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E. B. JARVIS

TEMPERATURE REGULATOR

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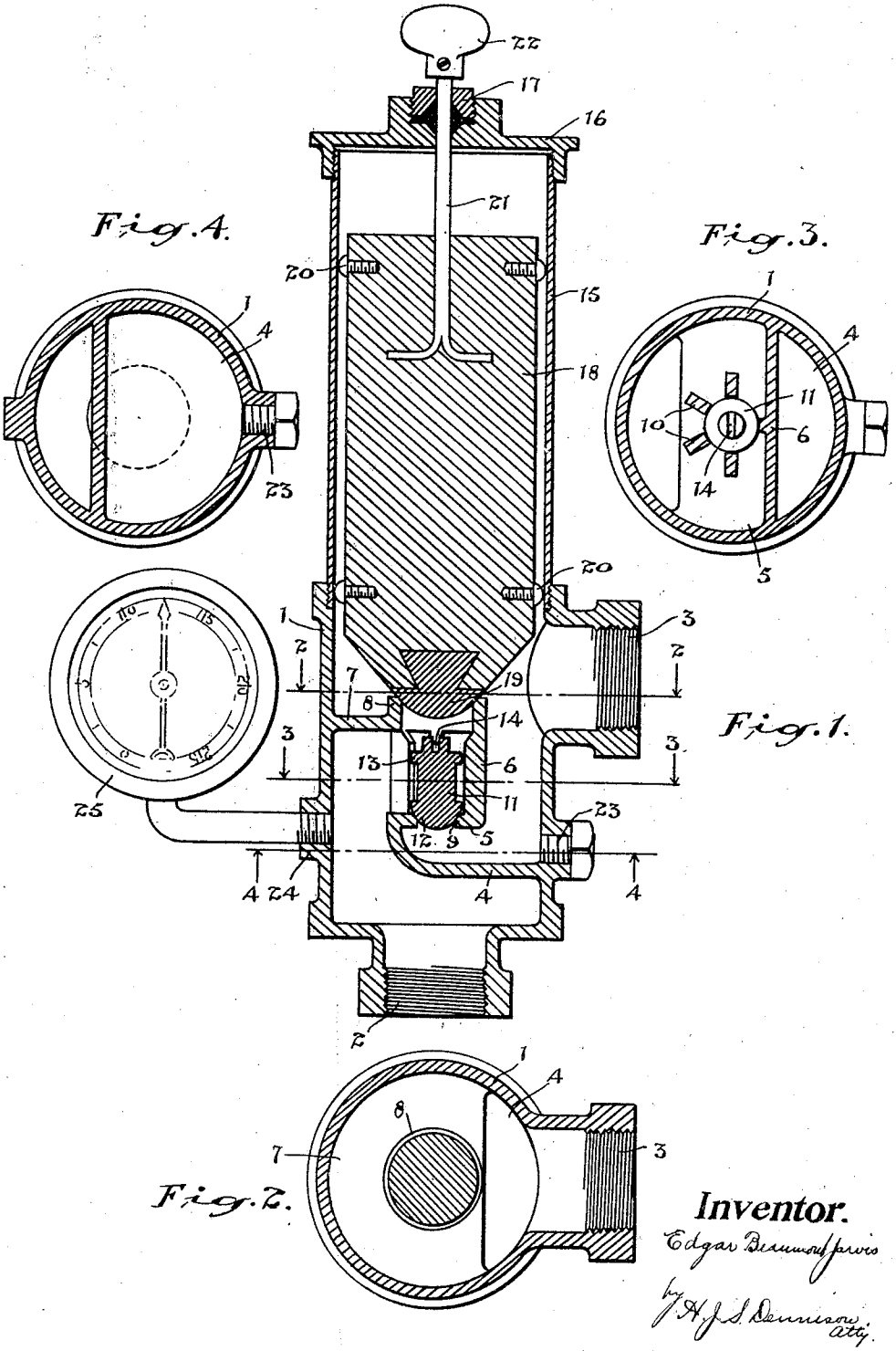



Fig. 4.

Fig. 3.

Fig. 1.

Fig. 2.

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## TEMPERATURE REGULATOR.

Application filed December 27, 1921. Serial No. 525,009.

*To all whom it may concern:*

Be it known that I, EDGAR BEAUMONT JARVIS, a subject of the King of Great Britain, and resident of the city of Belleville, county of Hastings, Province of Ontario, in the Dominion of Canada, have invented certain new and useful Improvements in Temperature Regulators, described in the following specification and illustrated in the accompanying drawings, that form part of the same.

The principal objects of the invention are, to obviate the difficulties met with in this class of device through clogging of the valves with dirt and sediment in the water, to enable the ready access to the valves for re-seating, to ensure positive operation of the valves at all times, and to devise a construction of extremely neat form.

The principal features of the invention consist in the novel construction of the casing and the arrangement of the valves, whereby an exceptionally free outflow passage to the main valve seat is provided and a simple and natural return flow passage is arranged, and whereby the main valve is supported in its enclosing casing to ensure its proper seating and the minimum of frictional contact.

In the drawings, Figure 1 is a longitudinal vertical section of my improved device taken in mid-section through the inlet and outlet passages.

Figure 2 is a horizontal plan section on the line 2—2 of Figure 1.

Figure 3 is a horizontal plan section on the line 3—3 of Figure 1.

Figure 4 is a horizontal plan section on the line 4—4 of Figure 1.

Temperature regulators of various kinds have been devised for use in hot water heating systems and their advantages are well known but it has been found that after such devices have been in use for more than a season or where they are installed in new systems without proper care being taken to cleanse the system the valves become inoperative through the clogging of sediment or other dirt carried by the water in a dead system.

The present construction has been particularly devised to overcome these difficulties, the body 1 is a unitary casting of cylindrical form having a centrally arranged inlet 2 at the bottom and the lateral outlet 3 adjacent to the top.

Within the cylindrical body is arranged a zig-zag partition the lower portion 4 thereof being horizontally disposed and extending past the vertical centre and turned upwardly to meet the horizontal partition 5 which is spaced above the portion 4.

A vertical portion 6 extends upwardly from the portion 5 and connects with the horizontal portion 7.

An annular boss 8 extends above the upper horizontal wall 7 and forms the main valve seat and a smaller seat 9 is formed in the horizontal partition 5 in alignment with the upper valve seat.

A plurality of vertical ribs 10 extend between the upper and intermediate horizontal portions 7 and 5 of the partition and these form vertical guides for a valve 11 which rests upon the seat 9.

The valve 11 is formed with a spherical seat 12 and the body is reduced intermediate of its length leaving a flange 13 at the upper end to form a sliding engagement with the ribs 10.

A transverse slot 14 is formed in the upper end to receive a screw driver to enable its being rotated to grind the valve to its seat.

Secured to the upper end of the body 1 is a cylindrical casing 15 closed by a suitable cap 16 which is shown provided with a stuffing box 17.

The main valve 18 is a heavy metal cylindrical body provided with a seating portion 19 of a suitable non-corrosive metal which is adapted to rest upon the valve seat 8. The cylindrical body of the valve 18 is provided with a plurality of projecting members 20 having rounded heads which slidably engage the inner wall of the casing 15. The valve thus operates with the least possible frictional contact with the wall of the casing and is supported individually centrally of the casing.

A rod 21 is secured in the valve 18 which extends upwardly through the stuffing box 17 being provided with a suitable thumb piece 22 by means of which the valve may be rotated on its seat to clean the seat of any grit or to grind it into place.

These devices are subject to deposit of sediment being carried up from the furnace and the construction herein described provides a pocket between the partition walls 4, 5 and 6 where this sediment will settle without interfering with the action of the

valves and as such pocket is in direct communication with both valve seats it will be very effective in keeping them clear.

A clean-out screw 23 is secured in the side of the body 1 to enable the accumulated sediment to be withdrawn.

It is desirable to provide means for ascertaining the operation of the heating system and a threaded boss 24 is arranged on the side of the body 1 below the main valve and in this boss is secured a suitable pressure gauge 25.

The operation of the device is very simple. The flow of the expansion of the water in the heating system is checked by the weight of the main valve and the increase in temperature causes the valve to eventually lift. When the temperature reduces the excess which has flowed into the expansion tank returns through the small return valve. The success of the device depends upon the freedom of movement of the valves and the ease of access thereto.

What I claim as my invention is:—

1. A temperature regulator, comprising, a cylindrical casing having an inlet at the bottom and an outlet thereabove, a zig-zag partition forming an integral part of said casing and separating the inlet from the outlet, a pair of valve seats arranged in opposing portions of said partition and in alignment and both opening upwardly, a main valve closing the upper valve seat, and a return valve closing the lower seat.

2. A temperature regulator, comprising, a cylindrical casing having an inlet at the bottom and an outlet thereabove, a zig-zag partition in said casing separating the inlet from the outlet, a main valve seat in the upper portion of said partition, a valve seat in the partition below the main valve seat and in axial alignment therewith, parallel guides extending between said upper and lower portions of the partition and spaced around the lower valve seat, a valve resting on the main valve seat, and a valve resting on the lower valve seat and slidably engaging said guides.

3. A temperature regulator, comprising, a cylindrical casing having an inlet at the bottom and an outlet thereabove, a zig-zag partition in said casing separating the inlet from the outlet, a main valve seat in the upper portion of said partition, a valve seat in the partition below the main valve seat and in axial alignment therewith, parallel guides extending between said upper and lower portions of the partition and spaced around the lower valve seat, a valve resting on the main valve seat, and a cylindrical valve closing the lower valve seat and having a peripheral flange slidably engaging said guides.

4. A temperature regulator, comprising, a cylindrical casing having an inlet at the bottom and an outlet thereabove, a partition within said casing extending from one side of the inlet and across same, returning horizontally and extending upwardly at one side of the axial centre and finally crossing the axis horizontally to the side wall and separating the inlet from the outlet, a valve seat in the upper horizontal portion of said partition, a valve seat in the horizontal portion beneath said upper portion, guides extending between said horizontal portions of the partition, a valve closing the upper seat, and a valve closing the lower seat and slidably held in said guides.

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