Oct. 16, 1956 J. M. VALENTINE 2,767,299

DOMESTIC APPLIANCE

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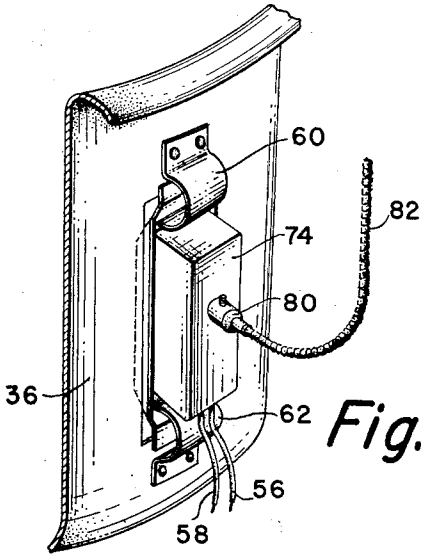


Fig. 2

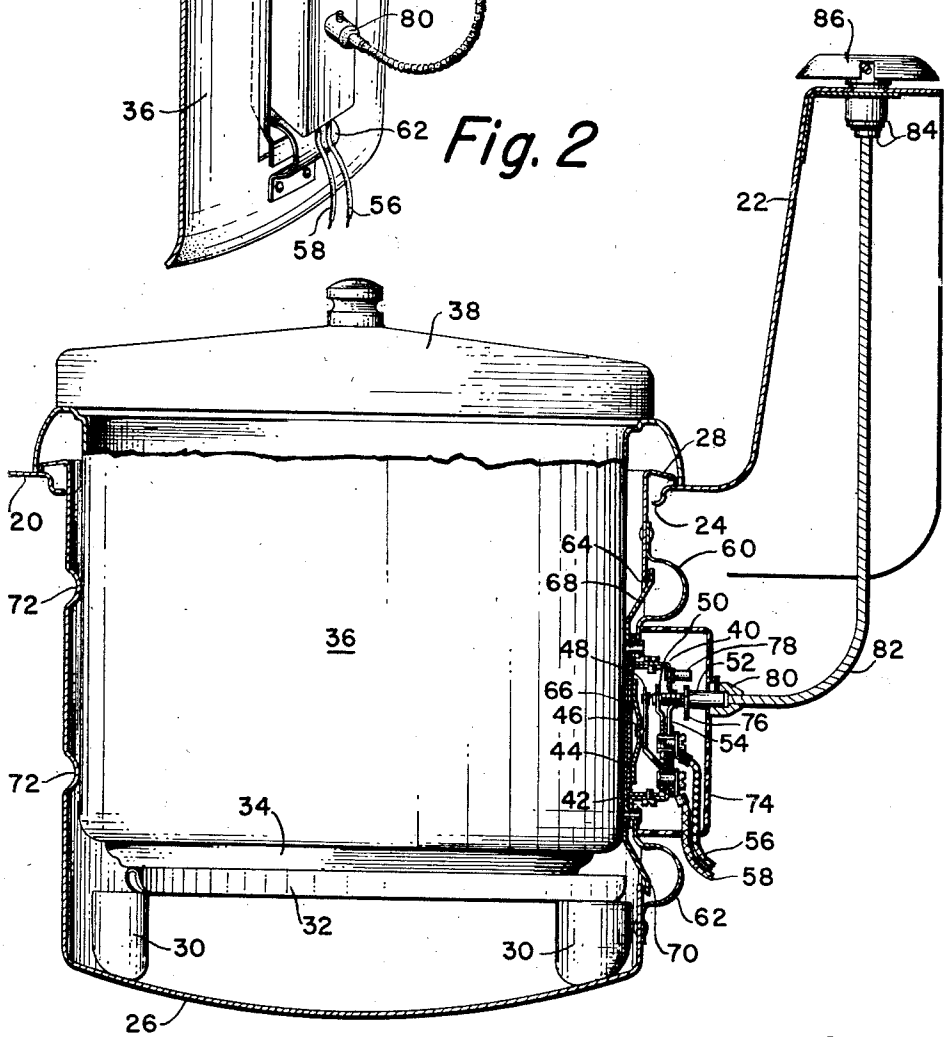


Fig. 1

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DOMESTIC APPLIANCE

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1 Claim. (Cl. 219—43)

This invention relates to a domestic appliance and more particularly to temperature controls for receptacle wells. Domestic ranges have been provided with deep well cookers for some time. They have been equipped with manual controls and time controls.

It is an object of my invention to provide a simple temperature responsive control for a receptacle in a well.

It is another object of my invention to provide a simple temperature responsive control mounted in a well but having good heat exchange relation with a receptacle in the well.

These and other objects are attained by providing an enclosed thermostat which is spring mounted in an aperture in a well so that it is yieldingly held in contact with the outer surface of the receptacle in the well regardless of variations in its size so that sufficiently good temperature relations are made for accurate control. The thermostat is adjusted by a knob on the back of the range which operates a flexible shaft to adjust the adjusting means of the temperature control.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings, wherein a preferred form of the present invention is clearly shown.

In the drawings:

Figure 1 is a vertical sectional view through a deep well cooker and adjacent portions of an electric range embodying one form of my invention; and

Figure 2 is a fragmentary perspective view of my tem-temperature control and the adjacent portions of the well.

Referring now to the drawings and more particularly to Figure 1 there is shown a range top 20 having a back portion 22 and an opening 24 in the top through which extends a deep well 26. This deep well 26 has an upper flange 28 normally resting upon the range top 20. The bottom of this well 26 is provided with three inwardly extending projections 30 each having a substantially flat upper surface upon which rests the three armed support 32 for a sheathed tubular type of electric heater 34. Supported on this heater 34 is the receptacle 36 normally supplied with the range for use in the well 26. It is provided with a suitable lid 38.

While it is desirable that the thermostat be responsive directly to the temperature of the contents of the receptacle 36, from the standpoint of convenience it is undesirable that there be any thermostatic or thermo-sensitive element located in or connected to receptacle 36. To make possible a temperature control which is not connected to the receptacle 36 and yet is directly responsive to the temperature of its contents, I provide a thermostatic means generally designated by the reference character 40 which includes a box shaped metal enclosure including an inner housing portion 42 of a metal or material having a very high co-efficient of thermal expansion. Fastened at both ends to the inner face of this

member 42 is an arched member 44 having a low co-efficient of expansion. This arched member 44 has a button 46 adapted to engage a resilient contact carrying arm 48 carrying the movable contact of a switch mechanism. The switch mechanism also includes a resiliently mounted normally stationary contact 50 which has its position made adjustable by the adjusting screw 52 threaded through the outwardly facing portion 54 of the box shaped enclosure of the thermostatic means 40. The normally stationary arm 50 is connected by a binding screw connected to the flexible conductor 56 while the movable arm 48 is connected by a binding screw to a flexible conductor 58.

The thermostatic means 40 is provided with upwardly and downwardly extending flanges integral with the portion 54. To these integral flanges are riveted the inner ends of the upper and lower U-shaped springs 60 and 62. These springs 60 and 62 yieldingly hold the thermostatic means 40 in the aperture 64 in the lower side wall portion of the well 26. These springs 60 and 62 are tensioned so that they tend to move the thermostatic means 40 toward the receptacle 36. Riveted along with the springs 60 and 62 to the thermostatic means 40 is a combined receptacle engaging contact and stop member 66 and mid portion of which is held in direct contact with the adjacent portion of the side wall of the receptacle 36.

The members 42 and 44 forming the actuating bimetal elements of the switch are therefore in direct metal heat conducting relation through the contact member 66 and the wall of the receptacle 36 with the contents of the receptacle 36. If desired, the members 42 and 66 may be combined and made of a single sheet of metal. The contact member 66 has upper and lower arms 68 and 70 which extend through the aperture 64 and overlap the upper and lower edges of the aperture 64 so that when it engages these edges it limits the inward movement of the thermostatic means 40 under the force of the springs 60 and 62. The upper arm extends outwardly at an angle so that when the receptacle 36 is inserted it will cam the thermostatic means outwardly to provide room for the receptacle 36. The well 26 is provided with inturned projections 72 opposite the thermostatic means 40 to substantially centralize the receptacle 36 in cooperation with the spring mounting of the thermostatic means 40 which will hold the receptacle 36 against the projections 72. The thermostatic means 40 is provided with a cover 74 of electrical insulating material. The screw 52 is provided with a stop arm 76 which co-operates with a stop pin 78 projecting out from the thermostatic means into the path of rotation of the arm 76 to limit the rotation of the screw 52 to approximately one turn. The location of the screw 52 adjusts the temperatures at which the contacts upon the arms 48 and 50 will open and close. These contacts through the conductors 56 and 58 are connected in series with the heating element 34 to control the heating of the receptacle 36.

To make it convenient to adjust the operating temperature of the thermostatic means 40, I attach to the screw 52 by the connector 80 the lower end of a flexible cable or flexible shaft 82. The upper end of this flexible shaft 82 is connected to the hub 84 beneath the knob 86 which is rotatably mounted on top of the back portion 22 of the range top 20. In this way the contents of the receptacle may be heated to and kept at the temperature for which the knob 86 is set. The receptacle 36 has no connection other than a purely thermal connection with the thermostatic means 40. Therefore the receptacle 36 can be readily inserted and removed without any necessity for mechanically disconnecting the thermostatic means

40. While my temperature control has been shown in one example as applied to the deep well over the electric range, it should be understood that it may be applied to other types of wells containing other types of receptacles including frozen food containers.

While the form of embodiment of the invention as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted, as may come within the scope of the claim which follows.

What is claimed is as follows:

In combination, means including a range top and a deep metal well extending beneath the range top for receiving and supporting a removable receptacle, means associated with said well for changing the temperature of said receptacle, said metal well being provided with an opening in its side wall portion beneath the range top, a thermostatic means located in said opening and having a thermosensitive element, curved leaf spring means extending in opposite directions connecting said thermostatic means and said well for urging said thermosensitive element and said receptacle into direct metal to metal heat exchange relationship with each other, stop arms extending in opposite directions from said thermostatic means beyond the edges of said opening outside the well for limiting the movement of said thermostatic means inwardly relative to the well, said thermostatic means being connected to control the energization of said temperature changing means in accordance with the temperature of the receptacle.

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