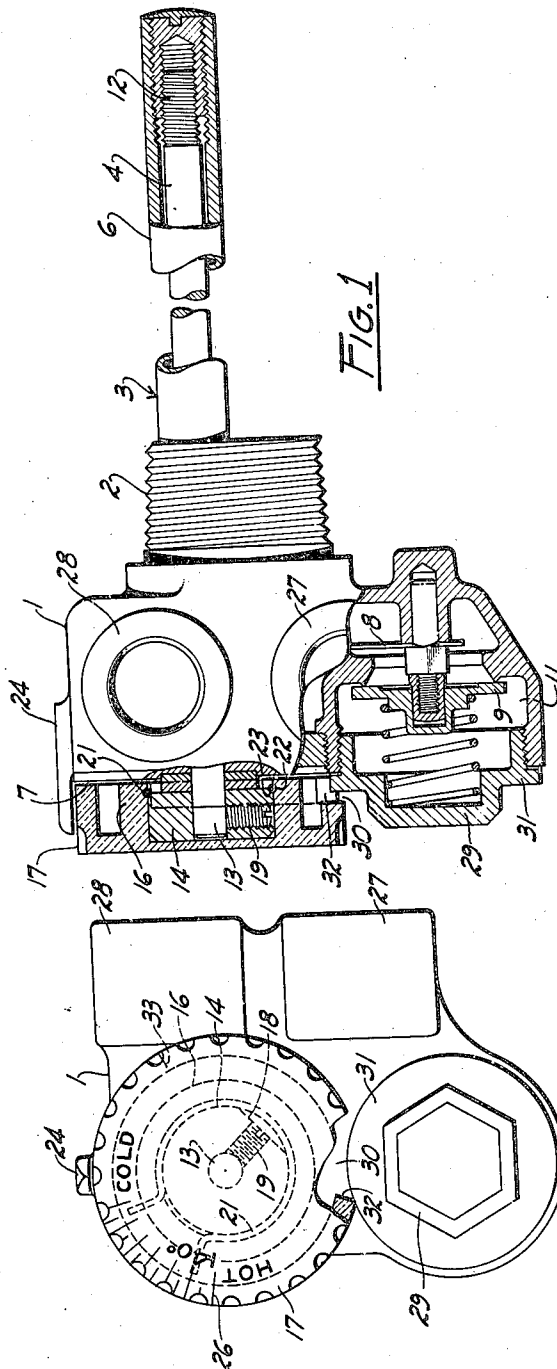


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THERMOSTAT ADJUSTMENT INDICATOR

2,483,731

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2,483,731

THERMOSTAT ADJUSTMENT INDICATOR

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1 Claim. (Cl. 236-102)

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The invention relates to temperature regulating devices and more particularly to the mode of attachment and the operation of the thermostat adjustment indicator of such devices.

An object of the invention is to provide a thermostat construction of the character described in which the several parts herein involved are so constructed and arranged, and coact in such a manner as afford: a more compact association of the parts and a substantial reduction in size of the device, a fewer number of parts which may be sturdily formed to insure substantially unlimited life, and a simplification and reduction in cost of the manufacture and assembly of the device.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawings accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawings and description may be adopted within the scope of the invention as set forth in the claim.

Referring to said drawings:

Figure 1 is a side elevation of a temperature regulating device showing the invention, with portions of the device shown in cross section to better illustrate the construction and operation of certain of the parts.

Figure 2 is a front elevation of the device shown in Figure 1 with a portion of the indicator dial shown in section.

The temperature regulating device shown in the accompanying drawings is of the type, and is adapted for the purpose, fully shown and described in Patent No. 2,238,837, issued April 15, 1941, to Sidney P. Vaughn and Wayne E. Jenkins. Reference is made to this patent for a fuller showing and description of parts of the device not specifically involved in the present application.

The temperature regulating device shown in the drawing is a water heater thermostat and comprises a valve body or casing 1 which is provided with a threaded boss 2 adapted to be threaded into an appropriate threaded flange or fitting on the side of a water heater storage tank so as to seal within the tank, for submergence in the water contained therein, the temperature responsive element 3 of the device. This element is here composed of the conventional rod 4 and tube 6 type wherein the tube is formed of a metal having a relatively high coefficient of heat expansion

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such as copper, and the rod is formed of a material having a low coefficient of heat expansion such as invar steel. The rod 4 extends, through the casing 1, to and from the front face 7 of the casing and is operatively connected within the casing to a snap-action device which in turn operates, through a lever 8, a gas shut-off valve 9 contained within a valve chamber 11 in the casing. For the construction and operation of the snap-action device, the lever and the valve reference is made to the above-mentioned Patent No. 2,238,837. Likewise reference is made to that patent for a description of the opening and closing of the valve 9 in accordance with the temperature of the water heated within the tank as accomplished by the relative longitudinal movement of the rod 4 and tube 6. It will be noted that one end 12 of the rod is threadedly connected to the tube so that the relative longitudinal position of the rod with respect to the tube can be adjusted by rotation of the rod relative to the tube and in this manner determine the temperature at which the device operates to open and close the valve 9. The description of this operation is also contained in the aforesaid Patent No. 2,238,837.

There is secured to the forward end 13 of the rod projecting from the side 7 of the casing, a collar or head member 14 which is adapted to receive a hub portion 16 of a rotatable temperature regulating member 17, here shown in the form of a hand engaging dial. As will be noted from Figure 2, the dial hub 16 and the head member 14 are held against relative rotation by means of a chordal flat 18 provided on the engaging surfaces of these members. The head member may be secured rigidly to the rod end 13 in any suitable manner such as by the set screw 19 here shown. Retention of the dial 17 on the head member in its proper position is here effected by a spring retainer ring 21 carried in an annular channel 22 in the dial hub 16 and snapping over and engaging a beveled or chamfered surface 23 on the back or inside corner of the head member 14.

An indicator pointer 24 projecting from the casing 1 at the periphery of the dial 17 co-acts with a suitable legend 26 provided on the face of the dial near the periphery thereof to indicate the temperature setting of the device. Gas inlet and discharge passages 27 and 28 are provided in the casing 1 and are communicated therein to opposite sides of the valve 9, being adapted for connection to a source of gaseous

fuel and to the burner of the water heater so that the flow of gas to the burner will be under the control of the valve 9.

The valve chamber 11 is provided in the casing 1 adjacent the front face 7 of the casing and is closed thereat by a closure plug 29 threadedly attached to the casing at the valve chamber. It will be noted that the spacing between the rod end 13 and the closure 29 is such, relative to the diameter of the dial 17 and closure 29, that a part of the dial overlies a part of the closure. Advantage is taken of this relationship to provide means for limiting the extent of rotation of the dial. As will be noted from Figure 1 the closure plug 29 is provided with a rim or flange portion 31 which protrudes from the face 7 of the casing and a portion of this rim enters a recess 32 formed in the inside face of the dial 17 at its periphery for a segment of the circumference of the dial. This recess provides at its opposite sides, a pair of circumferentially spaced shoulders 32 and 33 which on appropriate rotation of the dial come into contact with the rim 31 of the closure to thereby stop further rotation of the dial. The parts are so arranged that the shoulder 32 will move against the rim 31 and serve as a stop when the dial is rotated to the "cold" position of the control and shoulder 33 will be moved into engagement with the rim 31 to serve as a stop when the dial is rotated in an opposite direction to the "hot" position of the control.

It will be noted from the foregoing that the relative positioning functioning and co-action of the above described parts reduces the number of previously required parts to a minimum and permits a much closer relationship of the several parts affording a more compact unit, that the mode of attachment and operation of the parts afford a simplicity in manufacture and assembly and disassembly as has not heretofore been attained, and that the parts are simply and ruggedly constructed so as to insure positive operation throughout a substantially unlimited life.

We claim:

A temperature-regulating device comprising, a casing formed with a valve chamber and having

inlet and discharge passages connected to said chamber, a valve mounted in said chamber and movable to passage-opening and passage-closing position therein, said chamber opening to a side of said casing, a plug-type closure member connected to said casing for closing said chamber and having a rim portion protruding from said casing side, a rotatable temperature regulating member carried by said casing having an operating connection to said valve and provided with a rotating part extending exteriorly from said casing side with the axis of rotation of said part spaced laterally from said closure rim portion, and a manually engageable disk-shaped dial member secured to said part for rotation therewith and positioned with the interior facing of said member in closely spaced relation to said casing side and having a diameter sufficient to overlie a circumferential portion of said closure rim portion, said dial member being formed with a peripheral flange intersecting said closure rim portion, said flange being relieved over a portion of its circumferential extent to define a recess for receiving in said recess said closure rim portion and to provide shoulders in the opposite circumferential ends of said recess in the plane of said closure rim portion functioning to abut said closure rim portion to limit the extent of rotation of said dial member.

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THEODORE H. THIELE.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
732,197	Leitz	June 30, 1903
1,732,538	Robertshaw	Oct. 22, 1929
1,917,345	Vedoe	July 11, 1933
1,938,187	Mantz	Dec. 5, 1933
1,950,891	Hirschler	Mar. 13, 1934
2,172,977	Kimball	Sept. 12, 1939
2,235,210	Fonseca	Mar. 18, 1941
2,303,910	Clark et al.	Dec. 1, 1942