G. O. SCHULZ.

WALL CONSTRUCTION.

APPLICATION FILED MAR. 10, 1920.

1,383,766.

Patented July 5, 1921.

2 SHEETS—SHEET 1.

Fig. 1.

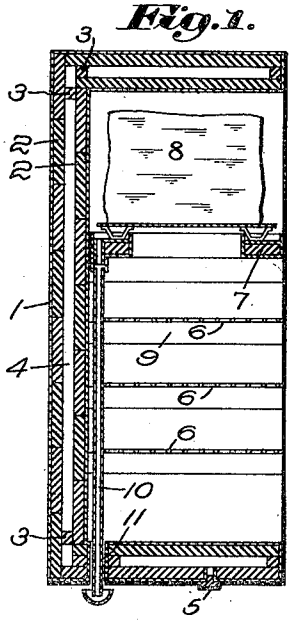


Fig. 2.

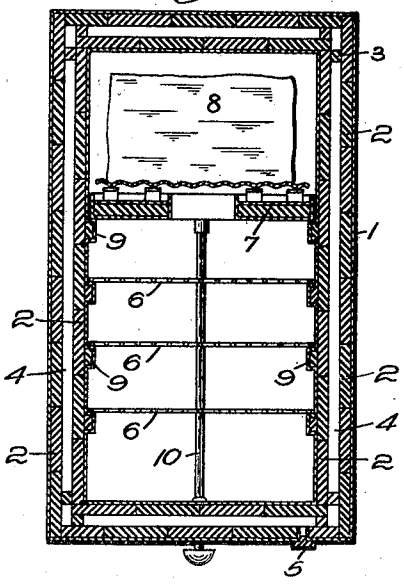


Fig. 3.

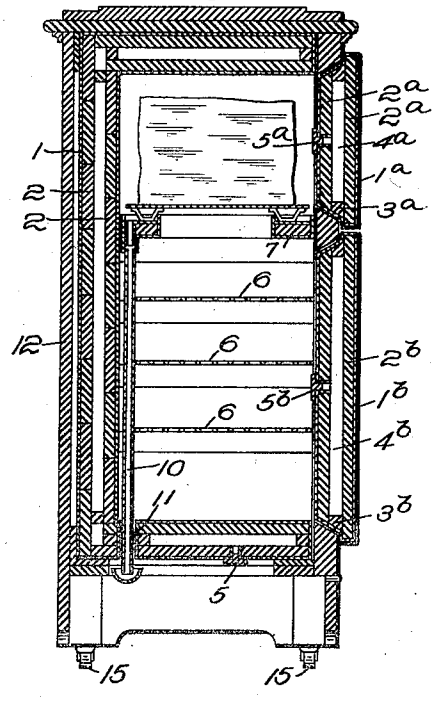
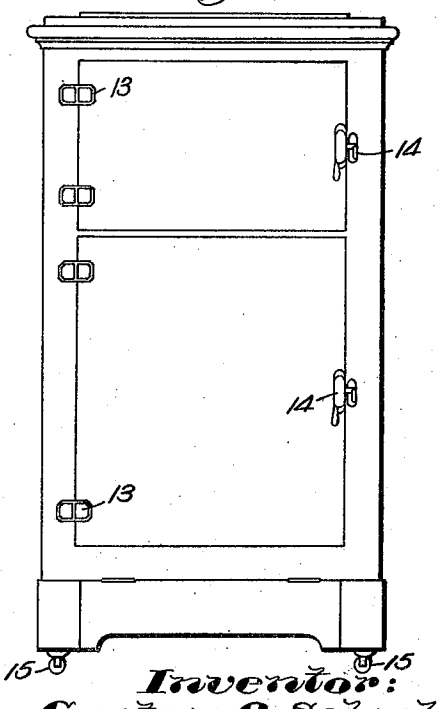


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 2.

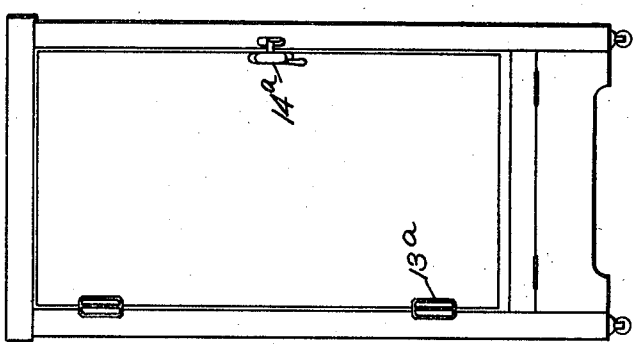


Fig. 6.

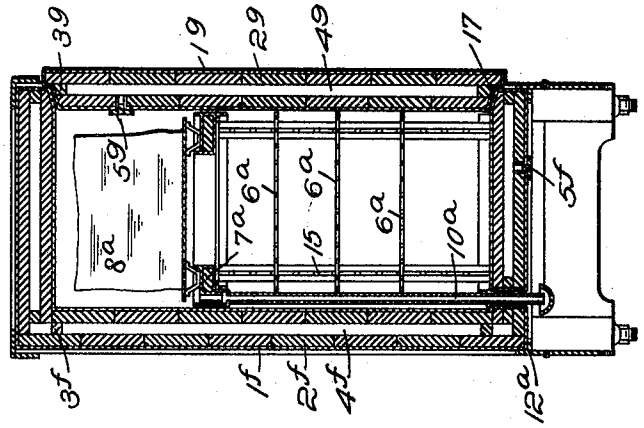
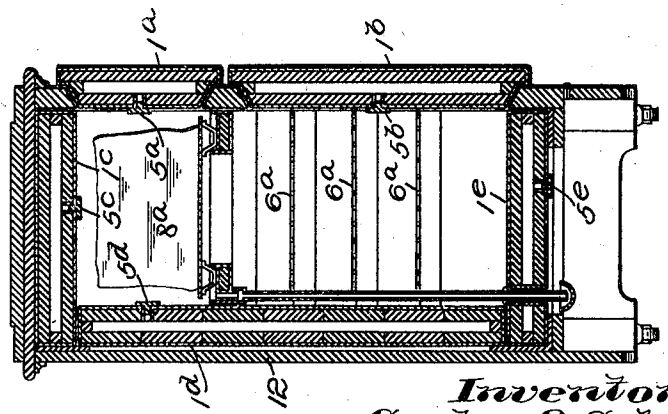


Fig. 5.



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UNITED STATES PATENT OFFICE.

GUSTAV O. SCHULZ, OF REVERE, MASSACHUSETTS.

WALL CONSTRUCTION.

1,383,766. Specification of Letters Patent. Patented July 5, 1921.

Application filed March 10, 1920. Serial No. 364,811.

To all whom it may concern:

Be it known that I, GUSTAV O. SCHULZ, a citizen of the United States, and a resident of Revere, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Wall Construction, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to wall construction for various purposes and more particularly to wall construction for containers which, in the disclosed embodiment of the invention, are typified by a vessel adapted to receive a refrigerant and to support articles to be subjected to refrigerant action.

In order that the principle of the invention may be readily understood, I have disclosed in the accompanying drawings several adaptations only of my invention, and to which the same is in no wise limited.

In said drawings,—

Figures 1, 2, 3, 5 and 6 are vertical transverse sections of refrigerators to which I have shown my invention as applied, Figs. 1 and 2 representing the refrigerator in an incomplete condition; and

Figs. 4 and 7 are front elevations of the respective refrigerators.

I shall proceed to describe that embodiment of my invention herein appearing as a refrigerator, but it is to be understood that the wall construction to which my invention relates may be employed not only in refrigerators, but in walls for receptacles or containers of general application. My invention, however, is peculiarly applicable in connection with containers adapted to receive ice or other refrigerating material and adapted for cold storage purposes.

Referring more particularly to the embodiment of my invention herein shown, I have in Fig. 1 represented a refrigerating vessel which is composed mainly, or if desired wholly, of a hermetically sealed envelop 1 having within the same a hollow core comprising the members 2, and spaced supports 3, there being a vacuum space 4, said vacuum being created preferably through the valve 5, and by any desirable means such as a vacuum pump.

In Figs. 1 and 2, I have shown shelves 6 to support articles to be subjected to refrigerant action, and a pan 7 to support a refrigerant 8, such as ice. In order to support the shelves 6 and the pan 7, I preferably extend the member 2 of the core as indicated at 9.

Attached to the pan 7 and for the purpose of conducting drip from the refrigerant 8 I have shown a pipe 10 in Fig. 1. As it is highly important to conduct drip from the refrigerant 8 and still not impair the vacuum in the space 4, I herein provide a pipe 11, which passes through the core 2, and is made an integral part of the hermetically sealed envelop 1. Consequently the pipe 10 which passes through the pipe 11 can be removed or replaced without interfering with the vacuum in the space 4.

The hermetically sealed envelop 1 inclosing the core 2 is then placed preferably in a frame 12, Fig. 3, which may be of any desired form or character. Attached by hinges 13, Fig. 4, and thus becoming a part of the frame 12, are hermetically sealed envelops 1^a and 1^b forming the doors for the refrigerator. The envelops 1^a and 1^b inclose the cores 2^a and 2^b, supports 3^a and 3^b, vacuum spaces 4^a and 4^b, and have the valves 5^a and 5^b respectively. The doors 1^a and 1^b and the frame 12 are provided with snap locks 14 and the frame 12 with casters 15, Figs. 3 and 4.

In Fig. 5, I have shown three different hermetically sealed envelops 1^c, 1^d and 1^e, which take the place of the envelop 1, Figs. 1, 2 and 3. Each of the envelops incloses a hollow core having a vacuum and similar to the part 2, Fig. 1, and has a valve 5^c, 5^d, 5^e respectively.

The hermetically sealed envelop 1^f, Fig. 6, incloses a hollow core 2^f supporting blocks 3^f and vacuum space 4^f and has a valve 5^f. The envelop 1^f including the core 2^f is made so as to flare as at 17, in order to receive the door which comprises the hermetically sealed envelop 1^g, hollow core 2^g, supporting blocks 3^g, vacuum space 4^g, and valve 5^g. In order to support the refrigerant 8^a, I provide a pan 7^a, which is supported by an iron or other suitable frame 15. The frame 15 also supports the shelves 6^a for articles to be subjected to refrigerant action. Attached to the pan 7^a is a pipe 10^a to conduct drip from the refrigerant 8^a. The door 1^g, Fig. 6, is attached preferably to the frame 12^a by hinges 13^a and snap lock 14^a, Fig. 7.

It will be seen that there is a distinct and important feature in my novel construction

of the hermetically sealed envelops which enables me to construct a wall of any desired form either curved or flat, without using a heavy material for the construction of the envelop itself, such as a heavy iron casting or other material necessary to withstand atmospheric pressure. The material that I preferably use in the practice of my invention is about 26 gage galvanized sheet metal, this being found sufficient by me to form an air barrier and still make a light and inexpensive construction. But in order to utilize such a light material, since it is subjected to more than fourteen pounds pressure per square inch, and still maintain a uniform surface throughout, I provide a continuous brace to the envelop such as that indicated at 2, Fig. 1. I utilize supporting blocks or strips which like the brace are preferably made of wood and are the means of supporting the brace by separating it from its adjacent brace; that is to say, I separate the two adjacent braces 2 by the supporting blocks 3, Fig. 1. As each brace acts to overcome the atmospheric pressure directed against it and as this pressure is in an opposite direction to the pressure directed against the respective adjacent brace, the braces support each other, the intermediate supporting blocks or strips co-acting therewith to this end. By using supporting blocks merely and solely to support the envelop, satisfactory results cannot be obtained, since the position of the envelop between the supports is not braced; consequently the atmospheric pressure acting on the envelop will cause this portion to concave or bend, thus giving the envelop an irregular surface. The results are also commercially unacceptable if a continuous brace be used to support the envelop, but no supporting blocks are provided to support the brace against atmospheric pressure, because, as such, the brace is not suitable in the construction of walls for containers of comparatively large size, especially such as refrigerators. Consequently it is evident that the provision of both the supporting blocks or strips and the braces is a great improvement in the construction of vacuum insulated walls.

Having thus described several illustrative embodiments of my invention, I desire it to be understood that although specific terms are employed, they are used in a generic and descriptive sense and not for purposes of limitation, the scope of the invention being set forth in the following claims.

Claims:

1. A wall for a receptacle comprising in combination, a hermetically sealed envelop, a hollow core enveloped thereby and inclosing a vacuum, said core bracing said envelop against atmospheric pressure, and means coöperating with said wall to support a refrigerant and conduct drip from said refrigerant.

2. A wall for a receptacle comprising in combination, a hermetically sealed envelop, a hollow core enveloped thereby and inclosing a vacuum, said core bracing said envelop against atmospheric pressure, and means cooperating with said wall to support a refrigerant and articles to be subjected to refrigerant action.

3. A wall for a receptacle comprising in combination, a plurality of hermetically sealed envelops, and a corresponding plurality of hollow cores enveloped thereby, each core bracing its respective envelop against atmospheric pressure.

4. A wall for a receptacle comprising in combination, a plurality of hermetically sealed envelops, a corresponding plurality of hollow cores enveloped thereby, each core bracing its respective envelop against atmospheric pressure, and means coöperating with said wall to support a refrigerant and conduct drip from said refrigerant.

5. A wall for a receptacle comprising in combination, a hermetically sealed envelop, a hollow core enveloped thereby and inclosing a vacuum, said core having spaced members bracing said envelop, and means inclosed between said spaced members to support said members against atmospheric pressure by bracing said members each against each.

6. A wall for a receptacle comprising in combination, a hermetically sealed envelop of sheet metal, a hollow core enveloped by said sheet metal, means for creating and maintaining a vacuum within said hollow core, said core being constructed and arranged to brace said envelop against atmospheric pressure, and means coöperating with said wall to support a refrigerant.

In testimony whereof I have signed my name to this specification.

GUSTAV O. SCHULZ.