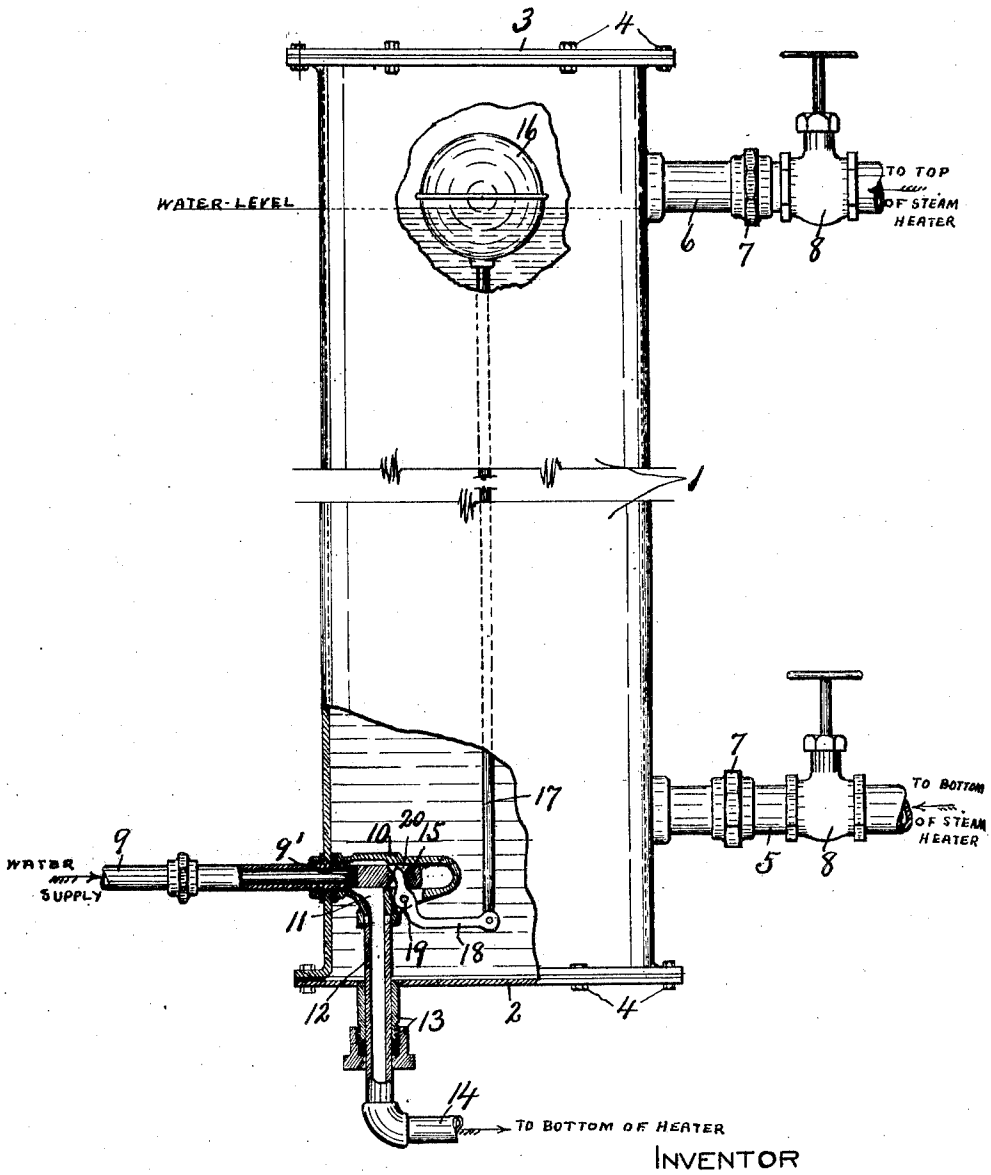
Jan. 31, 1928. 1,657,709

J. A. BEUCHAT

WATER REGULATOR FOR STEAM AND HOT WATER BOILERS

Filed July 26, 1921



INVENTOR

J. A. Beuchat

BY

Howard C. Denison

ATTORNEY

Patented Jan. 31, 1928. 1,657,709

UNITED STATES PATENT OFFICE.

JUSTIN A. BEUCHAT, OF FAYETTEVILLE, NEW YORK, ASSIGNOR OF ONE-HALF TO ELMER E. ROBERTS, JR., OF SYRACUSE, NEW YORK.

WATER REGULATOR FOR STEAM AND HOT-WATER BOILERS.

Application filed July 26, 1921. Serial No. 487,810.

This invention relates to an automatic water feed regulator for low pressure steam and hot water heaters involving the use of an upright receptacle connected to the boiler for receiving water therefrom and containing a float controlled valve which is connected in the water supply pipe leading directly to the boiler for automatically maintaining a predetermined water level therein when used in connection with a low pressure steam boiler although it is evident that the same device may be used as an expansion tank for hot water heaters for automatically maintaining the desired amount of water in the distributing system.

The main object is to provide a simple, compact and efficient unit as an article of manufacture adapted to be easily and quickly installed in connection with any low pressure steam or hot water heater for automatically replenishing or maintaining the desired amount of water in said heater or in the distributing system connected thereto.

Other objects and uses relating to specific parts of the device will be brought out in the following description:

The drawing represents a side elevation partly broken away in section of an automatic water feed regulator embodying the various features of my invention.

As illustrated, this device comprises an upright tubular receptacle —1— of any suitable cross-sectional form or size having its lower and upper ends closed by plates or heads —2— and —3— which are secured in place by bolts —4— to form liquid tight joints.

When the device is used in connection with low pressure steam boilers, the receptacle —1— extends some distance below and above the water level which it is desired to maintain in the boiler and preferably extends downwardly below the level of the grate of said boiler so that the valve mechanism in the lower end of the receptacle controlling the water supply to the boiler may be kept as cool as possible irrespective of the temperature of the water in the boiler.

The lower and upper portions of the receptacle —1— are connected by pipes —5— and —6— to the lower and upper portions of the boiler not shown but in such manner as will allow a free circulation of the water from the boiler to said receptacle so that the level of the water in the boiler will assume the same level in the receptacle, said pipes —5— and —6— being provided with unions —7— and valves —8— whereby communication between the boiler and receptacle —1— may be shut off at any time and the receptacle disconnected from the pipes for repairs or for any other purposes, it being understood that when the receptacle is connected to the boiler in the manner described, the valves —8— will be opened.

A water supply pipe —9— leading from any suitable source of supply is connected through one side of a receptacle —1— near the bottom thereof with the inlet of a valve case —10— having an outlet —11— connected to the upper end of a downwardly extending delivery pipe —12— which passes through an opening or gland —13— in the bottom —2— of the receptacle —1— and is connected by a pipe —14— to the bottom of the boiler (not shown) thereby forming a continuous connection between the source of supply and boiler and cutting off communication between the interior of the valve case —10— and the container —1— so that when the valve in said case —10— is open, the water passes directly from the source of supply to said boiler.

The end of the pipe —9— within the valve case —10— cooperates with a slide valve —15— which is movable endwise in the valve chamber into and out of engagement with the inner end of said pipe, the latter forming the valve seat.

This valve is actuated by means of a float —16— through the medium of a rod —17— and a bell-crank lever —18— which latter is fulcrumed at —19— on the under side of the valve case —10— and extends into a slot —20— in the valve —15— so that the main portion of the valve is interposed between the upwardly projecting end of the lever —18— and valve seat on the inner end of the pipe —9— and is also adapted to move across the inner end of the outlet —11—.

The float —16— rises and falls with the level of the liquid in the receptacle —1— which level corresponds with the level in the boiler and when it is connected in the manner shown and described, it is evident that as the level of the liquid recedes or falls below the normal level required, the weight of the float together with the rod —17— will automatically shift the valve to

its open position, while on the other hand as the level of the liquid rises, the float —16— will be similarly elevated to cause the closing of the valve —15— across the outlet —7— and against the seat as —9'— on the inner end of the supply pipe —9—, thereby cutting off the supply of water to the boiler through the pipes —9— and —14— when it reaches a predetermined level in the boiler and also in the receptacle —1—.

If the device is to be used as an expansion tank and water feed regulator for hot water heating systems, the receptacle —1— will, of course, have to be placed at an elevation some distance above the water distributing system in which case the pipe —5— may be connected to the top of the boiler or heater while the pipe —6— may be connected to a waste conductor or overflow so that the water rising in the distributing system will be delivered into the receptacle —1— through the pipe —5—, it being understood that the pipe —14— leading from the valve case —10— of the main supply tank —9— is connected to the bottom of the boiler in the usual manner for steam boilers.

In this use of the device as an expansion tank for hot water heaters, the pipe —6— will be normally opened to the atmosphere while the valve —10— will be normally opened until the entire system is filled with water to the level of the overflow pipe —6— at about which time, the float —16— will have been elevated by the rise of the liquid to automatically close the valve —15—. It therefore, follows that if the level of the liquid recedes in the receptacle —1— below its normal level, the valve —15— will be again opened to replenish the heater and thus maintain a completely filled distributing system at all times when the water is heated or cooled, all of which prevents the back flow of water and quickens the circulation of the hot water when the heater is put in operation.

What I claim is:

A water-regulator of the class described comprising, in combination, an upright tank adapted for connection at one side with the water and steam spaces of a boiler, a valve casing within said tank having an inlet secured to and extending through a side of the tank near the bottom of the latter, said valve casing having a depending outlet, said tank having a depending gland on the bottom thereof directly beneath said outlet of the valve casing, a pipe connected at its upper end to the outlet of said valve casing and extending downwardly through the bottom of the tank and the gland for connection with the water space of the boiler, a valve in said valve casing, and a float in the tank operatively connected to said valve.

In witness whereof I have hereunto set my hand this 22nd day of July, 1921.

JUSTIN A. BEUCHAT.