

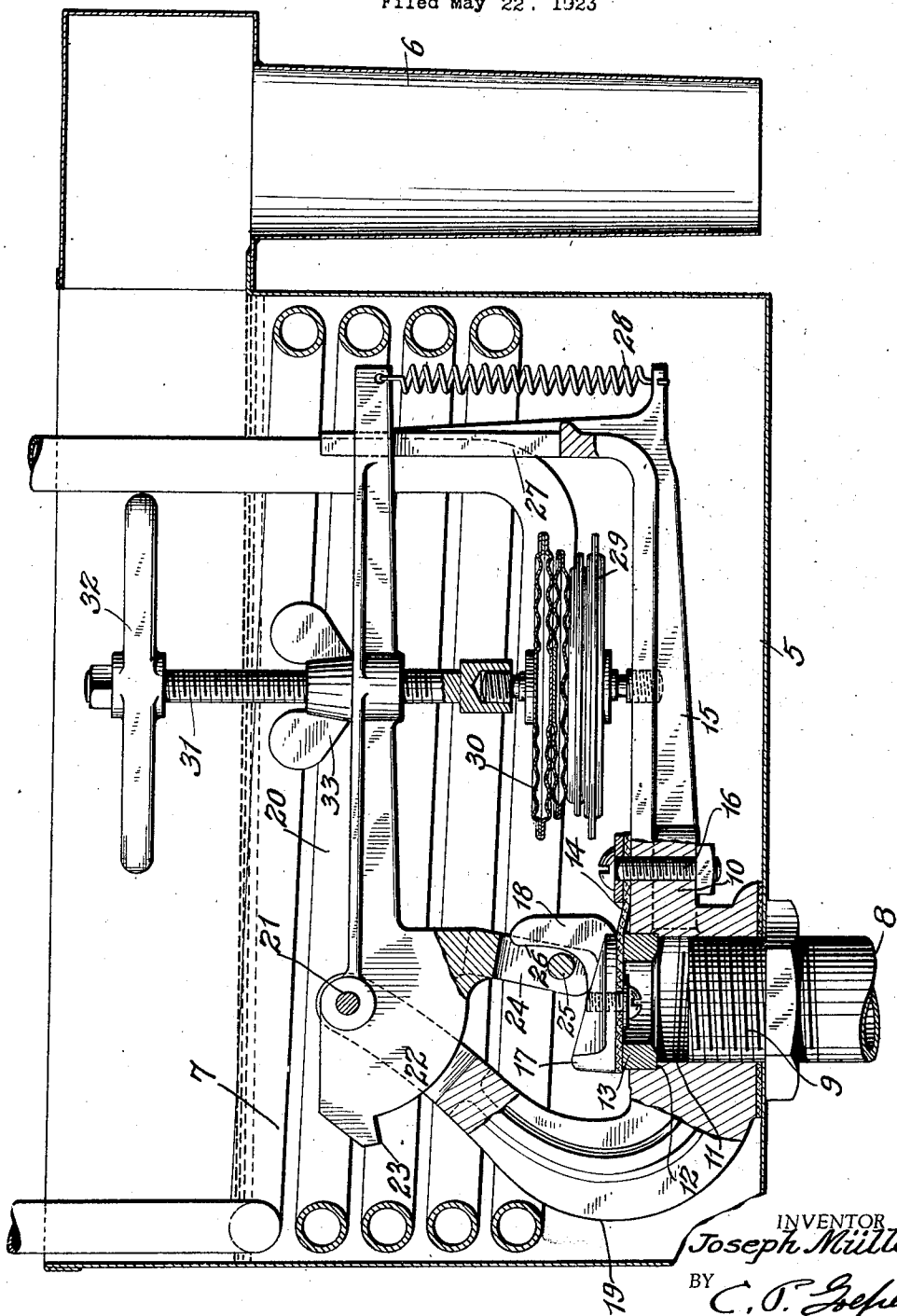
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AUTOMATIC WATER REGULATOR

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UNITED STATES PATENT OFFICE.

JOSEPH MÜLLER, OF DAYTON, NEW JERSEY.

AUTOMATIC WATER REGULATOR.

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To all whom it may concern:

Be it known that I, JOSEPH MÜLLER, a citizen of the United States, residing at Dayton, in the county of Middlesex and State of New Jersey, have invented certain new and useful Improvements in Automatic Water Regulators, of which the following is a specification.

This invention relates to automatic water regulators for automatically supplying cooling water to the condenser of a refrigerating machine of the absorption or compression type, of an air compressor, an air cooler, in beer or milk coolers, and in various other kinds of apparatus where the cooling water is to be maintained at a certain desired predetermined temperature.

More particularly, my present improvement is identified with thermostatically controlled water regulators and has for its primary object to provide a simple and efficiently operating means automatically influenced by the temperature of the water to open a valve and supply additional cooling water to the condenser chamber or other receptacle.

In one practical embodiment of the invention, I provide a suitable casting adapted to be connected to the end of the water supply pipe and arranged within the condenser chamber and a valve mounted upon said casting and normally closing communication between said pipe and chamber. Upon the casting there is mounted a spring held valve actuating lever carrying adjustable thermostatic discs arranged in opposed relation to similar discs mounted upon said casting. Thus, as the temperature of the water increases, the discs are expanded whereby the lever is actuated to open the valve and permit the water to flow from the supply pipe into the condenser chamber.

It is another object of my invention to provide an automatic water regulator of the above type which is of such construction that it can be readily applied to the ordinary condenser without necessitating any radical structural changes therein.

With the above and other objects in view, the invention consists in the improved water regulator and in the form, construction and relative arrangement of its several parts as will be hereinafter more particularly described, illustrated in the accompanying drawing and subsequently incorporated in the subjoined claims.

In the drawing, the figure represents a vertical section through the chamber of the condenser having my improved water regulator arranged therein.

Referring in detail to this drawing for purposes of illustration, I have shown a water receiving tank or chamber 5 having an overflow outlet 6 communicating with the upper end thereof. In this chamber the usual condenser coil 7 is arranged. The water supply pipe 8 extending from a pump or other water pressure source has a threaded end 9 extending upwardly through an opening in the bottom wall of the tank or chamber 5.

The device forming the subject matter of the present application includes a casting 10 having a body portion provided with a threaded opening 11 therethrough to receive the threaded pipe extension 9. A suitable seat 12 is formed in the casting at one end of this opening upon which a flap valve 13 is normally engaged, said valve having a flexible part 14 of leather or other material secured at one end to the horizontally extending arm 15 of the casting by means of a suitable bolt 16. A disc 17 is fixed upon the upper side of the flexible element 14 and is formed at one side thereof with an upwardly projecting lug 18, the purpose of which will presently appear.

At the opposite side of the body of the casting with respect to the horizontal arm 15, an upwardly extending arm 19 is formed thereon. The upper end of this arm is bifurcated and a lever 20 is pivotally mounted therein upon the transverse pin or bolt 21. This pivoted end of the lever is formed with a web plate 22 having a stop shoulder 23 to engage the arm 19 and limit the rocking or pivotal movement of said lever in one direction. The plate 22 is provided with a depending bifurcated arm 24 the spaced parts of which are connected by a transverse pin or bolt 25, said pin engaging a curved cam face 26 formed on one edge of the upwardly extending lug 18 of the disc 17.

The arm 15 terminates in an upwardly extending slotted guide standard 27 in which the other end of the lever 20 is movably positioned. This end of the lever is connected by a coil spring 28 to the arm 15.

Upon the arm 15, the expansible thermostat discs 29 are suitably mounted and similar discs 30 are opposed to the discs 29 and detachably connected to the lower end of a

rod 31 which has threaded engagement in the lever 20. A suitable handle 32 is fixed to the upper end of this rod whereby said rod may be conveniently adjusted in the lever to position the discs 30 with respect to the discs 29 and thus vary the degree of expansion of the discs which is necessary to actuate the lever 20 and open the valve in the manner to be presently explained. The rod 31 may be conveniently fixed in its adjusted position by means of a lock nut 33 threaded thereon and engaging the upper side of the lever 20.

In the operation of the device above described, as the water in the condenser chamber absorbs heat from the pipe coil 7 and increases in temperature, upon reaching a predetermined degree, the discs 29 and 30 will be expanded so that the rod 31 and consequently the lever 20, are moved upwardly against the action of the spring 28. In this rocking movement of the lever, the pin 25 coacting with the cam face 26 of the lug 18 raises the flap valve from the opening 11 in the casting so that cool water may pass from the supply pipe 8 into the chamber 5. The heated water overflows from said chamber through the outlet 6 from which it may be returned to the source of supply. As the temperature of the body of water in the chamber gradually decreases owing to the admission of additional cool water, the thermostat discs gradually contract and the spring 28 returns the lever 20 to its normal position so that the weighted flap valve will fall by gravity upon its seat 12 and thus shut off the water supply. It will be apparent that a device of this construction will be very positive and reliable in its operation and that the water in the condenser chamber is thus automatically maintained at a desired predetermined temperature. It will also be apparent that a material saving in the volume of water used can also be realized by means of my invention. Further, it will be noted that the device is of such construction that it can be manufactured and sold as a unit for application to condensers now employed on various types of apparatus and does not require any material modification or change in the structure of the condenser itself.

It will be apparent that my improved water regulator as above described may also be employed with that type of condenser in which the cooling water passes through the pipe coil which is surrounded by the gases to be condensed. In this case, the thermostatic valve is mounted upon the upper end of the pipe coil extending through the bottom wall of the chamber, and as the temperature of the water in said coil varies, the valve is opened or closed more or less to regulate the flow of the cooling water through the condenser tube.

While I have herein shown and described an embodiment of my present invention which I have found to be very satisfactory in practical use, it will nevertheless be understood that the essential features of the present improvement might be exemplified in various other alternative constructions and I, therefore, reserve the privilege of resorting to all such legitimate changes in the form, proportion and relative arrangement of the several parts as may be fairly embodied within the spirit and scope of the invention as claimed.

I claim:

1. In combination with a condenser having a conduit for a cooling medium, a pivotally mounted valve controlling the flow of the cooling medium and having a lug projecting from the outer edge thereof, a yieldingly held pivoted lever, thermostatically controlled means operatively connected with said lever to pivotally move the same in one direction from its normal position, and means on said lever coacting with the lug on said valve to move said valve towards an open position in such movement of the lever to thereby regulate the flow of the cooling medium through said conduit.
2. In combination with a condenser chamber and a water supply pipe connected thereto, a casting mounted within said chamber upon the end of the supply pipe, a valve carried by said casting and normally closing communication between the supply pipe and said chamber, a lever pivotally mounted upon said casting, said valve being provided with a cam part, a member carried by the lever to coact with said cam part, and thermostatic means operatively influenced when the water in said chamber reaches a predetermined maximum temperature to actuate the lever and thereby open the valve to admit cool water from the supply pipe to said chamber.
3. In combination with a condenser chamber and a water supply pipe connected thereto, a casting mounted within said chamber upon the end of the supply pipe, a valve carried by said casting and normally closing communication between the supply pipe and said chamber, a lever pivotally mounted upon said casting, said valve being provided with a cam part, a member carried by the lever to coact with said cam part, thermostatic discs mounted upon said casting, an adjustable member carried by said lever, thermostatic discs connected with said member and opposed to the discs on said casting, and a spring connected to said lever and yieldingly holding the same in a normal position, said thermostatic discs expanding when the water in said chamber reaches a maximum predetermined temperature to thereby move said lever against the action of the spring and open the valve to admit

cool water from the supply pipe to said chamber.

4. In combination with a condenser chamber having an overflow outlet at its upper end and a water supply pipe extending upwardly through the bottom wall thereof, a valve normally closing communication between said supply pipe and chamber and provided with a cam lug, a pivotally mounted lever having means coacting with said
10 lug, a spring connected to the lever to yieldingly hold the same in a normal position,

and adjustable thermostatically controlled means operatively influenced when the water in the chamber reaches a predetermined maximum temperature to move said lever against the action of said spring and thereby open said valve to admit cool water from the supply pipe to said chamber. 15

In testimony that I claim the foregoing as my invention, I have signed my name here- 20 under.

JOSEPH MÜLLER.