Nov. 23, 1926. 1,608,324

L. L. KNOX

COMPOUND WALL STRUCTURE

Filed Jan. 16, 1925

Fig. 1.

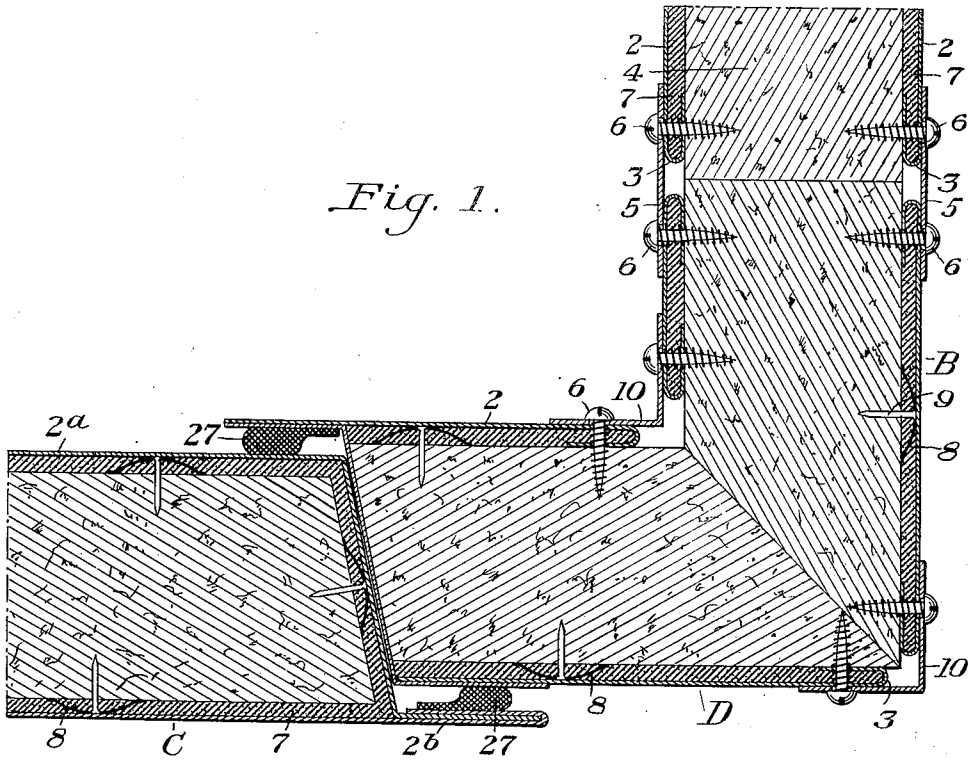
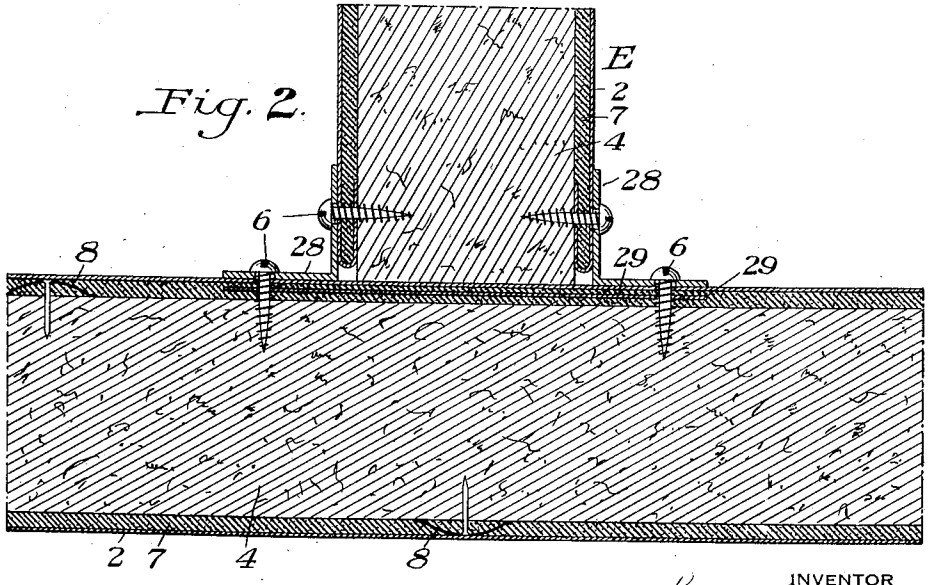


Fig. 2.



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COMPOUND WALL STRUCTURE.

Application filed January 16, 1925. Serial No. 2,872.

Figure 1 is a detail sectional view illustrating a corner portion of a structure having walls in accordance with the present invention and Figure 2 is a similar view showing one manner of attaching a partition in position.

My invention relates to compound wall structures, particularly those used for insulation, as for example, in iceboxes, refrigerators, etc., this application being a division in part and continuation in part of my copending application Serial No. 710,357, filed May 1, 1924.

The object of the invention is to provide a new and improved structure for such purposes and also a refrigerator or icebox formed therefrom.

One of the main features of my invention lies in placing an insulating plug or slab between walls, and then substantially filling the voids between the block and at least one of the walls, and preferably between the block and both walls, by pouring or filling in liquid material which will become solid or semi-solid after the filling in operation. The insulating block or slab is preferably held apart from one or both walls of the compound structure by spacers to provide for entrance of the filled-in material. In this manner, air circulation is avoided and the insulating efficiency of the wall is greatly increased.

The walls may be and preferably are of sheet metal and sections may be formed by means of which, with proper corner pieces, partitions, etc., refrigerating structures of any desirable size and shape may be built up.

In Figures 1, 2, 2 represent the end portions of opposed sheet metal walls having their edge portions reversely bent, as shown at 3, 3. 4 indicates the insulating slabs or blocks which may be of corkboard or similar material.

In the form shown in this figure, the cork filling of this section extends beyond the walls to abut against the similar filling of the next section, in this case, a corner section, and the sections when completed, are held together by joint strips 5, 5, held in place by screws 6, passing through the reversely bent portions of the walls and into the insulating filler. 7 indicates the poured-in filler material occupying the spaces between the insulating slab and the walls.

The corner section B shows at 8 one of the spacers consisting of an arched sheet metal disk held in place by a central nail 9, driven through it and into the insulating slab. In this corner section, the edge of the filler is beveled or chamfered and the outer wall is correspondingly extended beyond the inner wall, the insulating slab, however, projecting at the corner so as to be drawn closely against the other corner slab, this preferably being the case at each joint whether in the corner or side. The corner pieces are held together by angular inner and outer cover strips 10.

The filling material is of such nature that it is adapted for insertion into the desired voids in a substantially liquid state, the filling of the voids preferably being accomplished by pouring or flowing the material into place. The method of filling the voids is disclosed and claimed in my copending application Serial No. 109,182 filed May 14, 1926, and also in my copending application Serial No. 710,357 before referred to.

In Figure 1, I show at C an edge portion of a door in which the wall 2^a is bent down at the edge to join the outer wall 2^b, which is seamed about a flange of the wall 2^a. In this case, a space is preferably provided between the end edge of the asbestos slab and the edge of the door, to receive the filling. The edge of this section C and the corresponding edge of section D are preferably oppositely inclined, and gaskets 27 may be provided to properly seal the door when closed.

In Figure 2, I show the edge portion of a partition E, held by L-shaped strips 28. In order that the main wall portion may properly hold the screws for these strips, I preferably insert an inner strip 29 between the wall and the inner core filler in order to receive the threads of the securing screws 6, there being no reverse bending of the metal at this point to receive these screws. The screws which I prefer to use need to pass through two separated portions of sheet metal to properly engage the threads.

In the refrigerator as shown, the top, bottom, sides and partitions are formed of the sections, such as above described.

Where an artificial or natural asphalt or similar material is used as a filling, it re-

mains in a semi-solid condition, which is also desirable and imparts sound-deadening qualities.

The advantages of my invention will be obvious to those skilled in the art. A simple, inexpensive and effective structure is provided in which air circulation is practically eliminated by reason of the poured-in filler. In the preferred form shown, structures of different sizes, shapes and kinds may be built from substantially standard sections combined with corner sections, door sections, partitions, etc. The sections may be easily, quickly and firmly united by the cover strips, corner strips, etc., and a very simple, durable and effective structure obtained.

While the structure is particularly adapted for cold storage rooms, refrigerators, ice-boxes, etc., it may be used for any purpose where insulation is desirable. The inner and outer walls may be of any material, the insulating filling may be of different materials, the manner of pouring in the filling may be changed, and many other changes may be made without departing from my invention.

I claim:

1. In a compound wall structure, a pair of metal walls, an insulating slab intermediate said walls, said walls having reversely bent edge portions entirely outside of the plane of the sides of said slab, and filling material between the slab and said walls, substantially as described.

2. In a compound wall structure, a pair of metal walls, an insulating slab intermediate said walls, said walls having reversely bent edge portions entirely outside of the plane of the sides of said slab, and filling material between the slab and said walls, said filling material having a thickness substantially equal to the overall height of said reversely bent edge portions and being interlocked therein, substantially as described.

3. A compound wall structure, comprising an inner wall, an outer wall, an interposed insulating layer adjacent to but spaced from at least one of said walls and providing space for a filling and a filling in said space, said filling being of a material adapted for insertion therein in a substantially liquid state.

4. A compound wall structure comprising an inner wall, an outer wall, an interposed insulating slab of corklike material adjacent to at least one of said walls but providing space for a filling, and a filling in said space, said filling being of a material adapted for insertion therein in a substantially liquid state.

5. A compound wall structure comprising an inner wall, an outer wall, an interposed insulating layer adjacent to at least one of said walls and providing space for a filling and a filling in said space having adhesive properties and serving to unite the insulating layer and the adjacent wall, said filling being of a material adapted for insertion therein in a substantially liquid state.

6. A compound wall structure, comprising an inner wall, an outer wall, an interposed insulating layer adjacent to at least one of said walls and providing space for a filling, and a filling semi-solid at normal temperatures in said space, said filling being of a material adapted for insertion therein in a substantially liquid state.

7. A compound wall structure, comprising a protective wall, an insulating layer adjacent to said wall and providing space for a filling, and a filling in said space, said filling being of a material adapted for insertion therein in a substantially liquid state.

8. A compound wall structure, comprising a protective wall having a reversely bent edge portion, an insulating layer, adjacent to said wall, and providing space for a filling, a filling in said space, said filling being of a material adapted for insertion therein in a substantially liquid state, and fastening means extending through the reversely bent edge portion of said wall.

9. A compound wall structure comprising sections, each section having a protective wall formed with a reversely bent edge portion, an insulating layer of greater width than said protective wall and spaced from said wall to provide a space for filling, a filling in said space, said filling being of a material adapted for insertion therein in a substantially liquid state, fastening means comprising joint strips extending between and overlapping the protective wall of adjacent sections and spanning the joint between the insulating layer, said joint strips being held in position by driven fastening means extending through said reversely bent edge portion.

In testimony whereof I have hereunto set my hand.

LUTHER L. KNOX.