May 24, 1932. E. J. AHRENS 1,860,273

REFRIGERATOR APPARATUS

Filed Jan. 26, 1928

Fig. 1.

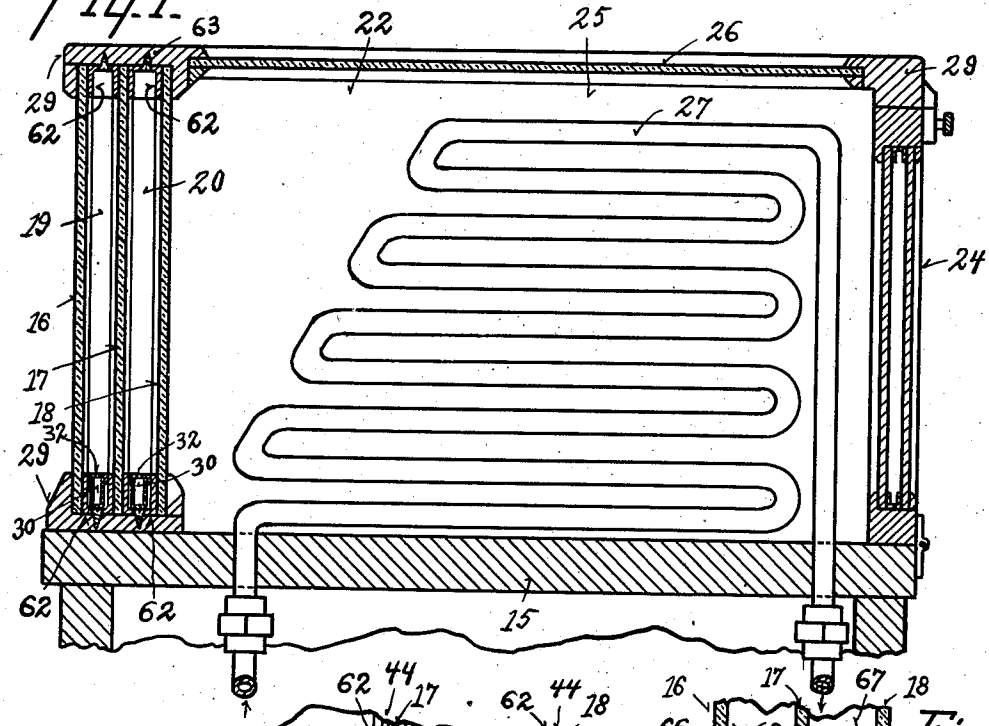


Fig. 2.

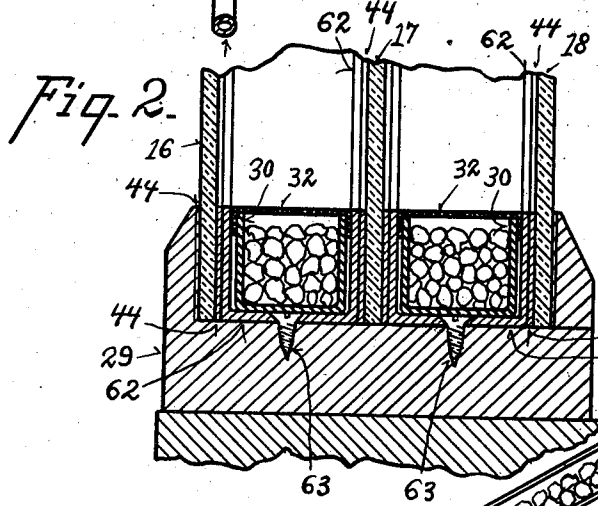


Fig. 4.

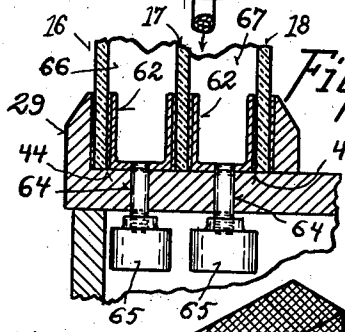
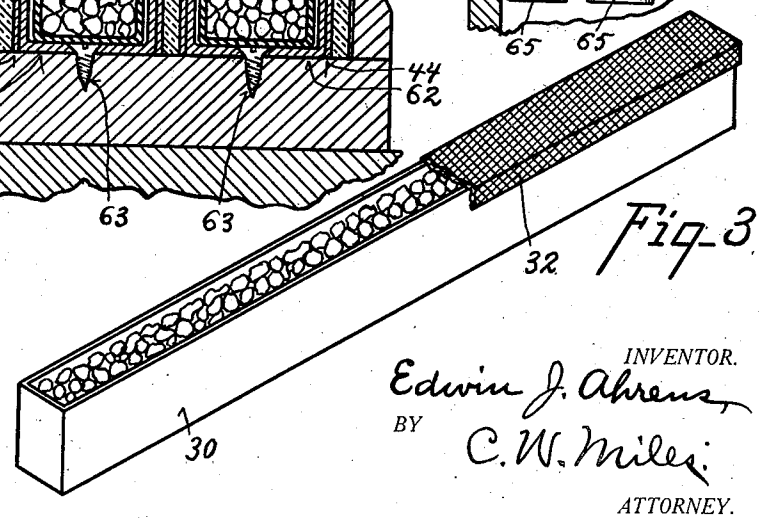


Fig. 3.



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UNITED STATES PATENT OFFICE

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REFRIGERATOR APPARATUS

Application filed January 26, 1928. Serial No. 249,734.

My invention relates to improvements in show case refrigerators, refrigerator windows and doors, refrigerator display counters and similar refrigerated containers. One of its objects is to provide a refrigerated show case having a plurality of transparent walls with intervening air spaces, which air spaces are kept substantially free from moisture and the faces of the glass forming the walls of said air spaces are kept clean and bright and free from deposits of dust or condensed moisture or a combination of both. Another object is to provide means whereby said air spaces are kept clear, sweet, and free from any accumulated moisture, gases or substances tending to detract from the appearance or odor of the show case. Another object is to provide a multiple walled transparent show case in which the faces of the transparent walls may be kept clean and bright and free from deposits upon their faces tending to decrease the degree of transparency or injure the appearance of the show case. My invention also comprises certain details of form and arrangement and combination of components, all of which will be fully set forth in the description of the accompanying drawings, in which:

Fig. 1 is a transverse vertical section through a refrigerated show case embodying my invention.

Fig. 2 is an enlarged sectional detail of a portion of the multiple wall structure and its air spaces and means to keep the walls thereof clean and bright.

Fig. 3 is a perspective view of one of the air space trays detached.

Fig. 4 is a sectional detail illustrating a modification.

The accompanying drawings illustrate one embodiment of my invention in which 15 represents the insulated bottom or floor board of a show case, 16, 17 and 18 represent a series of plates of glass with interposed air spaces 19 and 20 forming together an insulated front wall for the show case. Side or end walls 22 similar in structure to the front wall are provided. The rear wall may be composed of a series of hinged or sliding doors 24, serving to give access to the interior compartment 25 of the show case. A single transparent top wall 26 is usually employed, as there is comparatively little tendency for refrigeration losses to occur through the top plate. If desired, however, the top plate may also be constructed of two or more transparent plates with an intervening air space, similar to the front and end plates.

Within the compartment 25 is located a refrigerating member 27, for instance a coil of pipe through which cold brine or ammonia is adapted to be circulated. The compartment 25 also serves to contain the articles to be refrigerated and displayed, as for instance food products or meats. The insulated bottom 15 and the doors 24 may be constructed of any relatively good heat insulating material. The transparent plates are set rigidly in a framework 29 composed of wood or other heat insulating material.

Heretofore where an attempt has been made to employ multiple transparent show case walls in refrigerated show cases, refrigerator windows or doors, with interposed air spaces, the faces of the glass plates forming the walls of the air spaces, and which are inaccessible for cleaning purposes quickly became clouded over and rendered only partially transparent, due to deposits of dust or moisture, or combination of moisture and solid particles, which gave the show case or window the appearance of not having been properly cleaned, and also tended to develop odors as well as detract from the appearance of the show case. In order to obviate these difficulties I provide preferably in the lower portion of each air space or air chamber a relatively long and narrow tray or cartridge 30, in which I place one or more chemical substances adapted to absorb the moisture and other gases or substances having a tendency to give out odors. For instance I place a substance adapted to absorb moisture within the trays or employ a dehydrating substance and finely divided charcoal, either together in one compartment of the tray or separately in separate compartments of the tray, or any dehydrating chemicals or substances. In setting and sealing the transpar-

ent plates 16, 17, and 18 into the framework 29 I preferably employ metal channel bars 62, which are secured to the framework 29 by means of screws 63. Sheets of wool felt, cork-board or similar yielding sealing material 44 coated with asphaltum, putty or similar sealing or cementing material are interposed between the outer walls of the bars or frames 62 and the faces of the plates 16, 17 and 18 to seal the joints and provide dead air spaces between the plates 16, 17 and 18 and prevent moisture or gases entering said spaces after they have been sealed. The bars or frames 62 serve also as a convenient means to assemble, support and uniformly space the plates 16, 17 and 18 relative to the frames 29. The chemically charged trays 30 with their lids 32 are seated within the channels of the bars or frames 62.

In the modification Fig. 4, a metal conduit 64 leads from each of the dead air spaces 66 and 67 between the plates 16, 17 and 18 to the exterior of the frame 29, where a chemical chamber or cartridge 65, containing a dehydrating or a dehydrating and deodorizing chemical is adapted to be detachably threaded to or otherwise hermetically sealed to the end of the conduit 64 outside of the frame 29, so as to make the chamber of the cartridge 65 a part of the sealed dead air spaces 66 and 67. The trays 30 are preferably covered with lids 32 of fine mesh screen wire. The frames 62 and trays 30 are introduced as the transparent plates 16, 17 and 18 are mounted in the framework 29, and the joints between the framework 29 and the plates 16, 17 and 18 are sealed tightly by means of putty, cement, cork, linen, felt, rubber or a similar mounting material 44, after which the chemical substances in the trays 30 absorb substantially all of the moisture from the air in the compartments between the plates 16 and 17, and between the plates 17 and 18, and also any gases possessing an odor and thereby prevent moisture carrying out a cycle of movement or migration in said sealed compartments and prevents any film of solid matter being formed or built up upon the faces of the plates 16, 17 and 18 forming the wall of one of said air spaces, due to the presence of moisture and the adhesion of solid particles to the glass faces caused by the presence of moisture thereon, or the migration of moisture from one part to another of the faces of said plates within said air spaces. I am thus enabled to construct multiple walled refrigerated show cases, counters, or freezers having air spaces, in which the faces of the glass plates in contact with said air spaces remain clean and bright and free from deposited moisture or clouded appearances indefinitely, and in which odors are eliminated and prevented from developing.

The apparatus herein shown and described is capable of considerable modification within the scope of the claims without departing from the spirit of my invention.

What I claim is:

1. In a refrigerator wall section having a frame and spaced multiple transparent panels defining sealed chambers, U-shaped channel members rigidly mounted in said frame and serving as spacing members for said transparent panels and as pockets for containers, containers in said channel members, a dehydrating substance in said containers adapted to dehydrate the gaseous contents of said sealed chambers, whereby said transparent panels of said sealed chambers will be maintained clean and free from deposits of solid or liquid substances.

2. In a refrigerator wall section having a frame and spaced multiple transparent panels defining sealed chambers, channel members mounted in said frame and serving as spacing members for said transparent panels, containers in said channel members for receiving a dehydrating substance to dehydrate the gaseous contents of said sealed chambers, whereby said transparent panels will be maintained clean and free from deposits of solid or liquid substances.

In testimony whereof I have affixed my signature.

EDWIN J. AHRENS.