

Nov. 15, 1932.

D. C. McCORD ET AL

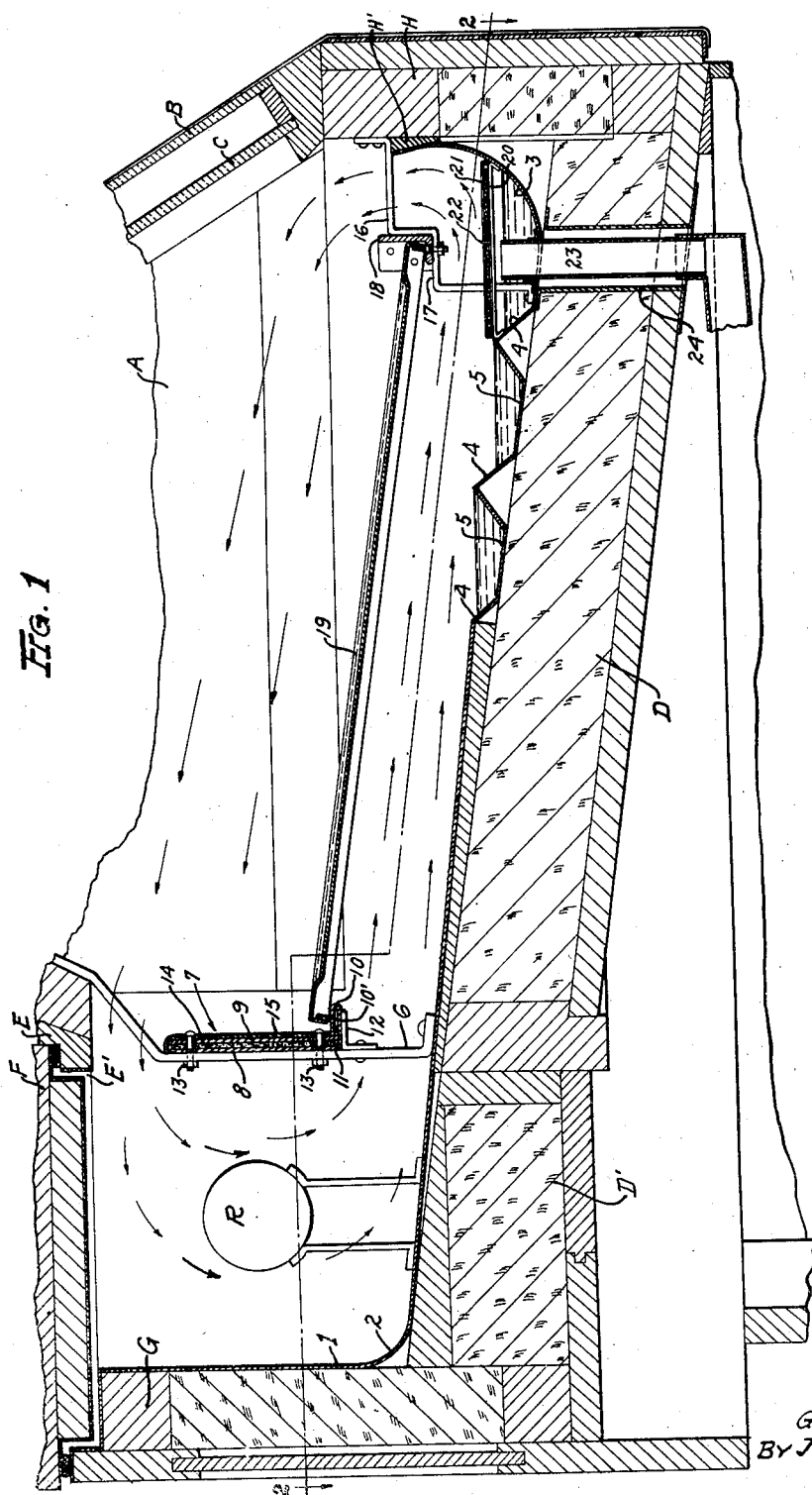
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REFRIGERATOR

Filed May 4, 1929

2 Sheets-Sheet 1

Fig. 1



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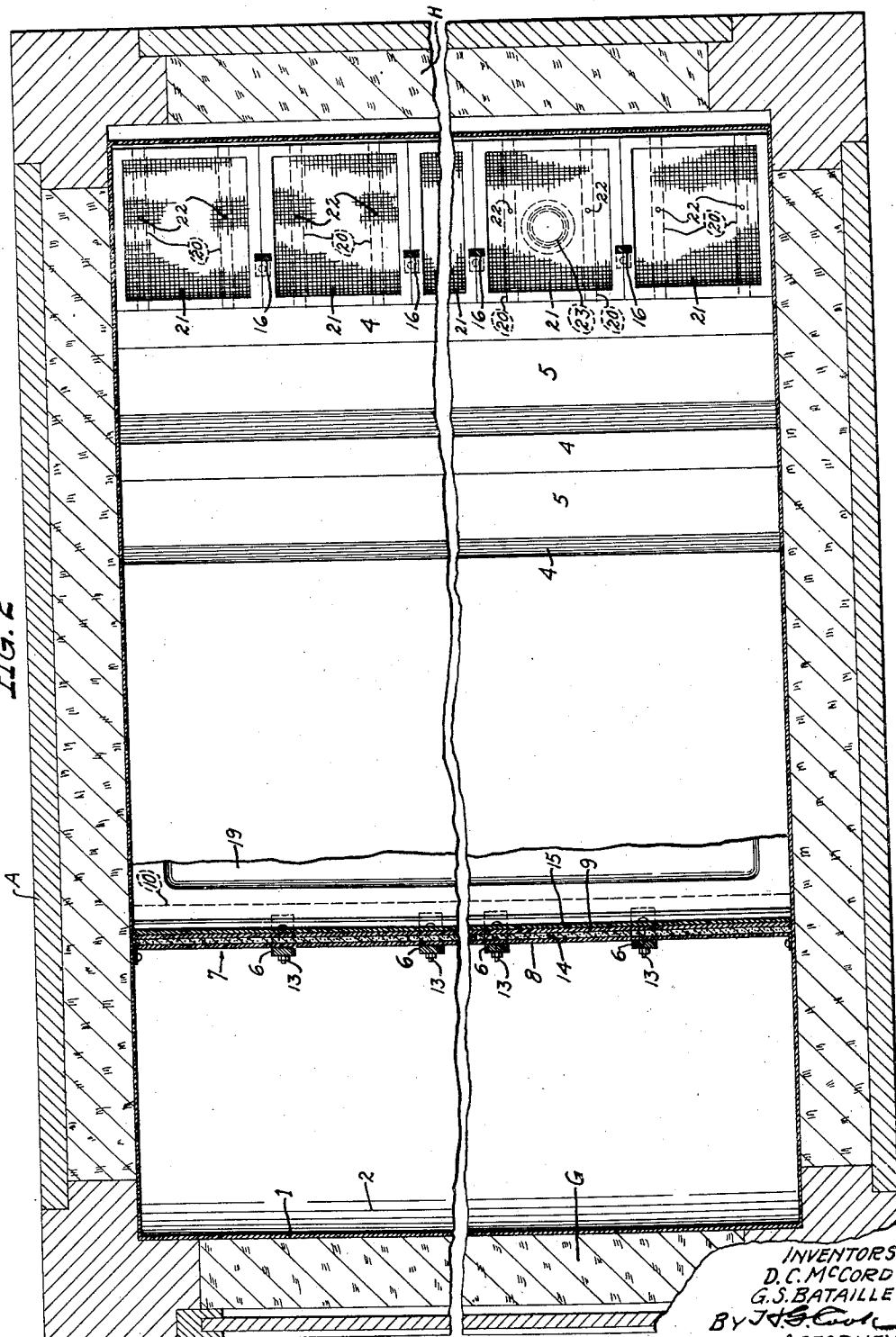
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FIG. 2



## UNITED STATES PATENT OFFICE

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## REFRIGERATOR

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This invention relates generally to refrigerators, and more specifically to display case refrigerators, the predominant object of the invention being to provide a refrigerator of this type which will function with greater efficiency than the similar refrigerators in use prior to this invention.

In the operation of such refrigerators it is of the highest importance that a circulation of air be maintained through the display case, and that the air so circulated be induced to travel in a predetermined path so that said air will travel in close contact with all of the goods being displayed in the display case. We have therefore so constructed the display case refrigerator disclosed herein that a complete circulation of air is obtained, this result being attained largely through shaping and arranging parts of the display case adjacent to the path of travel of the circulated air to induce such circulation of the air, and by removing elements from the path of travel of the circulated air formerly positioned therein, which would tend to baffle said air.

Another important feature of the invention resides in the use of a baffle which prevents radiation of the cold air from the cooling element, and hence induces circulation of air through the display case.

Still another important feature of the invention consists in providing the display case with a downwardly and forwardly inclined bottom wall along which the cold air may conveniently follow its natural course from the cooling element, and in providing said inclined bottom wall with fluid-receiving pockets or riffles, whereby the circulating air within the display case is maintained in a humid condition.

Fig. 1 is a fragmentary vertical section of a display case refrigerator constructed in accordance with our invention.

Fig. 2 is a horizontal section on line 2—2 of Fig. 1.

In the drawings, wherein is shown, for the purpose of illustration merely, one embodiment of the invention, A designates a display case refrigerator constructed in accordance with this invention. The display refrigerator A, as clearly shown in the drawings, comprises a rectangular casing provided with suitable insulated walls, and the front wall of the display case refrigerator at the upper portion thereof being comprised of a pair of spaced transparent panels B and C fixed in place and inclined downwardly and outwardly, as shown in Fig. 1, to provide for the convenient inspection of the goods displayed within the display case.

By referring to Fig. 1 of the drawings, it will be noted that the refrigerator display case A is provided with a bottom wall portion D, which is inclined downwardly in a direction toward the front of the display case, and that an associated bottom wall portion D' is substantially horizontal, said bottom wall portions D and D' being suitably insulated against the exchange of temperature there-through. Also, Fig. 1 indicates that our improved display case construction includes a substantially horizontal wall E, which is located in vertical spaced relation with respect to the bottom wall portion D', and said horizontal wall E is provided with an opening E' adapted to be closed by a cover F. The space between the horizontal walls D' and E, which space is closed by a rear wall G, comprises the cooling element receiving compartment, and said cooling element which is designated by the reference character R may be in the form of a mechanical refrigerating unit or a receptacle for ice. The cover F closing the opening E' in the horizontal wall E serves to allow access to the cooling element R.

1 designates a lining member, preferably formed of suitable metal which is attached in any convenient manner to the inner faces of the rear wall G, bottom wall portions D' and D, and front wall portion H, the last mentioned wall portion being disposed beneath the front wall portion provided by the transparent panels B and C. The lining member 1 follows the stepped formation at the top of the rear wall G at the opening E', and is arranged in contact with the inner faces of the rear wall G and the bottom wall portions D' and D. Also, said lining member at the front of the display case is attached to a member H' fixed to the inner

face of the front wall portion H. At the point where the rear wall G joins the bottom wall portion D' the lining member 1 is provided with a curved portion 2, and at the point where the bottom wall portion D joins the front wall portion H said lining member is provided with a second curved portion 3. At the forward portion of the bottom wall of the display case the lining member 1 is provided with upwardly extended corrugations 4, which provide pockets or riffles 5, said pockets or riffles being extended continuously longitudinally of the display case from one to the other end thereof.

Spaced longitudinally of the display case A is a plurality of brackets 6 having vertically disposed portions, the opposite end portions of said brackets being secured to the horizontal wall E and the bottom wall portion D respectively. Secured to the brackets 6 and extended longitudinally of the display case is a baffle 7, said baffle comprising a sheet of material bent upon itself, as shown in Fig. 1, to provide a rear wall 8 and a front wall 9 spaced from each other. At the bottom of the front wall 9 the sheet of material is bent to provide a flange 10 shaped to provide a recess 10' into which a substantially horizontal flange 11 at the bottom of the rear wall extends. The baffle 7 rests upon angular elements 12 secured to the respective brackets 6, and said baffle in turn is secured to said brackets by suitable fastening devices 13 which, if desired, may extend through the baffle and through the respective brackets. Interposed between the spaced rear and front walls 8 and 9 of the baffle is a layer of cork or other suitable insulating material 14, and arranged in contact with the outer face of the front wall 9 of the baffle is a facing strip 15 of suitable material.

Located at the forward portion of the display case is a plurality of brackets 16, which are spaced longitudinally of the display case as shown in Fig. 2, each of said brackets being provided with associated horizontal and vertical portions providing a rectangular seat 17. The rectangular seats of the aligned brackets 16 support an elongated angular member 18, said member being secured at its opposite ends to the opposite end walls of the display case. Supported at its rear edge portion by the flange 10 of the baffle 7 and at its front edge portion by the horizontal leg of the angular member 18 is a shelf 19, on which the goods being displayed in the display case are supported, said shelf being solid as differentiated from perforated or in the form of wire mesh to prevent short circuit of air therethrough.

Fixed at their opposite ends to the forwardmost upwardly extended corrugation 4 of the lining member 1 and the curved portion 3 of said lining member 1, respectively, is a plurality of brackets 20 which are spaced

longitudinally of the display case. The brackets 20 support a strip of wire mesh 21, one or more of said brackets being provided with an upwardly extended element 22 which is projected between adjacent wires of the wire mesh to prevent accidental displacement of said wire mesh. 23 designates an overflow pipe which leads to a suitable drain, said overflow pipe being extended through the bottom wall portion D at a point between the forwardmost corrugations 4 and the curved portion 3 of the lining member 1, and the open top of said drain pipe being disposed at a point spaced upwardly from the top face of the lining member 1. The overflow pipe is surrounded by a sleeve 24 which extends through the bottom wall portion D.

In the use of a display case refrigerator constructed in accordance with this invention, cold air passing from the cooling element R will flow forwardly and downwardly along the inclined bottom wall portion D. In this connection it is pointed out that the cold air is permitted to follow its natural course in a downward direction, and as a result thereof said descending air moves in the direction indicated by the arrows in Fig. 1. The bottom wall portion D and the shelf 19 provide a definite channel or passageway through which the forwardly moving air will pass, and when said forwardly moving air reaches the forward end of its course at the front wall of the display case the curved portion 3 of the lining member 1 will deflect said air, which at this point has increased slightly in temperature, upwardly as indicated by the arrows. The circulated air then passes rearwardly from the front to the rear of the display case in the path indicated by the arrows in Fig. 1, this rearwardly moving air passing in contact with and in close proximity to the goods on the shelf 19, and over the upper edge of the baffle 7 to the cooling element.

It is obvious, therefore, that a continuous and definitely controlled circulation of cold air passes from the cooling element R through the display case, and as a result thereof the interior of the display case may be maintained at the desired low temperature.

Particularly where a mechanical refrigerating unit is employed it is necessary to provide means for maintaining the air within the display case in a humid condition so that meats and other articles of foodstuff within the display case are not necessarily dried out by the dry condition of the air within said display case. In the use of the present invention this is accomplished by placing water in the pockets or riffles 5 formed in the lining member 1, and as the circulating air passes immediately above the water in said pockets or riffles, said air will be supplied with the necessary moisture.

The function of the baffle 7 is to prevent radiation of cold air from the cooling element R, it being plain that any cold air radiated by the cooling element will be baffled by the baffle in a manner to cause said cold air to be circulated in the manner already described. Also, the function of the strip of wire mesh 21 is to prevent small articles being displayed on the shelf 19 from falling from the front edge portion of the shelf into the water beneath said front edge portion of the shelf. In addition to this the strip of wire mesh 21 to a large extent screens the water in the bottom of the display case from the view of a person looking through the transparent panels B and C of the front wall of the display case.

We believe that our arrangement of providing the bottom wall of the display case with pockets or riffles which constitute an integral part of the bottom wall construction is novel, and this arrangement has a decided advantage in that it eliminates the expense incident to the production of a separate riffle pan, as used heretofore. Also, by providing the lining member 1 with the curved portions 2 and 3 we prevent the production of pockets which would interfere with the free circulation of air.

It will be noted that the refrigerator display case disclosed herein is so constructed that freedom of circulation of air is provided for, in that only the brackets 6 and 16 are disposed directly in the path of circulation of the air, and these brackets are of relatively small dimensions and are spaced to provide wide spaces therebetween through which the air may pass.

We claim:

A display case refrigerator comprising a casing having a forwardly and downwardly inclined bottom wall, a lining member permanently secured to said bottom wall, said lining member being provided with a water-receiving depression, and a cooling element, said cooling element being positioned so that circulating air passing from said cooling element will move immediately adjacent to said water-receiving depression, said lining member having oppositely disposed and integrally formed curved portions for directing the air moving from said cooling element.

In testimony that we claim the foregoing we hereunto affix our signatures.

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