Aug. 2, 1927. 1,637,497

H. W. O'DOWD

HEAT INSULATING UNIT

Filed April 24. 1924 2 Sheets-Sheet 1.

Fig. 1.

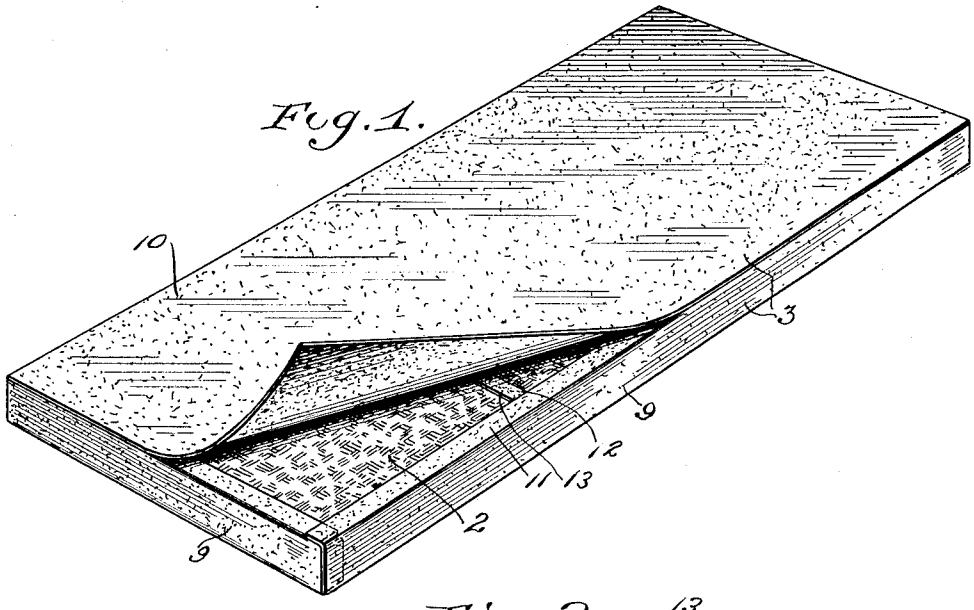


Fig. 2.

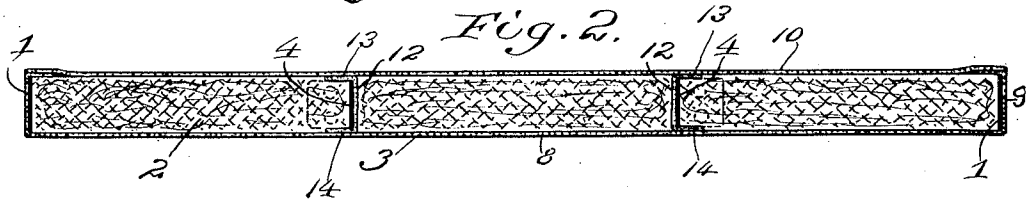
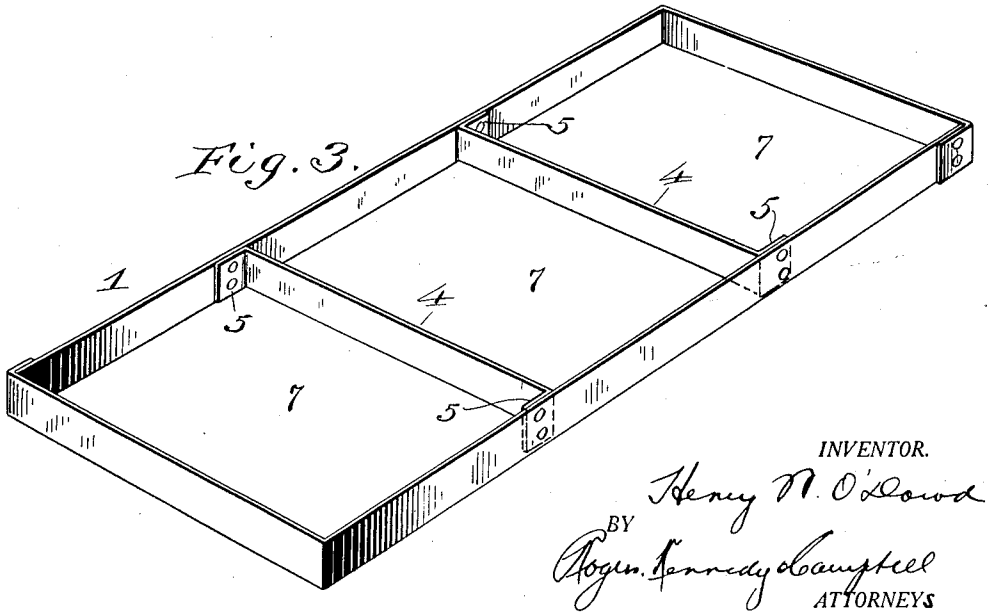


Fig. 3.



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Fig. 4.

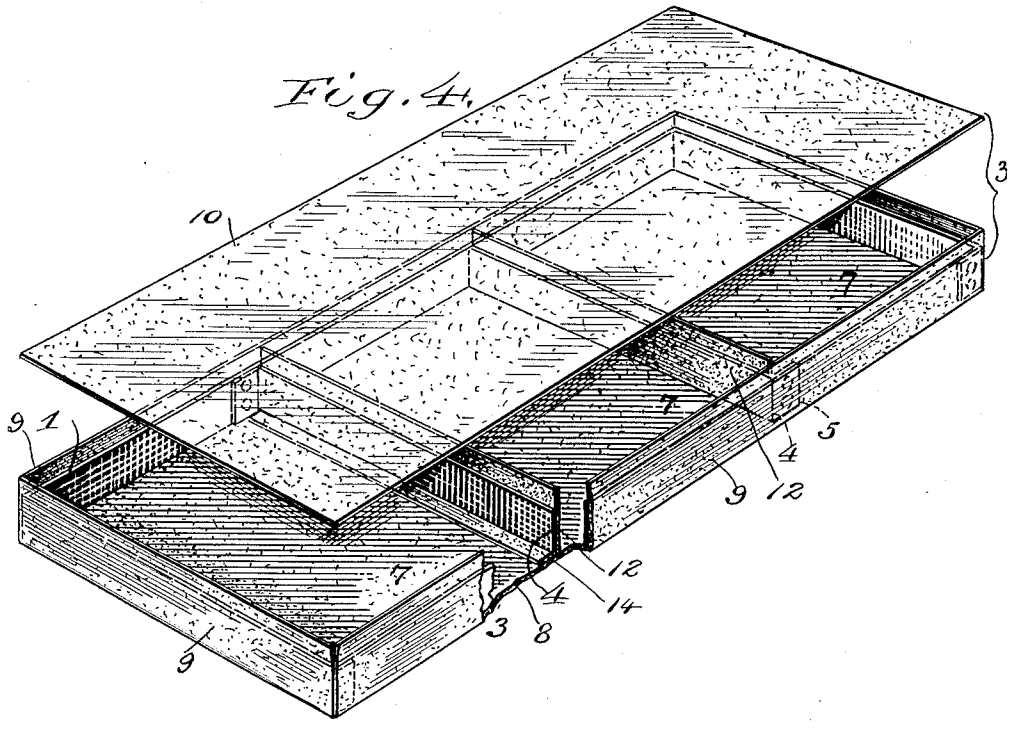


Fig. 5.

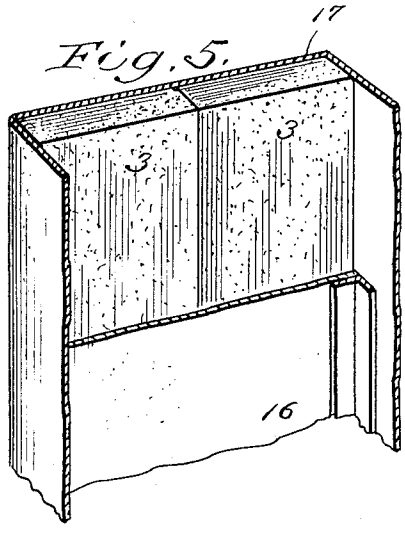
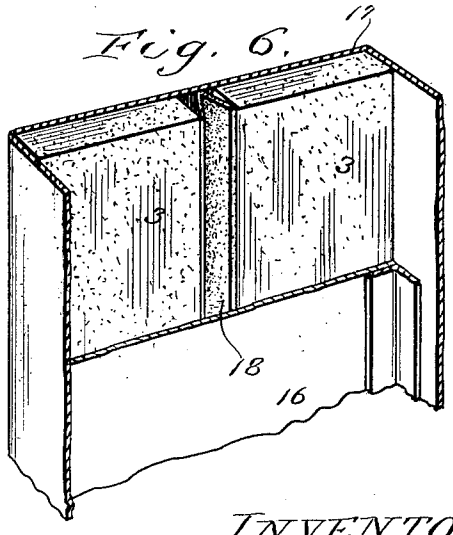


Fig. 6.



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UNITED STATES PATENT OFFICE.

HENRY W. O'DOWD, OF JERSEY CITY, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO STANDARD GAS EQUIPMENT CORPORATION, OF BALTIMORE, MARYLAND, A CORPORATION OF MARYLAND.

HEAT-INSULATING UNIT.

Application filed April 24, 1924. Serial No. 708,646.

This invention relates to a heat insulating unit, and has for its object the employment of fibrous heat resisting material, such for instance as mineral or slag wool, built up into definite form such as blocks, plates, tiles and the like for use in various situations to prevent the radiation of heat, for example in connection with the ovens of cook stoves to insulate the same against the radiation of heat.

Mineral or slag wool, which in its commercial form is a loose fibrous material, is recognized as one of the most efficient heat insulators, but in its handling and transportation, many difficulties are encountered arising for instance from the liability of the material to pack unevenly; the tendency of the packed mass to sag; and the objectionable effects on the workmen, of the dust arising from the packing and transportation of the material. When used as heretofore to insulate the ovens of cooking stoves, the leakage of the dust or fine particles into the oven, and the contamination thereby of the food being cooked, and the absorption by the fibrous mass of the odors, grease and moisture arising from the cooking, have added to the objections attending the use of this material. It is such objections as these, and others unnecessary here to enumerate, that is the aim of the present invention to overcome; and to this end the invention consists of a heat insulating unit comprising a reinforcing frame, a carton or closure of heat resisting material enveloping said frame, and a fibrous heat resisting filler packed in the frame, the whole being bound together in the form of a portable block or unit which may be conveniently handled, transported, and applied to use without the several objections above enumerated.

In the accompanying drawings:

Fig. 1 is a perspective view of a heat insulating unit embodying the invention, one of the sides of the enclosing sheathing being lifted to better show the internal construction.

Fig. 2 is a longitudinal section through the unit.

Fig. 3 is a perspective view of the reinforcing frame of the insulating unit.

Fig. 4 is a perspective view partly broken away, of the enclosing sheathing and reinforcing frame in place therein, showing the condition of the parts, previous to the introduction of the filler.

Fig. 5 is a perspective view showing how the improved units are applied to insulate the ovens of cooking stoves.

Fig. 6 is a similar view showing the means for filling the space between adjacent units, to prevent the radiation of heat through said space.

Referring to the drawings:

The improved heat insulating unit comprises an open reinforcing frame 1 in which is packed a fibrous filler 2 of heat resisting material, in the present instance mineral or slag wool; and an enclosing carton or sheathing 3, preferably of asbestos board or like sheet material, which completely encloses the frame and filler.

The reinforcing frame, in the embodiment of the invention illustrated, is of open rectangular form and is conveniently and economically made from strip sheet metal. It is strengthened by cross members 4 of similar material, extending between the side walls of the frame and having their ends bent laterally to form feet 5 which are seated against the inner sides of said walls and are firmly fastened thereto as by riveting. This construction of the frame produces cells 7 therein, and in these cells the filler 2 of loose dry mineral wool is firmly and tightly packed, the provision of the cells enabling the filler to be carried without liability of sagging. The frame with the filler therein, is enclosed on all sides by the sheathing or carton 3, preferably of asbestos board. In the form of the invention illustrated, this sheathing consists of a bottom sheet 8, side and end walls 9 connected to the edges of the bottom sheet, and surrounding the walls of the reinforcing frame, and a top or cover sheet 10. The sides 9 of the sheathing are folded inwardly at the top of the frame in the form of flanges 11, to which the top sheet 10 is cemented along its marginal edges by a suitable heat resisting cement such as water glass whereby the filler is effectually sealed by the sheathing against escape. The top and bottom sheets 10 and 8 of the sheathing are fastened to the frame through the medium of two strips 12 of asbestos, which are cemented to the sides of the cross members 4, and have their upper and lower edges

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bent over the edges of the cross members to form flanges 13 and 14 lying in the planes of the side faces of the frame, to which flanges the sheets 10 and 8 of the sheathing are respectively cemented by a suitable cement such as water glass.

By the construction described, a composite portable structure or unit is produced in which the loose dry fibrous heat resisting material is supported in the most effective manner and is prevented from escape or displacement by the enclosing sheathing or carton, which latter is reinforced and its form maintained by the enclosed frame, to which the sheathing is fastened as described. In order to effectually seal the sheathing against the entrance of moisture and the absorption of the odors arising from cooking, when the unit is employed as a heat insulator for ovens, a heat resisting moisture-proof sealing coating, such for instance as water glass is applied to the exterior of the sheathing so as to completely cover the same and destroy its absorptive properties.

A heat insulating unit of the above description may be employed in various situations where it is desired to prevent the radiation of heat. For instance the heat insulating units may be inserted in the spaces between the inner and outer walls 16 and 17 of the ovens of cooking stoves, as shown in Fig. 5, the said units being made of different commercial sizes to adapt them to be employed either singly or collectively according to the dimensions of the spaces surrounding the ovens which are to be insulated. In the event that the units will not completely fill a given space, and there is left an intervening space between the edges of two adjacent units, the additional space may be filled so as to prevent the radiation of heat, by means of a strip 18 of heat resisting material, such as asbestos, which may be folded into V-form as shown in Fig. 6 so as to completely fill the space between the two units.

While in the foregoing description and accompanying drawings, I have set forth the invention in the particular detailed form and construction which I prefer to adopt, it is manifest that these details may be variously changed and modified without departing from the spirit of the invention; and it is to be understood that the invention is not limited to any particular form or construction of the parts except in so far as such limitations are specified in the claims.

Having thus described my invention, what I claim is:

1. A heat insulating unit comprising a reinforcing frame, cross members extending between the walls of the same to produce cells therein, strips of heat resisting material associated with the cross members and presenting edge flanges extending parallel with the plane of the face of the frame, a heat resisting fibrous filler in the cells of the frame, and a sheathing of heat resisting material enclosing the frame and filler and cemented to said edge flanges.

2. A heat insulating unit comprising a reinforcing frame, cross members extending between the walls of the frame to produce cells therein, strips of heat resisting materiel cemented to the cross members and presenting edge flanges at the opposite sides of the frame, a heat resisting fibrous filler in the cells of the frame, and a sheathing of heat resisting material enclosing said frame and filler and cemented to said edge flanges.

In testimony whereof, I have affixed my signature hereto.

HENRY W. O'DOWD.