May 26, 1931. W. ABRAHAMSON 1,807,332

ARTIFICIALLY COOLED DISPLAY CASE

Filed Nov. 16, 1929

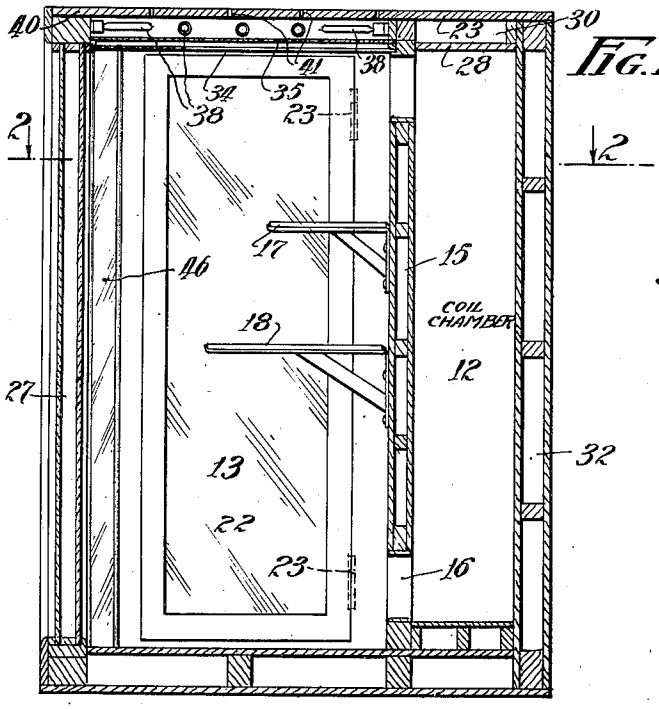


FIG. 1.

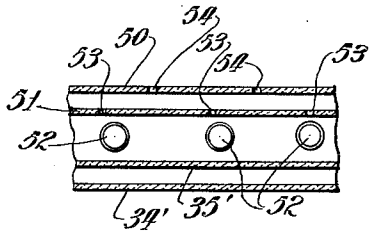


FIG. 3.

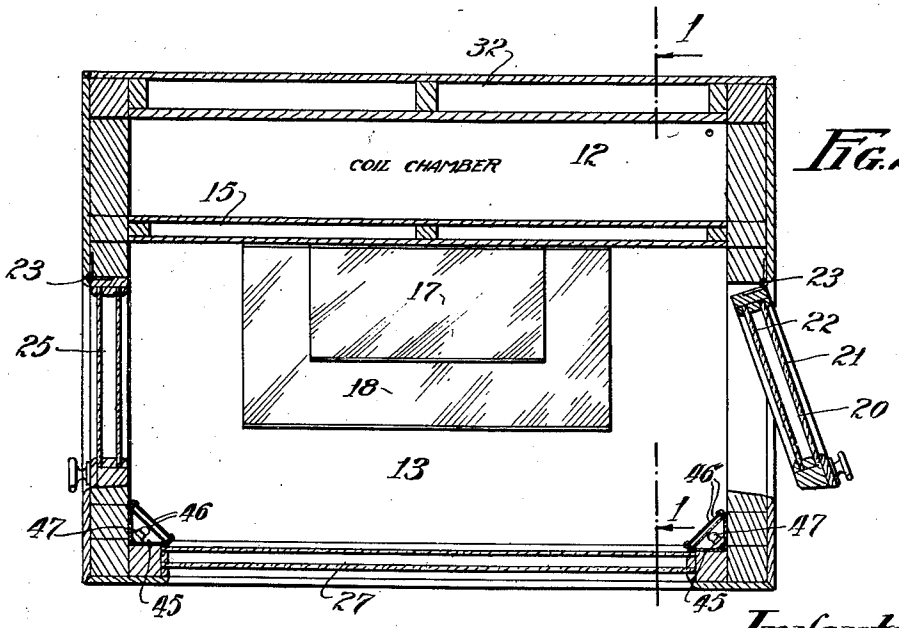


FIG. 2.

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UNITED STATES PATENT OFFICE

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ARTIFICIALLY COOLED DISPLAY CASE

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Objects of the present invention are to provide a display case for cut flowers and the like, that combines an artificially cooled compartment for containing the articles on display with means for illuminating the display by means of electric lamps that are themselves not apparent to the person viewing the display. There are other objects that will appear.

With reference to the accompanying sheet of drawings:—

Fig. 1 shows a side section view along the line 1—1 in Fig. 2.

Fig. 2 shows a top plan view along the line 2—2 in Fig. 1.

Fig. 3 shows a detail of the top, in a modified embodiment, showing the lamps of a portion of the top, together with the three glass plates forming the insulating barrier.

I am aware that it is not new to display cut flowers, and the like, in a glass enclosed show case, which is artificially cooled, but I believe that I am the first to devise such a show case wherein means for illuminating the display space is accomplished by means of electric lamps which are so positioned and arranged that a diffused light from these lamps causes the display space to be uniformly illuminated from artificial light sources not apparent to the observer, and thus the said sources in themselves will not attract the attention of the observer from the flowers or other merchandise on display in the display case.

With further reference to the drawings, there is a cooling unit compartment 12, which may contain ice or other suitable cooling agent, or a coil of pipes or other mechanical means for containing circulating cooling brine or other agency. This compartment is not essentially different in purpose from the cooling unit chambers found in well known refrigerators.

The display compartment 13 is contiguous to the compartment 12, separated by a suitable dividing wall 15, which has a lower opening 16 along the bottom or floor line for permitting cooled air from the cooling unit to pass into the display compartment 13. There is an upper opening along the top or ceiling line for permitting the warmer air arising to the ceiling of the display compartment to pass over into the cooling unit chamber. That is to say, there is a current of cooled air continually passing from the source of cold down through the opening 16, and a current of warmer air, as would naturally arise to the ceiling to pass into the cooling unit chamber to take the place of cooled air leaving it at the bottom via the opening 16 referred to.

The display compartment 13 has two shelves, 17 and 18 suitably affixed to the dividing wall 15. These shelves are for carrying the flowers or other articles on display.

The door 20 used in entering the display compartment has transparent glass plates 21 and 22, spaced about two inches apart forming an air space to enhance the insulating qualities over what a single glass plate for the door would afford. The door panel is therefore transparent and the flowers or other articles on the shelves 17 and 18 may be viewed through this door, which is swung by the hinges 23. A similar door 25 is on the opposite side of the display compartment to facilitate entering the said compartment from either side.

The front wall 27 of the display compartment consists of two plates of transparent glass, spaced about two inches apart to enhance the insulating qualities.

The top of the cooling unit compartment 12 is made of a ceiling of wood or other suitable material 28 and an outside covering 29 of wood or other suitable material, there being an air space 30 of about two inches between the ceiling and outside covering to enhance the insulating qualities. In fact this space, as well as the similarly arranged back wall 32, may be filled with suitable insulating material so as to prevent as far as practicable the cooling agent from absorbing heat from outside the display case.

A salient feature of my invention is the ceiling and top of the display compartment and the method of lighting the compartment as will appear. The ceiling consists of two plates of glass 34 and 35 spaced about two inches apart so as to have an air insulating characteristic in order to prevent as far as practicable heat being absorbed by

the air of the display compartment from the outside air and from the lamps 38 located above the plate 35. The plate 34 is preferably made of white-opal glass, so that while it is translucent enough to prevent seeing the outline of the lamp bulbs above, it is transparent enough to not seriously screen the light emitted from the lamps, and it serves to diffuse this light over the interior of the display compartment. The glass plate 35 is transparent.

The top 40 of the display compartment is covered by wood or other suitable material so as to prevent the light reflecting out into the room containing the display case. Moreover, the under face of the top 40 is faced with polished sheet aluminum or other light reflecting material not easily affected by the heat of the lamps 38 to further enhance the diffusion efficiency of the lighting of the interior of the display case. That is, in place of permitting the light directed upward towards the wooden top to be largely absorbed, this light is reflected back more or less diffused and passes through the transparent plate 35 and the translucent plate 34 to the interior of the display compartment.

While I have referred to the plate 34 being of white-opal glass, it is to be understood that this glass, or suitable substitute material, may be of any desired color depending upon the tint of lighting it may be desired to have on the display. Moreover, this plate 34 may be made interchangeable if desired so that the tint of the illumination may be changed from time to time, in order to change the effect and continue to be attractive to those who may see it often.

The top of the display compartment has small vent holes 41 to permit heated air from the lamps to readily escape and so hold down the temperature in this space to as low point as practicable.

At each of the front corners 45 is a pair of plates of glass 46, disposed similarly to the plates 34 and 35, and a plurality of electric lamps 47 positioned behind the pair of plates 46. These plates are positioned approximately two inches apart, the plate nearest the lamp being clear glass, and the plate facing the display compartment being white-opal, having in mind, of course, that this may be varied with the color chosen for the top, as referred to, or there may be a blending of colors. That is, the translucent plate for the corners may not necessarily correspond with that used in the top, depending upon the effect desired.

The space in the corner partitioned off by the pair of plates 46 enclosing the lamps 47 is preferably covered by polished sheet aluminum of other suitable reflecting material to insure obtaining the maximum of illumination and diffusion of light in the display compartment, consistent with the candle power of the lamps 47.

Suitable air vents will be provided at the bottom and top of the corner spaces 45 to allow the heat from the lamps 47 to escape.

It is thus seen that I have provided an attractive artificially cooled display case wherein it may be attractively illuminated by means of light sources that are not obtrusive to the viewer, detracting his attention from the display, while at the same time so arranged that the heat emitted from these lights is not absorbed by air in the display case and therefore in itself saving considerable in refrigeration expense.

While the exemplary disclosure chosen to illustrate my invention relates to displaying cut flowers or the like to persons viewing it from the sides and front, it will be understood that my invention may be employed in other ways. For example, the display case may be made lower and so varied in design that its top 50 will answer for a counter wherein articles of food are displayed below. Under this condition the modification shown in Fig. 3 may be employed. The plates 34′ and 35′ correspond to plates 34 and 35, respectively. Then there is an added transparent plate glass 51 placed over the lamps 52. The top 50, which may serve as a counter may be made of white-opal glass or other material. In fact, this top may be made of transparent glass. Suitable air-vent holes 53 are placed in plate 51, and suitable air-vent holes 54 are placed in the top 50, said air-vent holes being arranged in staggered relation, whereby the heated air from the lamp compartment may readily escape without permitting the entrance of the outside cold air.

By providing the multi-layered glass top for the display chamber 13, it will be noted that said chamber may be efficiently and effectively illuminated by exterior flood lights, or by the usual ceiling lights used in the illumination of the store or room in which the refrigerator may be placed, thus eliminating the use of any interior lighting fixtures, such as the lamps 52 and 47. It will therefore be apparent that I have provided a construction of display case, whereby the artificially cooled display chamber provided therein may be fully illuminated by lighting means disposed outside of the case.

I claim:

A refrigerated show case, comprising bottom, top, rear and side walls, a multi-layered window closing the front of said case, multi-layered glazed doors for closing the sides of said case, and a multi-layered glass top for said case, a vertical wall disposed adjacent the rear wall and spaced therefrom to form a cooling chamber and a display chamber, the said wall being spaced from the top and bottom walls of the case to provide passages for the circulation of air between said cool-

ing and display chambers, the multi-layered glass top comprising a pair of spaced double plate glass sections between which is formed a compartment adapted to permit the mounting therein of a plurality of incandescent bulbs for illuminating the display chamber, the outer one of said double plate glass sections forming the top wall of the case being provided with a plurality of staggered ventilating openings for permitting the escape of the heated air from said lamp compartment.

In testimony whereof, I affix my signature.

WILLIAM ABRAHAMSON.