

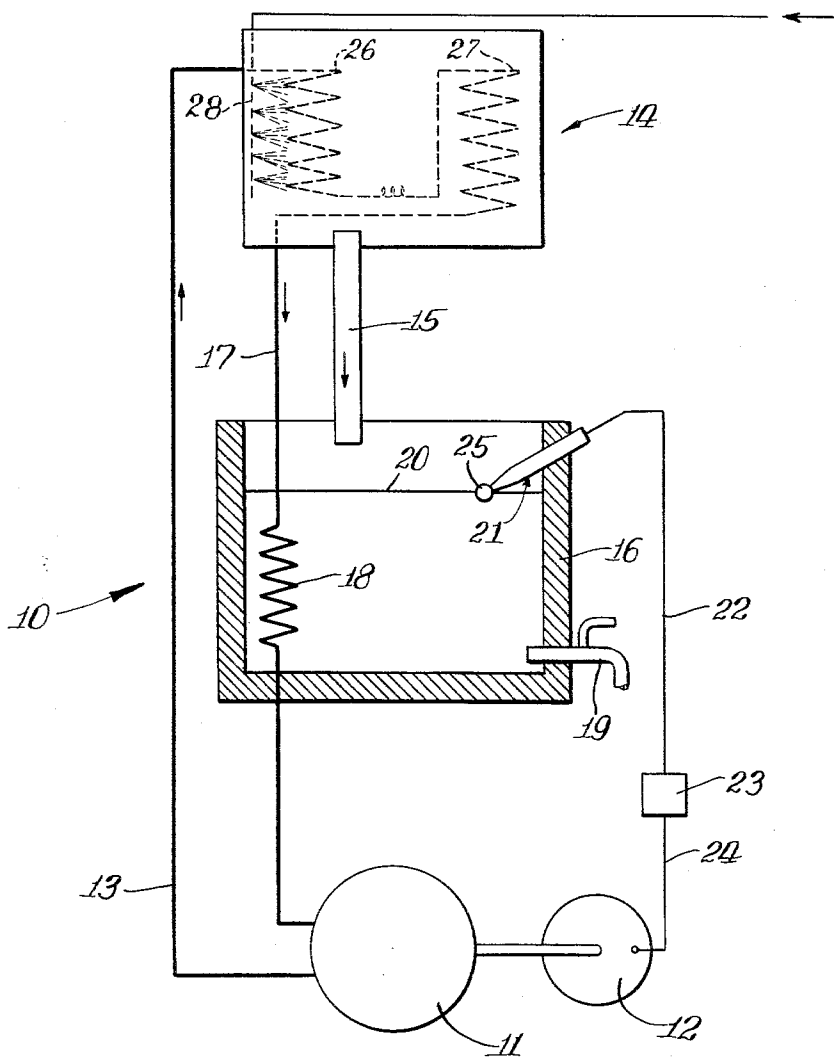
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LIQUID LEVEL AND TEMPERATURE CONTROL

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LIQUID LEVEL AND TEMPERATURE CONTROL
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1 Claim. (Cl. 62—188)

This invention relates to water purifying apparatus and more particularly to a combined temperature and level control for such apparatus.

It is a general object of the present invention to produce a new and improved temperature and level control device of the character described.

In my copending application Serial No. 239,396 filed November 16, 1962, there is shown a water purifying apparatus utilizing at least in one aspect, a refrigeration cycle including a compressor and evaporator to provide a cool surface upon which water vapor may condense. The condensate is then directed to a reservoir where it is maintained for use for drinking and other purposes. It is, of course, not desirable that such an apparatus be operated constantly as the supply of distillate produced would be expected to exceed the demands therefor, thereby resulting in a waste of power. It is, however, desirable to maintain the reserve supply of distillate in the reservoir at or above a predetermined level and it is further desirable to keep the distillate cool, particularly where the water is to be used for drinking purposes.

According to the present invention, there is produced a combined level and temperature control so that by virtue of a single instrument the dual functions can be performed. It is therefore an important object of this invention to produce such a dual operating control which is particularly adaptable for use in apparatus of the character just described.

Other and further objects and advantages of the present invention will be readily apparent from the following description and drawing, which is a schematic view of a water purifying apparatus embodying the invention.

While this invention is susceptible of embodiment in many different forms, there is shown in the drawing and will herein be described in detail one specific embodiment, with the understanding that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the invention to the embodiment illustrated. The scope of the invention will be pointed out in the appended claims.

Referring to the drawing, there is shown a water purifier 10 which, for the purpose of illustrating one of many environments in which the present invention may be used, includes a compressor 11 driven by an electric motor 12 which directs refrigerant in a first line 13 into a chamber indicated as 14 which includes an evaporator coil 26, a primary evaporating coil 27, and a source of water vapor 28. Reference may be had to my copending application for further details of the unit 14. Suffice it to say that distillate collected in the chamber 14 is directed by means of a pipe 15 into a reservoir 16 preferably constructed with thermal insulated walls as shown. The refrigerant is returned from the chamber 14 to the compressor 11 by means of the line 17 which includes a secondary evaporating coil 18 located within the reservoir 16. The reservoir

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is also provided with an outlet spigot 19 and a level of liquid within the reservoir is indicated by the line 20. Extending through a wall of the reservoir 16 is a thermosensitive unit 21 connected by means of a lead 22 to a controller 23, in turn connected through the lead 24 to the motor 12 for turning the latter on and off.

The unit 21 is, as previously noted, sensitive to temperature and may include, for example, a bulb 25 filled with gas or fluid which expands and contracts with changes in temperature, with the pressure changes so caused being transmitted by the lead 22 to the controller 23 which may be a pressure switch. Other thermally responsive control units may, of course, be used in the system.

An important feature is the location of the thermosensitive unit 21. The water in the reservoir 16 is normally quite cool due to the fact that it is condensed on refrigerated surfaces. When the level of the cool water is sufficient to immerse the bulb 25 therein, the thermally responsive element 21 will respond by shutting off the motor 12. When water is withdrawn from the reservoir through the spigot 19, the bulb is exposed to air and as the ambient temperature thereof is well above the desired water temperature, the unit will be re-started and additional water distilled. Thus the thermosensitive unit 21 serves to maintain the desired level of liquid in the reservoir. Additionally, should the water in the reservoir warm up due to long periods of non-withdrawal, the thermosensitive unit 21 again responds by turning on the unit, which will of course not only make additional water but will cool the water in the reservoir by virtue of the cooling coil 18 immersed therein. True, in this latter instance some water may be wasted as suitable means will be provided for directing any excess water in the reservoir to waste. On the other hand, the small amount of water so wasted is of little concern compared against the desire to maintain the water temperature at a palatable point, and in any event the overflow could be directed to a suitable container for use.

I claim:
In combination with a refrigeration type water purifier wherein a motor-driven compressor compresses refrigerant to provide a cooled surface for the condensation of water vapor, a combined liquid level and temperature control comprising a container connected to receive condensate, a refrigerant coil positioned to cool the water in said container, a temperature responsive element connected to operate the motor, said element being sensitive to conditions within the container at a predetermined level above the bottom thereof and functioning to operate the motor when its temperature rises above a predetermined point either by reason of the exposure thereof with the lowering of the level of the water in the container or by the warm up of the water.

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