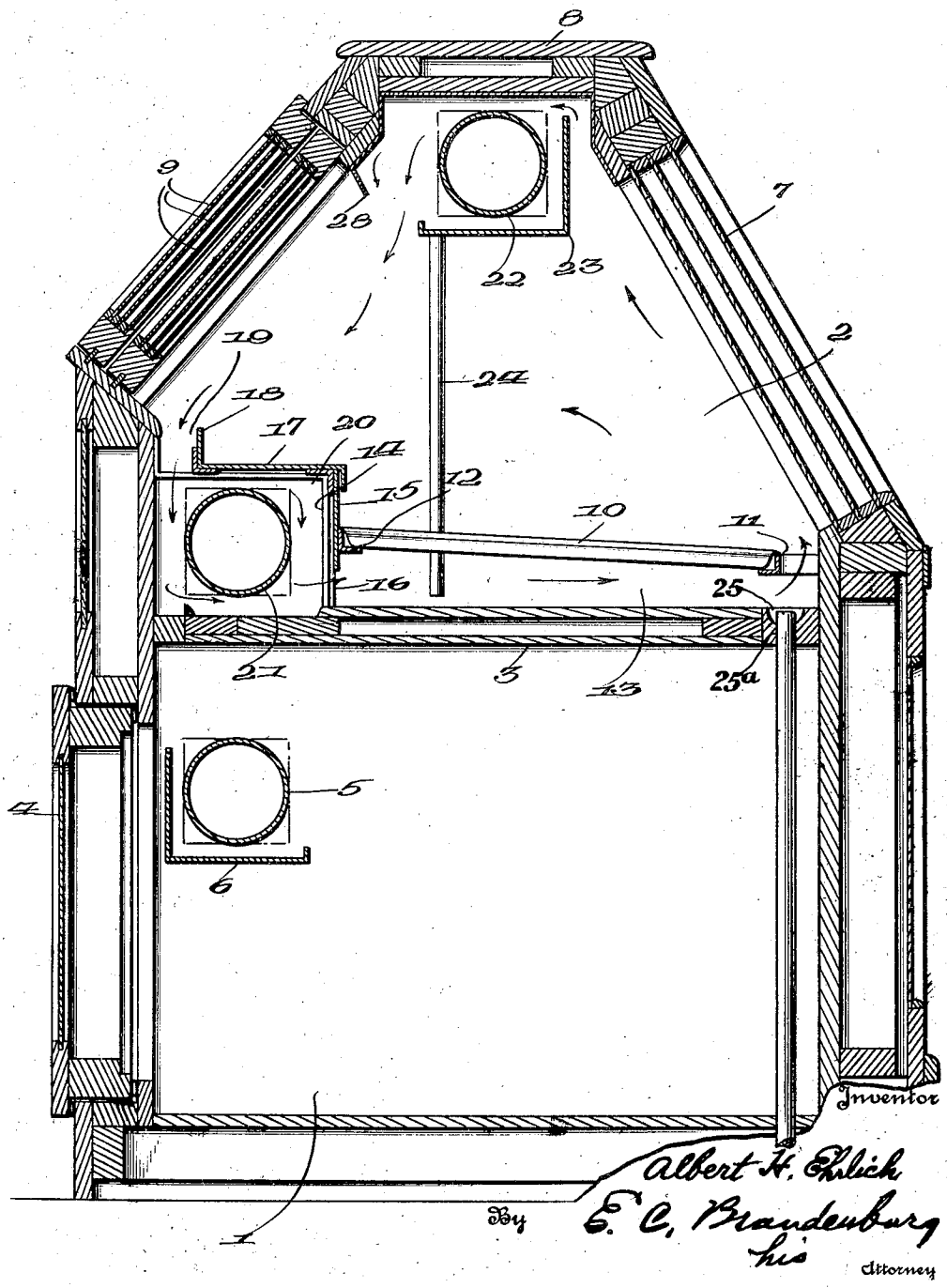
May 5, 1936. A. H. EHRLICH 2,039,685

REFRIGERATOR DISPLAY CASE

Filed Dec. 9, 1930 2 Sheets-Sheet 1

Fig. 1.



Inventor

Albert H. Ehrlich

By E. C. Brandenburg

his

Attorney

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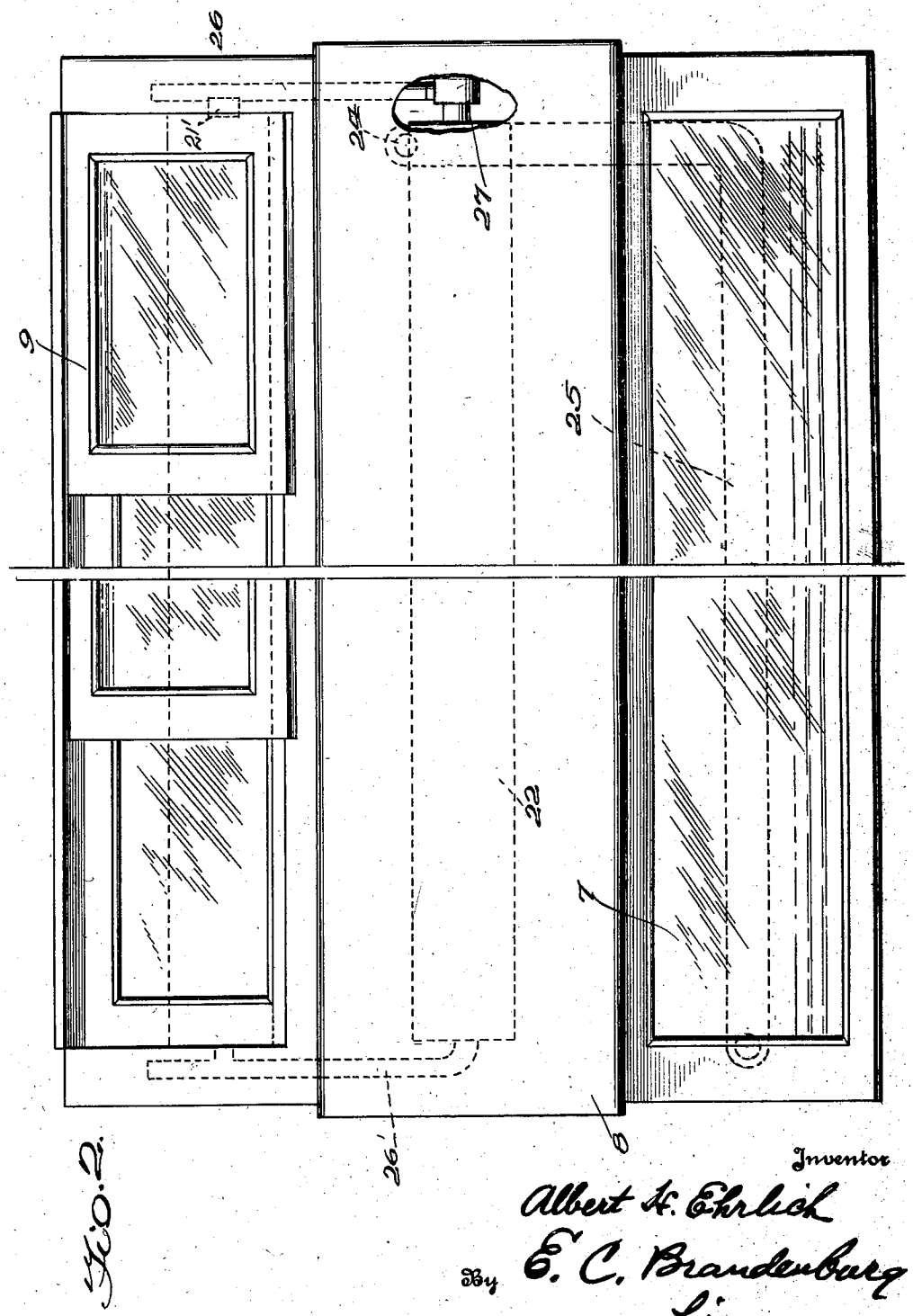

Fig. 2.

Inventor
Albert H. Ehrlich
By E. C. Brandenburg
his Attorney

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REFRIGERATOR DISPLAY CASE

Albert H. Ehrlich, St. Joseph, Mo.

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2 Claims. (Cl. 62—103)

This invention relates to an improvement in refrigerator display cases.

The invention relates to the type of refrigerator cases employing mechanical refrigeration. Considerable difficulty has been encountered in the use of mechanical refrigeration because of the large quantity of moisture taken from the air, and meats or vegetables within the case which causes those products to dry out and become discolored to a substantial extent. This has been a problem in the use of mechanical refrigerating means for display cases or the like that has been difficult of solution, and no practical means has been used heretofore which will restore the moisture to the air within the case that is taken out by the cooling coils on which the moisture is condensed.

It is the object of this invention to provide in a display case having one or more sets of coils, an automatic control for at least one set of coils which cause a defrosting of those coils and a suitable drain or receptacle is utilized for receiving the moisture from the defrosted coils and restoring the moisture to the air circulating within the display compartment. In this way, the air has its inherent moisture restored to it and to the products on display within the case so that they are not deprived of their moisture while cooled by mechanical refrigeration, and therefore do not become discolored and dry which renders them unsatisfactory and not as desirable for use.

In the accompanying drawings:

Fig. 1 is a vertical, sectional view through a refrigerator display case embodying the present invention, and

Fig. 2 is a top plan view of the same having a portion broken away.

The display case may be of suitable well known construction, and in the form illustrated it is provided with a storage compartment 1 in the bottom and a display compartment 2 in the top or upper portion separated from the storage compartment 1 by a suitable partition 3 extending transversely of the case. Doors 4 may be arranged in the back of the case for gaining access to the storage compartment 1, and this compartment may be cooled by a refrigerating coil or tube 5 extending longitudinally therein and which may have a suitable baffle 6 for directing the air about the coil 5. It is frequently desirable to maintain the storage compartment 1 at a temperature below freezing point in order to store therein frozen packaged meat or the like and the coil 5 may be provided and controlled for this purpose.

The display compartment 2 has a transparent front 7 and a closed top 8 while doors 9 are provided at the back for gaining access to this display compartment.

Platters 10 are provided for containing meat or other products on display within the compartment 2, which platters are supported on cleats 11 and 12, the former extending along the front of the display compartment and spaced therefrom while the other extends along the back portion of the compartment. The platters 10 are carried in a position spaced above the partition 3 providing a circulating space 13 between the platters and the partition so as to allow air to circulate forwardly under the platters. The cleat 12 is carried by a supporting structure designated generally by the numeral 14 and having a front baffle 15 extending therealong and downward to a point spaced from the partition 3 forming a circulating opening 16 therethrough. A top baffle 17 is arranged over the framework 14 and has an upstanding flange 18 at the back thereof which is spaced from the rear wall of the case forming a circulating opening 19 between the flange 18 and the said rear wall. The baffles 15 and 17 enclose a chamber 20 at the back of the display compartment 2 and in the lower portion thereof within which chamber 20 a cooling tube or coil 21 is disposed and suitably mounted to cool the air passing through the compartment, which cooled air is directed through the opening 16 into the space 13 beneath the platters 10, thence into the display compartment 2. Coil 21 may have a valve 21' for controlling the refrigerant passing therethrough.

In the top of the display compartment 2 is a refrigerating tube or coil 22 about which a baffle 23 extends, the lower portion of which forms a drainage receptacle, and a pipe 24 extends downwardly therefrom over a gutter 25, which gutter extends forwardly and longitudinally of the display compartment and may have an outlet 25a at one end arranged to retain moisture in the gutter 25. The gutter 25 is preferably disposed along the bottom of the display compartment 2 in the path of the cold air passing forwardly from the cooling coil 21.

Supply and withdrawal pipes 26 and 26' are shown in Fig. 2 as supplying the refrigerating medium to the coil 22, and the same or similar pipes may also supply the cooling medium to the other coils, which pipes are connected with a suitable refrigerating machine, not shown, but well known in the art. Connected with at least one of the pipes 26 is an automatic thermostatically con-

trolled shut-off valve 27 which is responsive to the temperature within the display compartment 2 and is preferably located at one end of the coil 22. The purpose of the snap-action valve 27 is to automatically cause a defrosting of the coil 22 at intervals by disconnecting the coil 22 from the pipe 26 and the refrigerating machine while the coil 21 continues to function in order to restore the moisture to the air of the display compartment by the gutter 25 and prevent a complete drying out of the air. The valve 27 may be set to shut off at a temperature of around 32° to 34°. Then when the top coil 22 is shut off, the temperature in the upper portion of the display compartment 2 rises several degrees so that the frost melts. The set temperature may be changed as desired.

In the display of frozen meats or the like, it is desirable to maintain a low temperature of between 30 and 40 degrees in the lower portion of the case, and this may be done by proper operation of the cooling coil 21 which cools the air to the low temperature desired and directs it through the opening 16 into the space 13 beneath the platters 10 and may therefore keep the meat in the platters at the low temperature desired but it should not be so cold as to freeze the water in the pipe 24 and gutter 25. When the air leaves the coil 21 it passes into contact with the bottom surface of the trays 10 containing the meat or other goods on display as well as passing over the top of the partition 3, so that there would necessarily be a rise in the temperature of the air at least to some extent by the time the air passes around the cleat 11 and over the gutter 25, and therefore there would be an absorption of moisture at that point. The air circulates from the space 13 into the display compartment 2, and by passing over the gutter 25 absorbs some of the moisture from the gutter, thus keeping the air in a moistened condition and restoring to the air at least some of the moisture taken out or condensed therefrom by the cooling coils. The gutter 25 is supplied with moisture from the coil 22 which is automatically and intermittently defrosted at intervals by the action of the snap-action valve 27 which operates at certain temperatures causing the coils 22 to be defrosted or allowing the frost to melt from the coils and the water resultant therefrom is drained through the pipe 24 into the gutter 25 in the bottom of the display compartment where it is contained and serves to moisten the air circulating in the display compartment.

In this way, the air in the display compartment is kept moistened and the meats or foods on display are not deprived of their moisture to such an extent as has been true heretofore where no provision has been made for supplying moisture to the air.

A baffle 28 is shown in Fig. 1 as turned forwardly and downwardly from the back of the display compartment 2 at the upper edge of the doors 9 so that in the event that the doors 9 are opened, the cooled air from the coil 22 is directed downwardly and forwardly and in that way is prevented from passing out through the door opening.

I claim:

1. In a refrigerating compartment, the combination of a mechanical refrigerating element in the lower portion of the compartment, a second mechanical refrigerating element in the upper portion of the compartment for respectively cooling the air in said compartment, means for automatically causing a defrosting of the second refrigerating element only, and moisture retaining means for receiving the moisture resulting from the defrosting of said element and supplying said moisture to the cooled air of the compartment.

2. In a refrigerator display case, the combination of a mechanical refrigerating element, means extending forwardly from said element for receiving articles to be cooled, said case having a passageway extending forwardly from said refrigerating element beneath said means and communicating with the space above said means at the forward edge thereof for supplying cooled air thereto, a moisture retaining receptacle for supplying moisture to the cooled air passing to the space above said means, a second mechanical refrigerating element disposed in the upper portion of the case for cooling the air and condensing moisture therein, and means for automatically defrosting said second refrigerating element only for supplying moisture to said receptacle.

ALBERT H. EHRLICH.