F. B. DAWLEY.

ATTACHMENT FOR STEAM HEATING PLANTS.

APPLICATION FILED JULY 11, 1917.

1,344,292. **Patented June 22, 1920.**

2 SHEETS—SHEET 1.

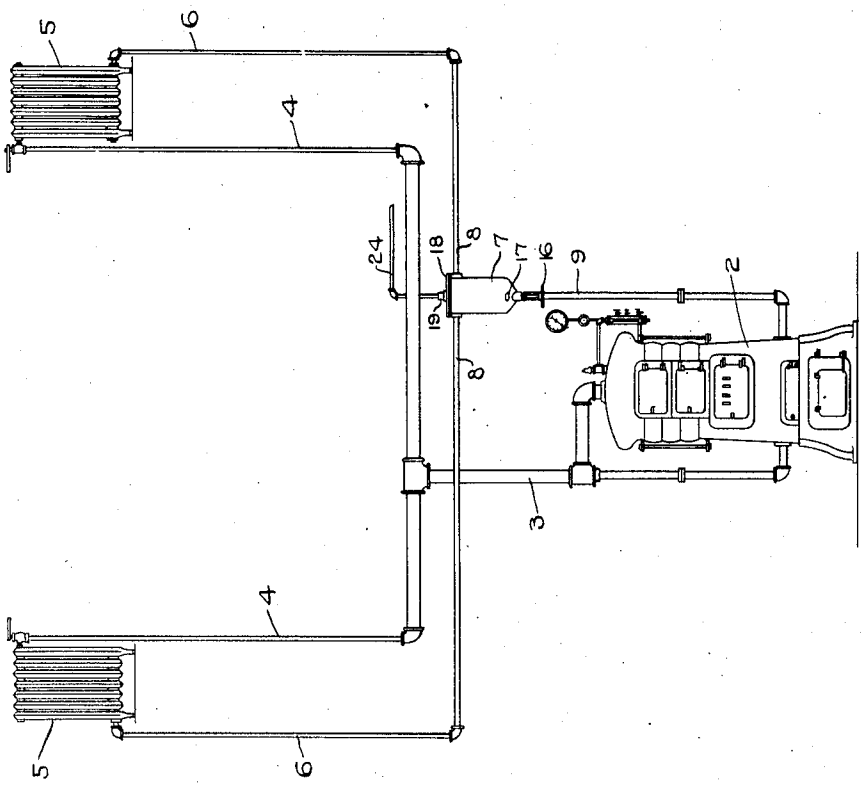


FIG. 1

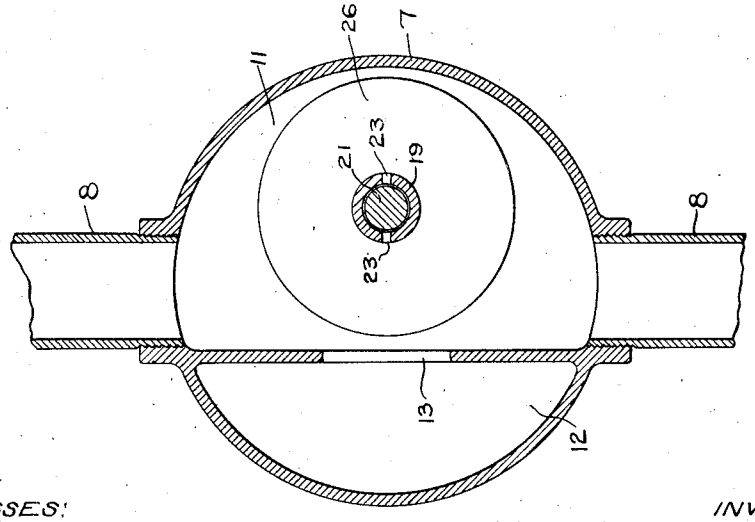


FIG. 3

WITNESSES:
B. Hall.
G. E. Sorensen

INVENTOR:
FRED B. DAWLEY.
BY Paul & Paul
ATTORNEYS.

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2 SHEETS—SHEET 2.

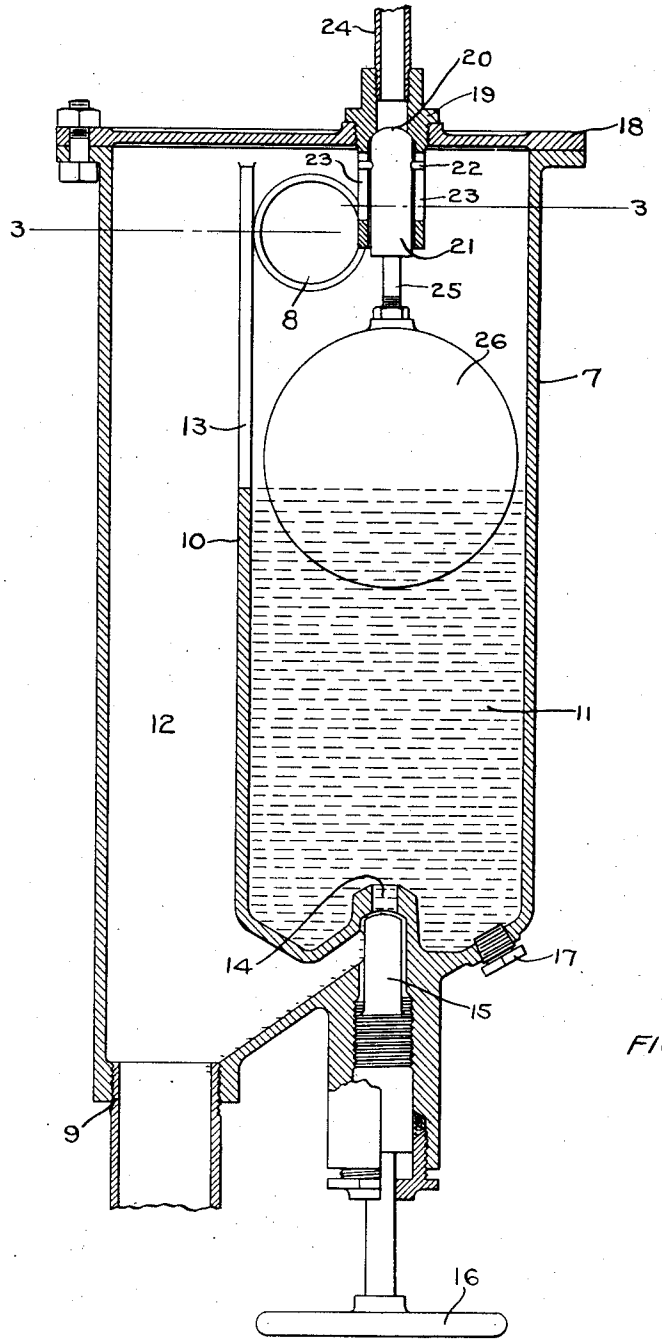


FIG.-2

WITNESSES:
B. Hall.
G. E. Sorensen

INVENTOR:
FRED B. DAWLEY.
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UNITED STATES PATENT OFFICE.

FRED B. DAWLEY, OF DETROIT, MINNESOTA.

ATTACHMENT FOR STEAM-HEATING PLANTS.

1,344,292. Specification of Letters Patent. Patented June 22, 1920.

Application filed July 11, 1917. Serial No. 179,854.

To all whom it may concern:

Be it known that I, FRED B. DAWLEY, a citizen of the United States, resident of Detroit, county of Becker, State of Minnesota, have invented certain new and useful Improvements in Attachments for Steam-Heating Plants, of which the following is a specification.

My invention relates to attachments for steam or vapor heating plants having return pipes from the radiators to the boiler and the object of the invention is to provide means for exhausting the air from the system upon the entrance of the live steam or the vapor to the radiators.

Other objects of the invention will appear from the following detailed description.

The invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification,

Figure 1 is a view of a heating system with my invention applied thereto,

Fig. 2 is a vertical sectional view through the attachment, illustrating the operation of the same,

Fig. 3 is a horizontal sectional view on the line 3—3 of Fig. 2.

In the drawing, 2 represents a steam boiler of ordinary construction, having a riser 3 with pipe connections 4 therefrom to the radiators 5. Each radiator has a return pipe 6 for delivering the water of condensation to the boiler, as usual in systems of this kind. I have shown but one riser and one line of radiators connected therewith, but it will be understood that there may be a number of these risers from the boiler, each leading to a group or line of radiators.

Referring now to Fig. 2, 7 represents a shell or casing having a return pipe connection 8 at its upper end communicating with the radiator and a connection 9 at its lower end leading to the boiler. The casing is therefore interposed in the return pipe. An upright wall 10 is provided within the casing, separating it into chambers 11 and 12. The wall extends to a point above the return opening 8 and has a passage 13 therein terminating below said opening. In the bottom of the chamber is a port 14 leading to the chamber 12 and a valve 15 is mounted to close this port and has an operating handle or wheel 16. The valve 15 is so constructed that it may be positioned with respect to the outlet opening to vary the flow of water therethrough, according to the volume of the accumulation in the chamber 11, and this will depend, of course, upon the size of the plant and the number of radiators connected with the return. The valve is capable of adjustment so there may be only a very small discharge from the chamber.

A plug 17 is preferably provided in the lower wall of the chamber to allow access thereto for any purpose, such as cleaning out the sediment which may accumulate therein. A top or cover 18 is provided for the casing 7 and a sleeve 19 is tapped into this cover and provided with a valve seat 20. The valve 21 is slidably mounted within this sleeve and has a pin 22 slidable within slots 23 in the wall of the sleeve 19. When the valve is raised, the passage through the sleeve will be closed and when the valve is depressed, the passage will be opened and the accumulation of air in the radiator or the system may be driven out through the slots 23 and the pipe 24 to the atmosphere. The pin 22 engaging the walls at the lower ends of the slots 23, will limit the downward movement of the valve. The stem 25 of the valve has a float 26 thereon depending within the chamber 11. This float may drop by gravity and expose the outlet to the pipe 24, but will be raised by the accumulation of the water of condensation in the chamber 11 to close the valve and shut off the passage when the air has been expelled.

In the operation of the system when generation of steam takes place and fills the risers and the radiators, the air accumulated in the system will be driven by the vapor down the return pipes into the chamber 11 and the float 26 being in its depressed position and the port open, the air will escape therethrough to the atmosphere. As the system fills with the vapor, the water of condensation flowing down the return pipe will accumulate in the chamber 11, the valve 15 being adjusted so that the water will flow in faster than it passes out and as the water rises, the float 26 will be lifted and the valve 21 gradually closed, shutting off the exit of vapor through this valve when the air has all been discharged. The system will thus be automatically freed of

air and the vapor permitted to flow to all the radiators. Any overplus of water in the chamber 11 will flow through the opening in the wall 10 into the passage 12 and from thence to the boiler, a certain portion dripping through the opening 14 and past the valve 15. When the supply of vapor in the system diminishes, so that the escape of water from the chamber 11 is more rapid than the supply thereto, the float and valve will drop, opening the exit or exhaust opening ready to permit the expulsion of air when the supply of vapor is renewed.

I claim as my invention:

1. In combination with the return pipe, of a steam heating system, a receptacle inserted in said pipe, a wall provided in said receptacle dividing it into independent chambers, one of said chambers communicating at the top with the return pipe section leading from the system and the other chamber communicating at the bottom with the return pipe section leading to the boiler, said wall having an overflow opening therein and a port and a valve in its lower walls for regulating the flow of the water of condensation from one of said chambers to the other, the chamber having a direct communication with the return pipe from the system having an air exit opening and valve therefor, and a float connected with said valve and movable in said chamber, the water of condensation raising said float to close said valve when the air has been expelled from the system.

2. In combination with the return pipe of a steam heating system, a receptacle inserted in said pipe, a float chamber provided in said receptacle communicating with said return pipe and having an air discharge opening and adapted to receive the water of condensation from said return pipe, said chamber having a discharge port in its lower walls with means for regulating the flow of the discharge therefrom and said discharge port communicating with the section of the return pipe leading to the boiler, the discharge of the water of condensation from said chamber being normally less than the accumulation thereof in said chamber while the system is being filled with vapor and while the air is being discharged, and a float mounted in said chamber and having means for closing said air discharge opening when said float is raised by the water of condensation in said chamber.

In witness whereof I have hereunto set my hand this 19th day of June, 1917.

FRED B. DAWLEY.