

May 8, 1934.

P. S. DENNING
INSULATING MATERIAL

1,957,822

Filed March 2, 1932

2 Sheets-Sheet 1

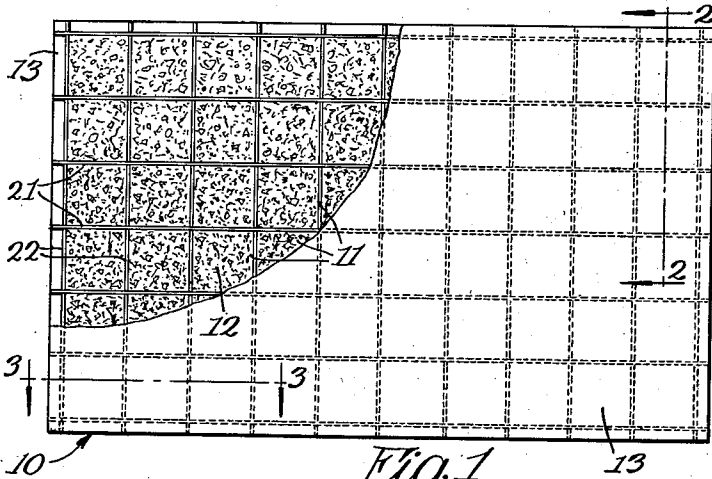


Fig. 1

Fig. 2

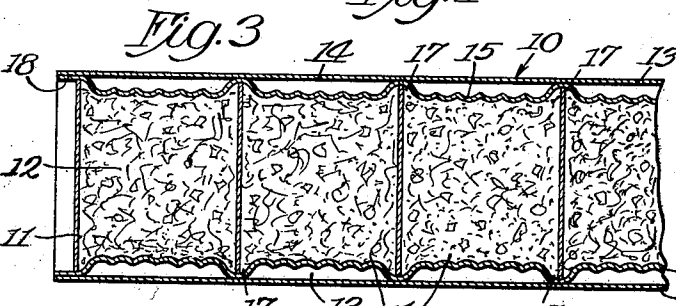
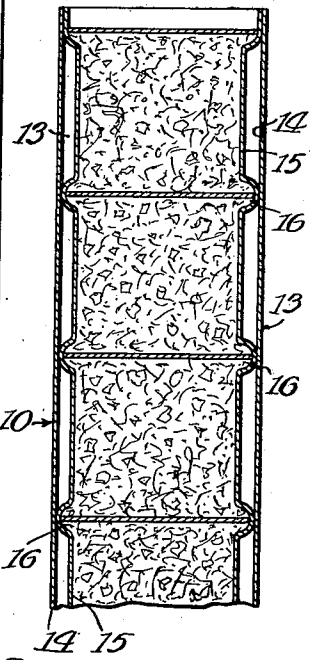


Fig. 3

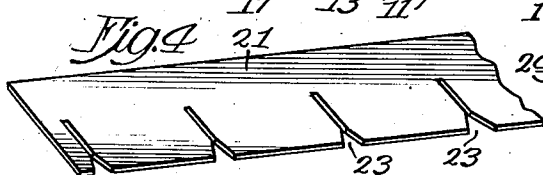


Fig. 4

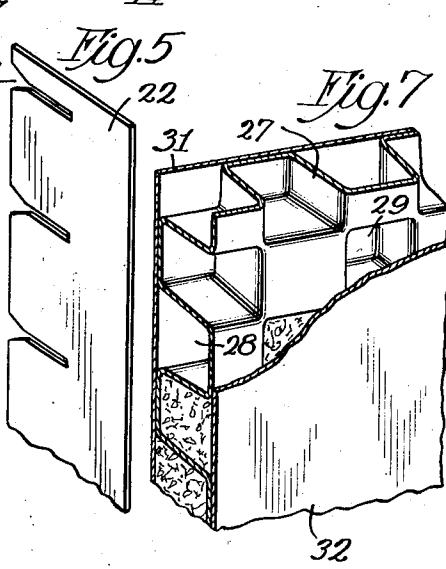


Fig. 5

Fig. 7

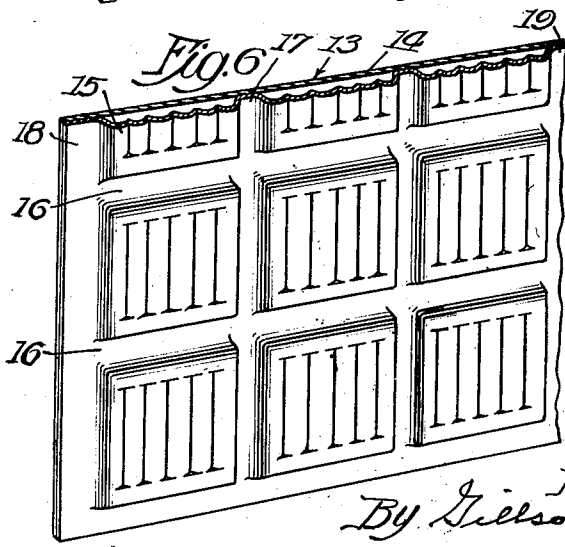


Fig. 6

Inventor
Paul S. Denning
By Gilson, Mann & Co. Attys.

May 8, 1934.

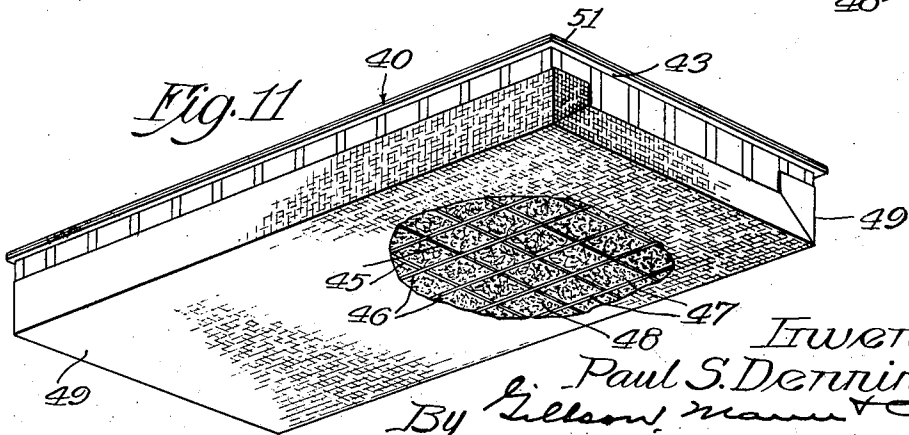
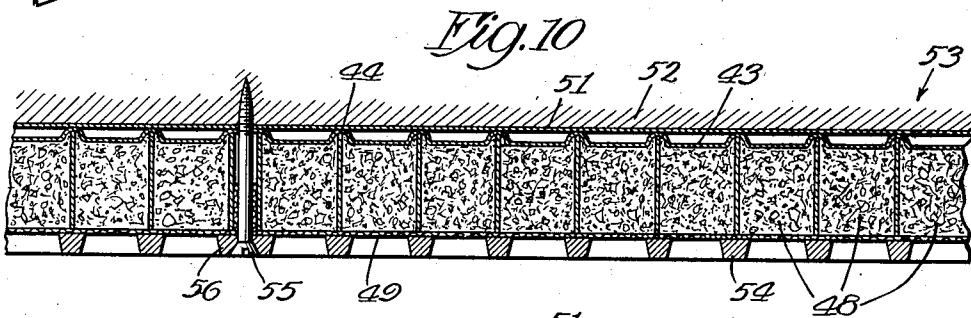
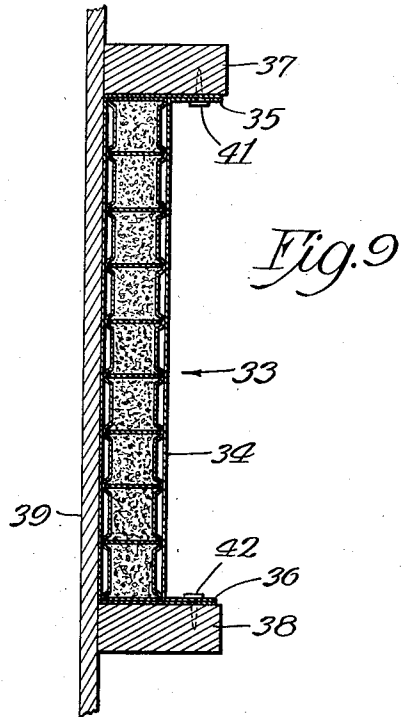
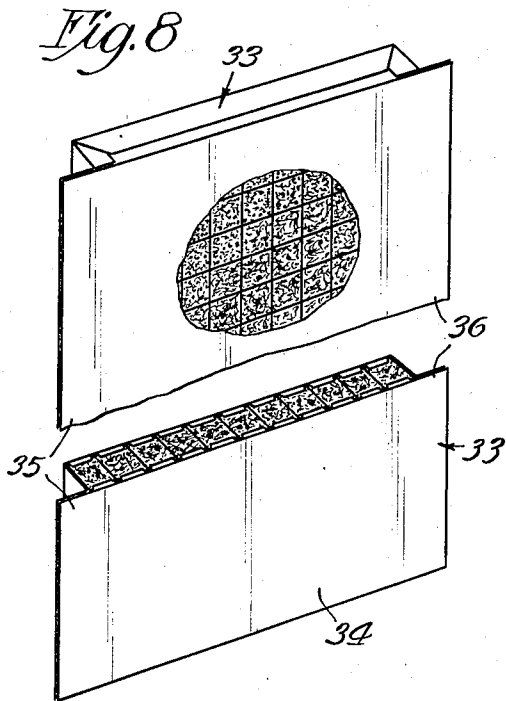
P. S. DENNING

1,957,822

INSULATING MATERIAL

Filed March 2, 1932

2 Sheets-Sheet 2



Inventor
Paul S. Denning
By *Gilson, Mann & Co.* Attys

UNITED STATES PATENT OFFICE

1,957,822

INSULATING MATERIAL

Paul S. Denning, Joliet, Ill., assignor to F. E. Schundler & Company, a corporation of Illinois

Application March 2, 1932, Serial No. 596,251

4 Claims. (Cl. 154-44)

This invention relates to insulation, and, more particularly, to that type wherein the insulating material is prepared in blocks, squares or units.

One of the objects of the invention is the provision of new and improved means for employing insulating material in loose form in assembled units.

Another object of the invention is the provision of a new and improved insulation container which is provided with a plurality of cells for containing and independently supporting the insulating material.

A further object of the invention is the provision of a new and improved insulating material container having novel means for covering the container and for securing the same in position for use.

A still further object of the invention is the provision of a new and improved insulation unit provided with novel means for securing the same in position in a wall or the like.

Another object of the invention is the provision of a new and improved insulation unit that is simple in construction, inexpensive to manufacture and that may be applied in position of use at a minimum of time and expense.

Other and further objects and advantages will appear from the following description taken in connection with the accompanying drawings, in which—

Fig. 1 is a side elevation of one of the insulating units;

Fig. 2 is a vertical section on the line 2—2 of Fig. 1;

Fig. 3 is a section on the line 3—3 of Fig. 1;

Fig. 4 is a perspective view of one of the partition members;

Fig. 5 is a perspective view of another partition member;

Fig. 6 is a perspective view of one of the side plates of the unit;

Fig. 7 is a perspective view of a modified form of unit with parts broken away;

Fig. 8 is a perspective view of a further modified form of insulating unit;

Fig. 9 is a horizontal section through a portion of the building showing the invention in position thereon;

Fig. 10 is a vertical section of a top wall or ceiling of a building showing a further modified form of the heat insulating units in position thereon;

Fig. 11 is a perspective view of one of the insulating units shown in Fig. 10.

In the use of insulating material, especially of the type which is granular, divided or composed

of small, more or less independent particles, it has been the practice to employ the same in loose condition in large units or placing the same in position in situ. Such an arrangement is objectionable because where employed in side walls of buildings, for instance, the material will settle due to the pressure of the weight of the column on the lower portion of the material, thereby leaving considerable vacant space above each column of insulating material. This space increases as the material settles, thus, in time, leaving a considerable area of the walls without insulating material at their upper portions.

The present invention seeks to remedy this difficulty by the provision of unit containers having cells for containing the granular insulating material thereby reducing the settling of the material to a minimum in that the walls of these units and cellular walls will support the weight of the material.

These units can be built up to form continuous surfaces of large areas as desired without affecting the material in the individual cells.

Any suitable insulating material may be employed whether granular or not. But for the purpose of illustrating one embodiment of the invention, the insulating material will be considered as being granular or divided more or less finely. As one example, expanded or exfoliated vermiculite or Jefferisite may be employed.

Vermiculite or Jefferisite is a micaceous product, and after being mined it may be broken up into small particles, which on being heat treated at about 1500 degrees Fahrenheit, expands to many times its original size. In the expanded form a cubic foot of the material will only weigh from 5 to 8 pounds and is an excellent non-conductor of heat and sound.

Referring now to the drawings, the reference character 10 designates generally an insulation unit which is provided with a plurality of small containers or cells 11 for containing the insulating material 12. The cells 11 may be formed in any suitable manner. In the form selected to illustrate one embodiment of the invention, the unit 10 comprises side plates 13 (see Fig. 6) which may be of any desirable construction. As shown, each side is of cardboard and comprises the outer plate, or board, 14, and an inner plate, or board, 15.

These plates, or boards, may be corrugated and formed with enlarged corrugations forming grooves 16 extending longitudinally of the unit and with enlarged corrugations forming grooves 17 extending transversely of the unit. The ends

of the corrugated plates 15 are attached to the board 14, as shown at 18 and 19, whereby a rigid plate 13 is formed.

Partition members 21 and 22 extending longitudinally and transversely of the unit are provided for forming the cells or receptacles 11 between the side plates 13. These members are connected together in a manner well known in the art. As shown, the partition members 21 are each provided with open slots 23 arranged at intervals along one edge thereof and the other partition members 22 are each also provided with open slots 24 along one edge thereof.

In assembling the units, the partition members are assembled by causing the slots 23 and 24 to engage in the manner of an egg crate thereby forming a unit having a large number of small cells or receptacles which are adapted to contain the insulating material. The assembled partitions are then placed on one of the side plates 13 with the side edges of the partitions within the grooves 16 and 17.

The cells formed by these partitions and the side plate are then filled with the insulating material, after which the other side plate is placed in position and secured by any suitable means, as by an adhesive or by a strip of paper extending about the unit and pasted in position, or by staples or other fastening means.

It is immaterial how these partitions are arranged or connected together so long as they form independent receptacles for containing the insulating material.

Since the details of the construction of the cellular unit constitute no part of the present invention, it is not thought necessary to further illustrate or describe the same.

The size of the units may vary as desired for convenience of handling.

In Fig. 7 is shown a modified form of cellular unit. In this form of construction, the cellular structure 27 may be stamped or molded to the desired shape to form cells or receptacles 28 opening in one direction and alternate cells 29 opening in the opposite direction. Suitable side plates 31 and 32 are adapted to be secured over the cellular structure for closing the cells or receptacles. In charging or filling the cells in this form of construction, the unit is placed so that one set of the cells open upwardly, and, after they are filled, the adjacent plate is secured in position as by an adhesive after which the plate is turned over and the remaining cells filled and the adjacent side plate secured in position over these cells.

Under certain conditions, it may be desirable to independently secure the units in position in the building. In Figs. 8 and 9 is shown a form of construction in which this may be accomplished. The cellular unit 33 may be substantially the same as that of either of the forms described above and may be encircled by a layer of paper, or other suitable flexible material 34. This material is secured to the unit, as by an adhesive, and the same is provided with flaps 35 and 36 extending laterally from the unit, as clearly shown in Figs. 8 and 9.

When it is desired to secure the individual units in a building, as, for instance, in a frame building having the studding or vertical frame members 37 and 38 and the siding 39 attached to the outer side of the frame members, the unit is placed between the frame members 37 and 38 into contact with the siding 39 with the flaps extending inwardly along the side of the frame

members, and fastening means, such as nails or tacks 41 and 42, are driven through the flaps 35 and 36 into said frame members.

When this form of construction is used as insulation for the side walls of frame buildings, the units, of course, are arranged in tiers between the vertical frame members of the building and the tiers are separated by those frame members.

In Figs. 10 and 11 is shown a modified form of construction especially adapted for use in rooms or buildings where sound insulation is of prime importance.

In this form of construction, each unit 40 comprises a back plate 43 similar to one of the side plates 15 in the form of construction previously described and which is provided with intersecting grooves 44 which are adapted to receive the edges of the partitions 45 and 46, as in the previous construction. The cells or receptacles 47 formed by the partitions 45 and 46 are adapted to contain insulating material 48 which may be the same as the insulation used above. After the cells 47 have been filled with the insulating material 48, a foraminous member 49 is placed over the cells for holding the material in position therein. The foraminous member 49 may be of any suitable material, such as muslin, wire netting or the like. The plate 43 may be reinforced by a member 51 of paper, or the like, as in the construction described above. In applying these units to the ceiling 52 of a room or building 53, they are placed in alignment against the lower surface of the ceiling and are held in position by grid panels or other open or lattice work 54.

These panels are held in position by suitable fastening means, such as the screws 55, which pass through one of the grids 56 and either through or between two adjacent sound insulation units 40 and into the ceiling 52, as clearly shown in Fig. 10 of the drawings.

These sound insulating units may also contain material, such as expanded vermiculite, that is also a heat insulating material. A wall build of such material will not only prevent the escape of heat from the room but will also not transmit sound through the wall.

I claim as my invention:

1. An insulation for a wall of a building comprising a plurality of insulating units, arranged in alignment alongside said wall, each unit comprising light rectangular plates parallel and spaced apart, and having grooves therein, the light partitions extending at right angles to each other and interlocked, the partitions extending in one direction being seated in said grooves, the space between said plates being divided into comparatively small receptacles and light insulating material within said receptacles, said material comprising divided particles.

2. In combination, a building having a wall, insulating units comprising a back plate, partitions engaging said back plate and forming therewith a plurality of small receptacles, insulating material within said receptacles, a sheet of reticulated material across the open ends of said receptacles and a grill across the front of said reticulated material.

3. An insulating unit comprising a back plate having outwardly pressed corrugations therein, said corrugations extending in two directions and forming grooves on the inner side of said plate, a plurality of partitions extending in one direction and engaging within said grooves, a plurality of partitions extending transversely to said first-named partitions and engaging in said grooves

and forming with said first-named partitions and with said back plate a plurality of comparatively small receptacles, insulating material filling said receptacles, a sheet of material secured over the front of said unit for closing said receptacles and another sheet of material secured over the back of said unit whereby a plurality of dead air spaces will be formed between said back plate and last-named sheet.

4. An insulating unit comprising a back plate, a front plate, said plates each having a plurality of outwardly pressed intersecting corrugations

forming a plurality of intersecting corrugations forming a plurality of intersecting grooves on the inner sides of said plate, a plurality of intersecting partitions between said plates engaging in said grooves for forming a plurality of closed receptacles, insulating material in said receptacles and sheets of fabricated material forming an envelope containing said unit, said sheets having their edges extended laterally in the plane of one of said plates at opposite sides of said unit to form attaching tabs.

PAUL S. DENNING.

15	90
20	95
25	100
30	105
35	110
40	115
45	120
50	125
55	130
60	135
65	140
70	145
75	150