending into said controller chamber and communicating with the shell below said diaphragm, a by-pass valve, and a follower 35 resting on said diaphragm and connected to a lever for opening the valve.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

SAMUEL V. SHAROOD.

Witnesses:

C. HAROLD PORTER,
ELMER H. FLETCHER.