April 19, 1932. G. R. WYMAN 1,855,161

COMPOSITE INSULATING BOARD

Filed Oct. 12, 1928

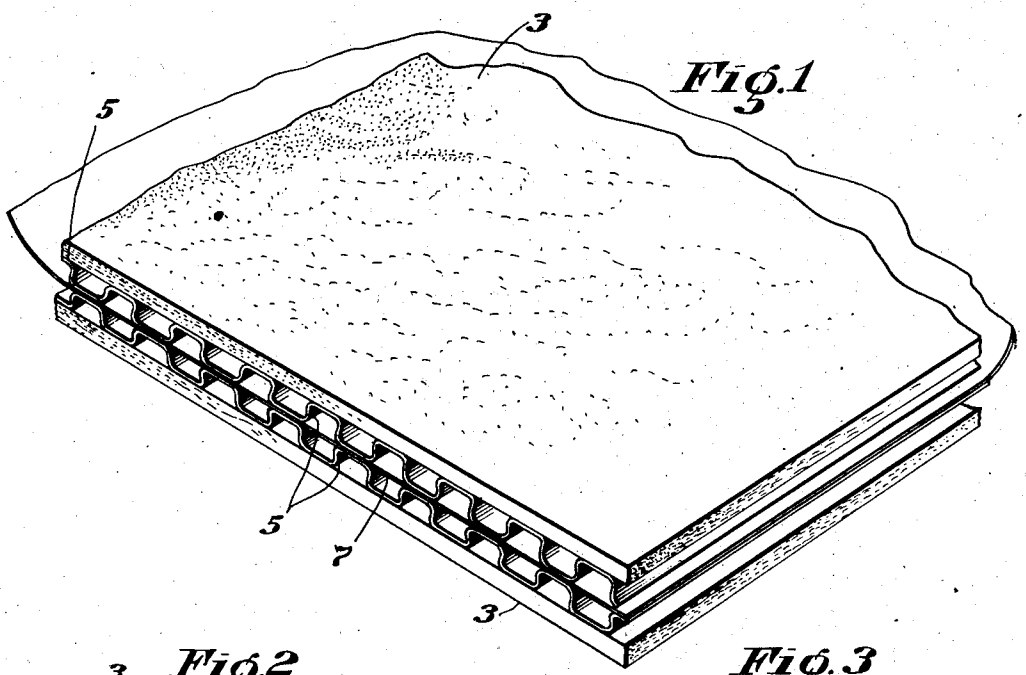


Fig. 1

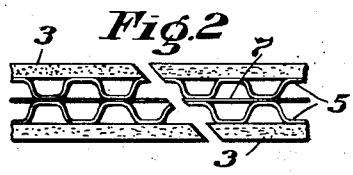


Fig. 2

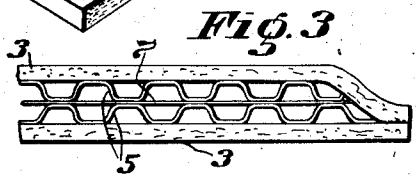


Fig. 3

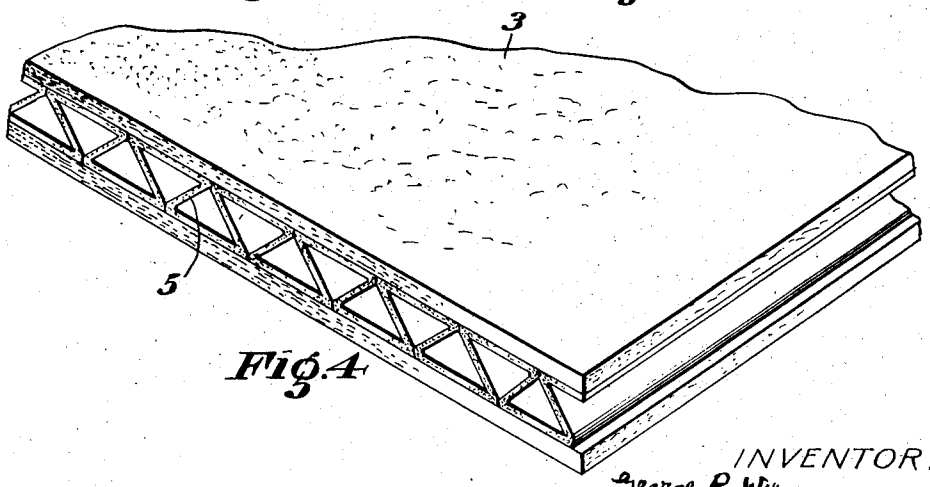


Fig. 4

INVENTOR.
George R. Wyman
By
His attorney

Patented Apr. 19, 1932 1,855,161

UNITED STATES PATENT OFFICE

GEORGE R. WYMAN, OF EAST WALPOLE, MASSACHUSETTS, ASSIGNOR TO BIRD & SON, INC., OF EAST WALPOLE, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS

COMPOSITE INSULATING BOARD

Application filed October 12, 1928. Serial No. 312,047.

This invention relates to a composite insulating board and has for its object to provide an inexpensive wall or plaster board having excellent heat and sound insulating qualities, and which is of light weight, and also adapted to receive a waterproofing treatment if desired. Other objects will appear and be more fully pointed out in the specification and claims.

In the drawings Fig. 1 is a perspective view of my improved insulating board or lath substitute;

Fig. 2 is a cross-sectional view showing how the edges of adjoining boards may be diagonally cut and applied so as to lap;

Fig. 3 shows in detail how the edges of the insulating board are preferably constructed for use as a plaster board; and

Fig. 4 shows in cross section a modified type of the board embodying but a single layer of corrugations.

Referring to the drawings, this insulating board consists in its preferred forms (Figs. 1, 2 and 3), of two outside layers 3 of low-density fibrous material as hereinafter described. The top and bottom or outside layers are of a low degree of density in order to get maximum heat insulating value which is due in turn to the high percentage of voids or dead air cells in the material which provide a good heat and sound insulation. Between the fibrous outside layers 3 are two corrugated sheets 5 so as to make the board thicker and at the same time give it structural strength and a large number of separated small dead air spaces to further increase the insulating value of the board. This corrugated material is applied to the opposite sides of a central layer of backbone sheet 7 which with the corrugated material provides a sufficiently stiff framework for the outside low density layers. If desired, the outside layers may be further stiffened and strengthened by adding sizing to the stock in the mixer, or later impregnating with a material, such as rosin, glue or sodium silicate. The outside layers of low density fibrous material may be built up by combining them with other similar sheets, and the fire resisting qualities of the board will be improved if sodium silicate or similar material is used as an adhesive. The board or lath may also be somewhat stiffened and strengthened by treating the stock with mixtures or dispersions containing silicate, glue or gums, or such treatment may be given to the fibrous sheets or to the finished or partly finished board. Such use of sodium silicate or other similar material will tend to make the board more resistant to fire and for the same purpose a small percentage of asbestos fibre may be used along with the other fibrous material in any of the component sheets to make the board or lath fire-resistant. When used for plaster board, I leave the surface to receive the plaster in its original pervious rough state so as to make a good bond with the plaster and apply to the back of the board a coating of wax to minimize the entrance of moisture.

I prefer to make the outside layers of ground wood screenings which weigh from 1 to 1½ pounds per thousand square feet of outside layer for every thousandth of an inch in thickness, although the weight may vary from ½ to 2½ pounds. This material in sheet form increases in width less than ½% when thoroughly wet with water (though this may be as high as 1%) and because of this the board does not warp or buckle when subjected to moist atmosphere or when wet plaster is applied. A corresponding advantage is obtained when the plaster is setting as it will not have a tendency to crack, due to changes in dimensions or distortion of the board underneath which apparently has the capacity to take up internally such stresses consequent to a moistening or drying of the board without movement of the fibres sufficient to cause objectionable warping.

In the actual manufacture of the outside layers a free working somewhat coarse fibrous stock, preferably ground wood screenings, is run on a Fourdrinier, or similar paper making machine at a freeness of from 500 to 700 c. c. on the Green type freeness tester at 20° C. and .3% consistency. These outside layers following a drying of the same are applied to the corrugated foundation which may be made in the well known manner and attached

by means of a suitable adhesive and permitted to dry or set.

It is found that a thicker layer of plaster over the points formed at the junction of sheets of the insulating board is advantageous in preventing cracking of the plaster, and to improve my product in this respect, the edges may be beveled by compressing the same and combining them in this compressed position with a suitable adhesive, such as a quick-setting glue or asphalt (see Fig. 3). In order to accomplish this, the corrugated section or middle sheet may be cut or buffed out along the edge to make the edge more readily compressible, and also resulting in a better appearance. If it is not desired to employ this type of an edge, I prefer to cut the edges at an oblique angle, as shown in Fig. 3.

It is preferable that the corrugations which furnish the air cells or pocket run parallel or at right angles to the sides of the sheet, though the corrugations may be at any angle to the sides and still be used to advantage.

Having described my invention, what I wish to claim and secure by Letters Patent is:—

1. A composite insulating and plaster receiving board having a core of corrugated sheet material and having outer layers adhesively attached to said core, at least one of said outer layers consisting of a coarse fibrous felted sheet having the expansion characteristics under influence of moisture of a sheet of ground wood screenings, and with a co-efficient of expansion due to moisture of not to exceed one percent, said sheet being of low density and having a relatively high percentage of voids, said board having one outer surface sufficiently pervious to form a bond with plaster applied thereto.

2. A composite insulating board having a core of corrugated sheet material comprising two layers of corrugations disposed on the opposite sides and adhesively attached to a sheet of paper and having outer layers adhesively attached to said core, at least one of said outer layers consisting of coarse fibrous felted material having the expansion characteristics under influence of moisture of ground wood screenings, and with a co-efficient of expansion due to moisture of not to exceed one percent, said material being of low density and having a relatively high percentage of voids, said board having one outer surface sufficiently pervious to form a bond with plaster applied thereto.

3. A composite insulating board having a core of corrugated sheet material comprising two layers of corrugations disposed on the opposite sides and adhesively attached to a sheet of paper and having outer layers adhesively attached to said core, at least one of said outer layers consisting of coarse fibrous felted material having the expansion characteristics under influence of moisture of ground wood screenings, and with a co-efficient of expansion due to moisture of not to exceed one percent, said material being of low density and having a relatively high percentage of voids, said board having one outer surface sufficiently pervious to form a bond with plaster applied thereto, said outer layers extending adjacent and adhesively attached to one another at an edge of said board.

4. A composite insulating and plaster receiving board having a core of corrugated sheet material and having outer layers adhesively attached to said core, at least one of said outer layers consisting of a coarse fibrous felted sheet having the expansion characteristics under influence of moisture of sheet of ground wood screenings, and with a co-efficient of expansion due to moisture of not to exceed one percent, said sheet being of low density and having a relatively high percentage of voids, said board having one outer surface sufficiently pervious to form a bond with plaster applied thereto, and another outer surface coated with a waterproofing material.

GEORGE R. WYMAN.