Sept. 29, 1931. O. M. SUMMERS 1,825,022

REFRIGERATING APPARATUS

Filed Dec. 31, 1927 2 Sheets-Sheet 1

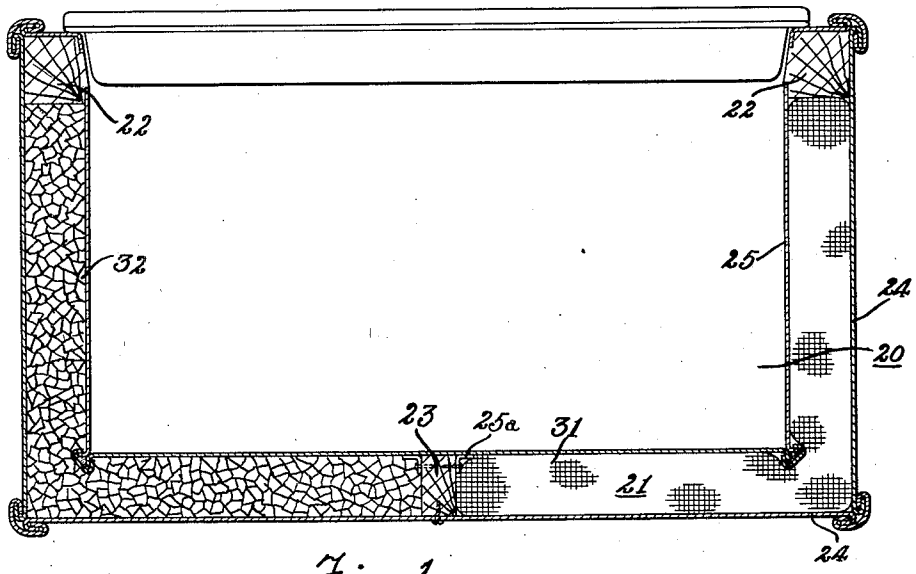


Fig. 1.

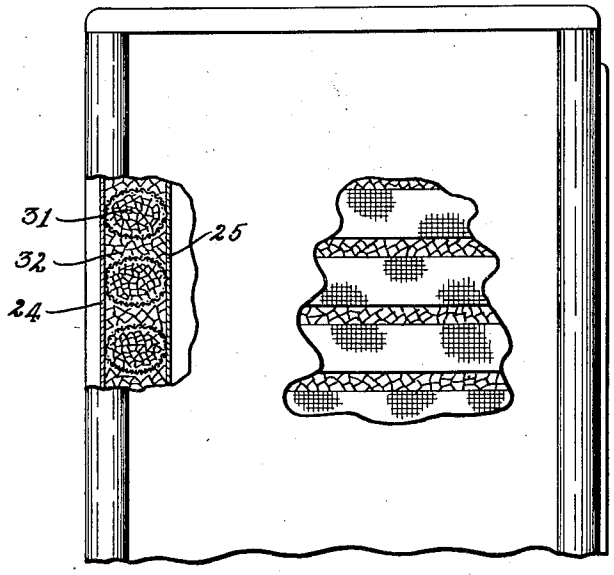


Fig. 2.

Inventor

Otto M. Summers,

By Spencer, Hardman & Fehr

Attorneys

Sept. 29, 1931. O. M. SUMMERS 1,825,022

REFRIGERATING APPARATUS

Filed Dec. 31, 1927 2 Sheets-Sheet 2

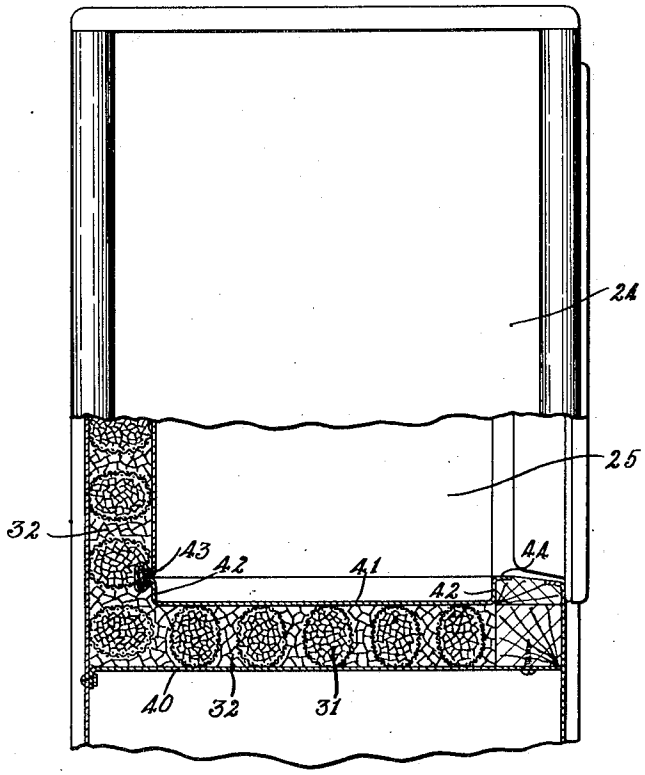


Fig. 3.



Fig. 4.

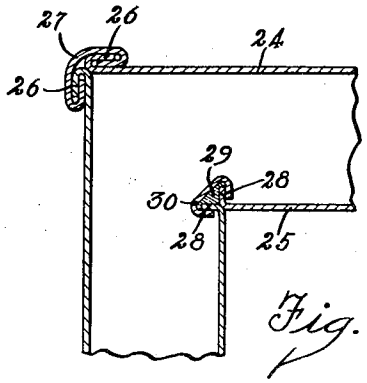


Fig. 5.

Inventor

Otto M. Summers,

By Spencer, Hardman & Fisher

Attorneys

Patented Sept. 29, 1931 1,825,022

UNITED STATES PATENT OFFICE

OTTO M. SUMMERS, OF DAYTON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO FRIGIDAIRE CORPORATION, A CORPORATION OF DELAWARE

REFRIGERATING APPARATUS

Application filed December 31, 1927. Serial No. 244,017.

This invention relates to refrigerators and the method of making the same.

An object of this invention is to provide a refrigerator with insulating material secured in the insulation space of a refrigerator in such a manner that it does not become dislocated.

Another object of this invention is to provide a method of inserting insulating material in the insulation space of a refrigerator in a manner to secure the same permanently in the position in which it is placed.

Another object is to provide insulation for a refrigerator of such a character that it may be placed in the insulation space of the refrigerator and secured permanently therein without danger of dislocation.

Another object of this invention is to provide a seam for a wall of a refrigerator which may be readily assembled.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings, wherein a preferred form of the present invention is clearly shown.

In the drawings

Fig. 1 is a horizontal section of a refrigerator embodying my invention;

Fig. 2 is a side elevation of said refrigerator with parts broken away to show the construction of the insulation;

Fig. 3 is another side elevation of said refrigerator with other parts broken away to show further details of the refrigerator construction;

Fig. 4 is an elevation of a bag of insulation used in a refrigerator embodying my invention; and

Fig. 5 is an enlarged detail view of an insulation wall before the insulation has been placed therein, and disclosing particularly seams in the shells of the wall embodying my invention.

A refrigerator designated as 20 and embodying my invention comprises an insulating wall generally designated 21. This wall may be formed of frame-work which may include upright members 22, which may also form part of the door jamb of the refrigerator, and one or more additional uprights 23 in other parts of the wall 21. These uprights may be made of wood, if desired. An inner shell generally designated as 25 may be secured to the uprights 22 and 23 to form an insulation space of the wall 21. The shell 25 may be enameled sheet metal. The outer shell 24 may comprise sheet painted or enameled metal members having flanges 26. These flanges may abut at the bends formed in said flanges, as shown in Fig. 5, and a key 27 made, for instance, of Monel metal, may be slid over the flanges 26 in order to secure the flanges together. The key 27 may extend throughout the length of the joint of the members 24 or there may be a plurality of short keys throughout said length. The inner lining 25 may also comprise members having flanges 28 abutting at the bends forming said flanges and a sealing substance 29 may be placed between the flanges 28 and a key 30, made for instance of galvanized plate, may be placed over the flanges 28 to lock them together. Key 30 may extend throughout the length of the joint or it may comprise a plurality of shorter members placed along the joint. The sealing substance 29 may be placed therein before or after the key 30 has been applied to the joint. The sealing substance may be a very soft putty forced into the joint after the key 30 has been placed over the flanges. The outer shell 24 and the inner shell 25 may be secured to the uprights 22 and 23 in any suitable manner. For instance, angle members 25*a* may be welded to the lining 25, and secured to the upright 23 by screws. The shell 24 may also be screwed to the upright 23, thus preventing the wall 21 from bulging when the insulation is applied.

The lining 25 at the bottom may comprise a pan 41 having upwardly directed sides 42. Three of the sides 42 may have flanges 43 to cooperate with flanges 28 of the side wall of the lining and the other side 42 may have a flange 44 to be placed on the door jamb.

The insulation may comprise bags of insulating material. A bag 31 containing insulating material may be made by any suit-

able method, and I may employ a method of forming a bag such as disclosed in the patent to Bates 693,820, patented February 18, 1902, with the difference that the material placed in the bag may be any loose insulating material such as ground cork or any other approved insulating material, suitable for a refrigerator.

In the preferred form of my invention, the length of the bags 31 is sufficient to reach horizontally from one upright to another and as shown in Fig. 1 the bags reach from the upright 22 to the upright 23.

The bags 31 may be placed between the shells 24 and 25 and may be secured to either or both of said shells by any suitable means and preferably by an adhesive substance such as hydrolene which may be applied to one or both surfaces of the walls 24 and 25 or to the bags 31, or to all three of them. The bags 31 may have layers of additional insulating material placed between them and these additional layers of insulating material have been designated 32. In Fig. 1 a layer 32 of insulating material on one side of upright 23 has been shown at the same level as a bag 31 on the other side of the upright. However, the level of the bags on either side of the upright 23 may coincide.

A method of assembling the insulation of a refrigerator embodying my invention may be as follows: The cabinet may be placed front side down after the top lining and all but the rear one of the side walls have been assembled on the frame-work. Alternate layers of insulating material and bags may be rammed into the space between the top and the lining, the bags being secured to one or more of the shells of the insulating wall in any manner such as by coating such shell or shells with hydrolene. After the top insulation space has been thus filled the cabinet may be placed upside down and the rear side wall may be assembled on the frame-work. The insulation space of the side walls may be filled in the same manner, that is, by ramming alternate layers of insulating material and bags into the space, the bags in this case being also secured to one or both of the shells of the wall in order to prevent subsequent displacement of the insulating material. The bottom insulating space may then be filled by placing alternate layers of insulating material 32 and bags 31 on the lining 25 and then pressing the bottom outer shell 40 against the insulating material and securing the same to the frame-work and to the side walls of the refrigerator.

It is seen that the insulation assembled in this manner is held in place permanently by the bags, which are secured to one or both of the shells of the insulating wall. The bags 31 prevent the loose insulation 32 from becoming dislocated after assembly.

An object of the bags 31 is to bind together insulating material in strips so that these strips may be secured to a shell in an insulating space together with interposed layers of unbound insulating material. Means of forming strips of bound insulating material, other than by placing it in bags, may be used.

While the form of embodiment of the invention as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

What is claimed is as follows:

1. A refrigerator having an insulation space, bags of loose insulating material in said space, and additional loose insulating material in layers between the bags in said space.

2. The method of constructing a refrigerator having shells providing an insulation space which comprises placing insulating material in bags, placing said bags in said space and securing said bags to a shell of said space and placing additional insulating material in said space between said bags.

3. A refrigerator having shells providing an insulation space, strips of bound insulating material in said space secured to a shell of said space, and unbound insulating material in layers in said space between said strips.

In testimony whereof I hereto affix my signature.

OTTO M. SUMMERS.