My Invention pertains to a device to be used in conjunction with a tank in which water may be heated for household uses by means of gas or electricity. The object of my Invention is to provide a device which may be set to automatically discontinue the application of heat to the contents of a tank when a predetermined volume of water has been brought to a desired temperature.

It will be understood that the device, although designed for household use may be employed for industrial purposes. Also, that its application is in no way restricted to tanks for heating water but that the same may also be installed for the purpose of application of heat to volumes of other contents or other material where in industrial pursuits this may prove desirable. I shall now describe my invention with reference to the accompanying drawings in which:

Figure 1 is a perspective view of a conventional water tank for household use, a gas heater for same and that of my device as applied to said tank;

Figure 2 is an enlarged view of a detail of construction on line 2—2 of Figure 1;

Figure 3 is a sectional view on line 3—3 of the detail shown in Figure 2;

Figure 4 is a sectional view of the same detail with some elements shown in side elevation, the view disclosing an element of my device in a different operative position;

Figure 5 is a sectional view on line 5—5 of Figure 3;

Similar numerals refer to similar parts throughout the several views.

The tank 10 of the usual household type, rests on legs 11. The gas heater generally indicated by numeral 12 is connected to the tank by means of a pipe 13 and includes a burner and a heating coil which, being of a well known variety, is not disclosed. What is important and what is disclosed is a valve 14 in a gas supplying pipe 15. The valve is to be operated by a lever 16 and is normally in a closed position, being kept in that state either by weight or by a spring which may be a part of the valve. A chain 17 affixed to the lever serves as a means of opening the valve and leads to a thermostat device which is generally indicated by numeral 18. This includes a circular plate 19 supported at diametrically opposite ends by a metal band 20 encircling the tank. The free ends of the band are clamped at 21, this being done in a manner to permit the band to be shifted vertically on the tank to any desired level thereon. The disk, it will be noted, is slightly curved to conform to the curvature of the wall of the tank and fits snugly against it.

Normally, abutting against the plate is a thermostatic element 22 consisting of a plurality of hollow disk shaped containers 23, made of thin flexible sheet metal, and filled with gas or a mixture of gases for expansion thereof on application of heat thereto. An external axial boss 24, extends from said element and carries a link 25 pivoted therein for connection with other elements to be described herein.

Projecting outwardly from the plate is a U-shaped bracket 26 which straddles the thermostatic element 22, the lower arm 27 of the bracket having a trough-like formation 28 for nesting the lower portion of said thermostatic element. Partly disposed within the bracket and passing through slots 29 and 30 in the top and bottom arm thereof, respectively, is an oblong bar 31 which at its lower end, outside the bracket, is affixed to a chain leading to lever 16. At the opposite end, the bar is suspended from a chain 32 which may pass through the floor of an ordinary dwelling house and may be attached to a terminal fixture 33 on a wall 34. The bar is indented to form a right angle shoulder 35, best shown in Figure 4. As the lower slot 30 in the lower arm 37 of bracket 26, is vertically out of alignment with the slot in the top arm, the bar assumes a position slanting at its upper portion towards the tank, permitting the shoulder to jut over the edge of the upper slot 28 on the end closer to the tank. This is shown in Figure 3.

An oblong slot 36 in the direction of the axis of said bar accommodates the outer end of link 25 extending outwardly from boss 24 on the thermostatic element 22.

As a means of adjusting the depth of engagement of shoulder 35 over the edge of slot 28, I have provided a cam 37, made in the form of a circular wafer pivoted eccentrically by means of bolt 38 on the upper arm of bracket 26.

To conclude the description of the device, I wish to add that for the purpose of limiting the upward movement of bar 31, the bracket includes an inwardly bent stop 39 which is struck out from the body of said bracket.

I shall now describe the operation of my device. It may be assumed that the tank in which the water is to be heated, is placed in the basement of a dwelling and that the chain 32 leading upwardly from bar 31 is located above the ground floor. The above arrangement is used only for illustration and may be changed when desired.

It will be understood that, normally, valve 14...
is closed, this by virtue of a suitable spring, built into the valve or by virtue of a weight properly applied thereto. It is assumed that the band carrying the thermostat will be disposed at a desired level on the tank. Since the thermostatic element is to be actuated by changes of temperature of water within the tank, the level at which the band is placed will depend upon the quantity of water to be heated, said quantity being gauged from the top of the tank. To set the device into operation, bar 31 is pulled upwardly by means of chain 32 which is affixed to a bracket 33 above the location of the tank. The upward movement of the bar will be limited by stop 39, extending into the path of link 25 as best shown in Figure 2. When said bar 31 has been lifted upwardly to the limit of its movement, a shoulder 35 in the edge of the bar will slip over the edge of cam 31, placed over the edge of slot 29 in the upper arm of bracket 25. The upward shift of the bar will swing lever 16 upwardly, opening valve 14, which valve controls the supply of gas for the heater 12. It will be understood that the heater is equipped with a pilot light for ignition of the gas passing through said valve.

When the temperature of water in the tank at the level of the band has reached a sufficiently high degree, the gas content in the thermostatic element 22 will expand its outer wall thus causing link 23 to bear against the bar 31. Under the pressure of said link, the bar will slip out of engagement with the edge of cam 37 and fall downwardly as shown in Figure 4, thus releasing tension on chain 17 and lever 16, and permitting the spring actuated valve 14 to return to its normally closed position. As a result thereof the supply of gas will be cut off.

The cam above described serves to adjust the depth of engagement of the shoulder 35 on bar 31 over the edge of said cam. Thus if a higher temperature is needed the depth of engagement may be increased. This will require a longer linear push on link 25 to disengage the bar from the cam and this in turn means that the temperature of water would have to be brought to a higher degree to cause a larger expansion of the thermostatic unit.

While in the accompanying drawings attention is centered upon a gas operated heater, it will be understood that a similar combination may be fully effective when an electric heating element should be substituted for the gas heater. It will be further understood that some changes may be made in the structure of elements described by me and in the combination of parts shown by me without deviating from the inventive principle disclosed herein. What I therefore wish to claim is as follows:

1. A thermostatic device for control of a heat supplying unit, said device including a metallic gas-filled chamber, the chamber being expandable by exposure to heat, a stationary support for the chamber to expose it to a heat source, a bracket mounted on said support, a vertically movable bar having a shoulder for suspension on said bracket, link means connecting the bar with the chamber to cause a disengagement of the bar from the bracket on expansion of the chamber to permit the movement of the bar downwardly, and means connected to the bar to disconnect the supply of heat.

2. A thermostatic device to control the valve of a gas burner adapted to heat water in a tank, said device including a circular gas-filled chamber expandable by heat and exposed to the heat of the tank, a bracket mounted by intermediate means on said tank and including two horizontal arms, one above the other, said arms straddling said chamber, a vertically movable bar having a shoulder for suspension from the bracket, link means connecting the bar with the chamber to cause disengagement of the bracket on expansion of the chamber, and means connected to the bar to operate the valve.

PERCY E. PARKINSON.

REFERENCES CITED

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

<table>
<thead>
<tr>
<th>Number</th>
<th>Date</th>
<th>Name</th>
<th>United States Patents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,648,662</td>
<td>Nov. 8, 1927</td>
<td>Shadrick</td>
<td>1,648,662</td>
</tr>
<tr>
<td>1,800,333</td>
<td>Apr. 14, 1931</td>
<td>Shadrick</td>
<td>1,800,333</td>
</tr>
<tr>
<td>2,249,886</td>
<td>July 22, 1941</td>
<td>Dayton</td>
<td>2,249,886</td>
</tr>
<tr>
<td>2,322,620</td>
<td>June 22, 1943</td>
<td>Jenkins</td>
<td>2,322,620</td>
</tr>
</tbody>
</table>