

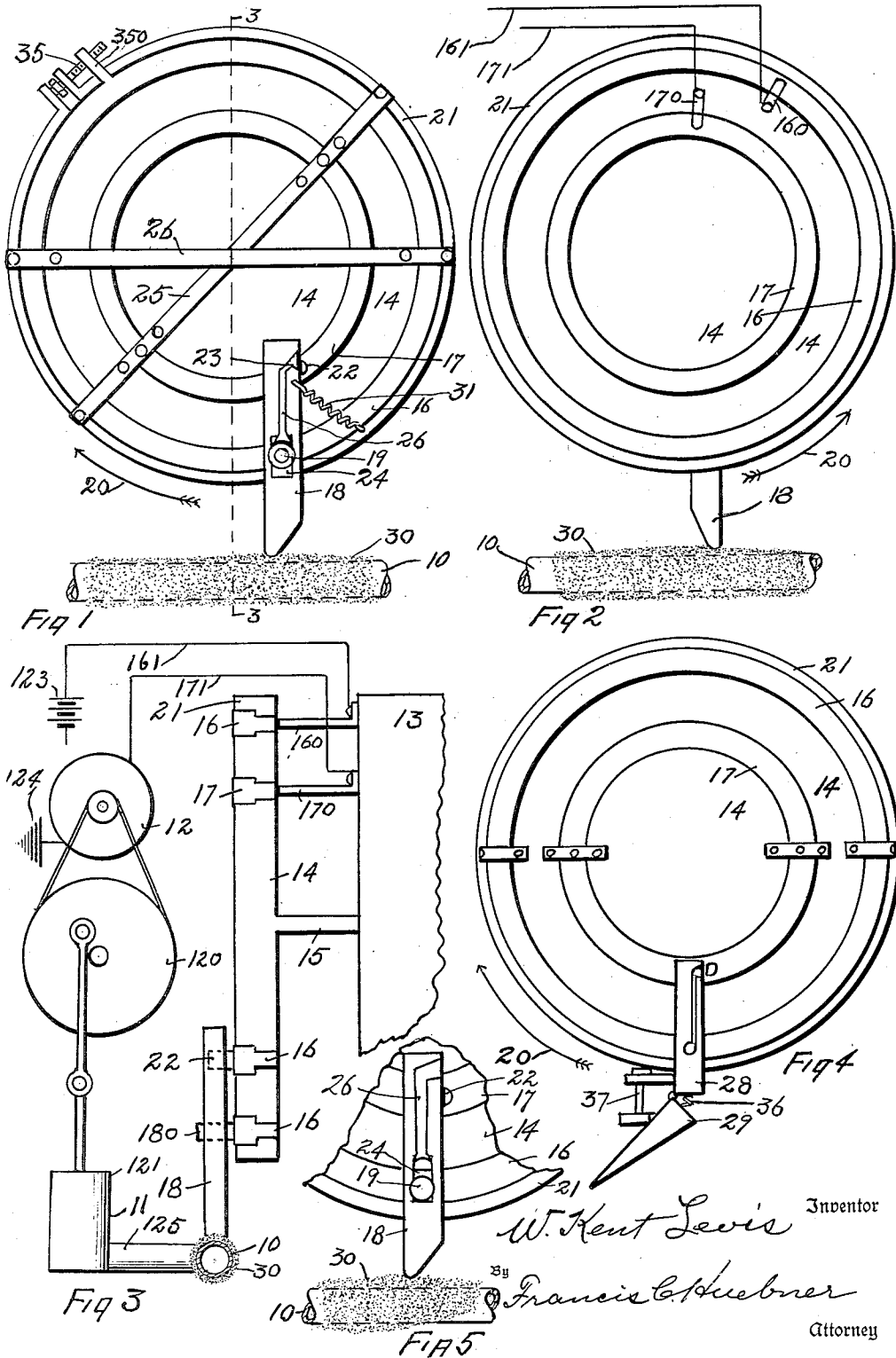
July 10, 1934.

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1,966,099

DEFROSTER FOR REFRIGERATING DEVICES

Filed Jan. 16, 1933



UNITED STATES PATENT OFFICE

1,966,099

DEFROSTER FOR REFRIGERATING
DEVICES

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Application January 16, 1933, Serial No. 651,880

4 Claims. (Cl. 62-4)

My invention relates to a defroster for a refrigerating device. It is well known that in refrigerating devices and ice making machines the refrigerator coils become covered with ice and frost to a degree that the cold created by the fluid within the pipes is insulated from the chamber in which the coils are located, and it becomes necessary from time to time to defrost the pipes. This defrosting is usually done by stopping the mechanism of the refrigerating device so that normal temperature is restored in the coils. Inasmuch as the normal temperature is usually higher than the freezing point, the pipes become warm enough to loosen the ice and frost on the outside of the pipes and the frost and ice will drop therefrom. The stopping, and subsequent starting of said mechanism is frequently done manually. It also has been done by means of clock mechanism which is adapted to stop the mechanism at regular intervals. It is noted, however, that while it is desirable to have the defrosting done at a specified hour, usually when the least use is being made of the refrigerating device, such as between 12 A. M. and 4 A. M., it is not desirable to defrost every day at that hour as the defrosting may not then be needed or desirable. The object of my invention is the construction of a device which will automatically position means for defrosting such pipes at a predetermined hour, but which means will not function unless there is a predetermined thickness of ice on the coils or pipes to warrant defrosting.

In the drawing herewith Fig. 1 is a front view of one form of my device. Fig. 2 is a rear view of the dial of the clock being a portion of the device. Fig. 3 is a partial sectional view of the device along the sectional line 3-3 in Fig. 1. Fig. 4 is a modified form of the device. Fig. 5 is a fractional view of the device showing one form of switch in an opened position.

Referring to the drawing, 10 represents a fractional pipe or coil which carries the cooling or freezing fluid. A pump 11 which is actuated by a motor 12 is adapted to circulate the fluid within the pipes. A clock 13 is positioned adjacent to the pipe 10. In my invention it is preferable that said lock be adapted to have one revolution of the dial within 24 hours, inasmuch as it is desirable to do the defrosting at night time only. In the drawing the revoluble face or dial is shown as 14. A stem 15 connects the face with the mechanism within the clock. The mechanism is not shown in the drawing but comprises the works of an ordinary clock. The clock dial has two annular rings 16 and 17 which rings are concentric with the dial

of the clock, said rings being spaced apart. The rings should be constructed of conducting material, and preferably imbedded in the dial so that a ring of said conducting material extends clear through the dial. It is noted that the body portion of the dial should be constructed of non-conducting material. Posts 160 and 170 are attached to the clock housing, so that the end of post 160 will drag on ring 16, and an end of post 170 will drag on ring 17, thus forming electrical connections between the posts and said rings. An electric line which conducts electric power to the motor is broken, and one end, 161 of said line is attached to post 160, and the other end 171 of said line is attached to post 170.

I have constructed a switch consisting of a lever 18 which is pivotally connected with pivot 19 to ring 16. The one end of lever 18 extends across ring 17, and the other end depends downward. Lever 18 is constructed of nonconducting material but contains thereon a lead 26 which extends from pivot 19, constructed of conducting material, to a point 23 which is directly over ring 17. A stop of conducting material 22 is attached to ring 17. Lever 18 can be positioned so that point 23 and stop 22 are in contact and the said contact completes the circuit of lines 161 and 171.

The arrows 20 show the direction of the travel of the dial, which direction is clockwise. It is noted that when an end of lever 18 drags on pipe 10, and on the frosted, or ice covering 30 the connection between said lines 161 and 171 is broken and necessarily the flow of electrical energy to the motor, or other means of power is stopped. When the ice is sufficiently melted so it no longer obstructs lever 18, said lever will be drawn to normal position by spring 31 so that point 23 will contact stop 22, and thus permit the restoration of the flow of the electric current to the motor.

To prevent lever 18 from binding and thereby stopping the clock when lever 18 comes in contact with the ice or frost on the coils or pipes, hole 24, which engages pivot 19, is elongated so lever 18 can have a sliding movement upwards when lever 18 is in contact with said coil or pipe. When the lever is thus raised the contact between pivot 19 and lead 26 will be broken.

It is noted that ring 17 is rigidly attached to the dial, and clamp 21 is also held in a fixed relation to the dial by braces 25 and 26. Ring 16 can be moved circumferentially. The object of the allowable movement of ring 16 is to adjust lever 18 with relation to its proximity to the coil or pipe. This adjustment is made by screw 35. Screw 35 is rotatably anchored to ears on clamp

21, and is screwed through a projection 350 on ring 16.

The form shown in Fig. 4 is a slight modification of the form hereinbefore described in respect to bar 28 which is substituted for lever 18, said bar having a pointed member 29 hingedly connected therewith. A spring 36 is adapted to hold the pointed member 29 against an adjustable stop 37, which stop limits the movement of said pointed member with relation to bar 28, and with relation to the space said point is removed from the pipes.

It is also noted that I have shown a motor as the power plant, but any means of power can be used in which an electric current is used in connection with the cooling or freezing process. The switch I have described, depending on the clock for timing the defrosting mechanism, and depending likewise on the amount of frost and ice on the pipes as to whether the defrosting means will be actuated or not, can with slight modification be used on any electrically controlled means for refrigeration, when no power plant is used therewith, as for instance with the device in which a liquid is heated until it becomes a gas, which gas is circulated in the pipes for the purpose of refrigeration. In a device of this character the liquid is heated with a flame and by using a solenoid in combination with the switch, the supply of fuel can be stopped or regulated by the frost or ice adhering to the pipes.

Having described my invention I claim:

1. In a refrigerating device having pipes through which a freezing medium is circulated and having means for impelling said circulation, said impelling means being controlled in whole or in part by an electrical current, a source of electrical energy and leads from said source of electrical energy to said impelling means, a switch positioned on said line adapted to make and to break said electrical current, timed means for moving said switch toward, across and away from said pipe over the accumulations of frost or ice on said pipes, the accumulations of frost and ice on said pipes being adapted to open said switch by means of an arm forming a part of said switch, said arm being adapted to open said switch, said

arm being positioned so that one end thereof is a spaced distance from the pipe during the period when said arm is passing over the pipe, said frost and ice being adapted to move said arm and to open said switch, and said clock means being adapted to carry said switch beyond the point where the arm comes in contact with said frost and ice.

2. A device as described in claim 1, and means for adjusting the reach of said arm.

3. In a defroster for a refrigerating device having tubes through which a freezing fluid is forced by a power plant dependent in whole or in part on a current of electrical energy, and a source of electrical energy, a clock having a rotating dial of nonconducting material, concentric rings of conducting material attached to said dial a spaced distance apart, an electric line connecting one of said rings with a source of electrical energy, an electrical line from the other ring to said power plant, switch means connecting said rings consisting of a lever of nonconducting material pivotally attached to the larger of said rings, said lever extending in one direction from said pivot to the smaller ring, and extending in the other direction to a point adjacent to one of said tubes, an electrical lead connected with the ring to which the lever is pivoted and extending along said lever adjacent to the other ring, the electrical lead on the lever being adapted to contact the smaller ring when the lever is positioned therefor, and to break said contact when the lever is moved from said first position.

4. In an electrically operated mechanical refrigerating system including an air cooling element, a normally closed switch for controlling the operation of said system, time controlled means for substantially periodically opening said switch, dependent upon the thickness of ice and frost on said air cooling element, said switch having an arm thereon adapted to open said switch, said switch being positioned at timed intervals so that the end of said arm is a selected spaced distance from said air cooling element, said time control being adapted to move the switch and the arm attached thereto across said air cooling element.

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