

March 26, 1935.

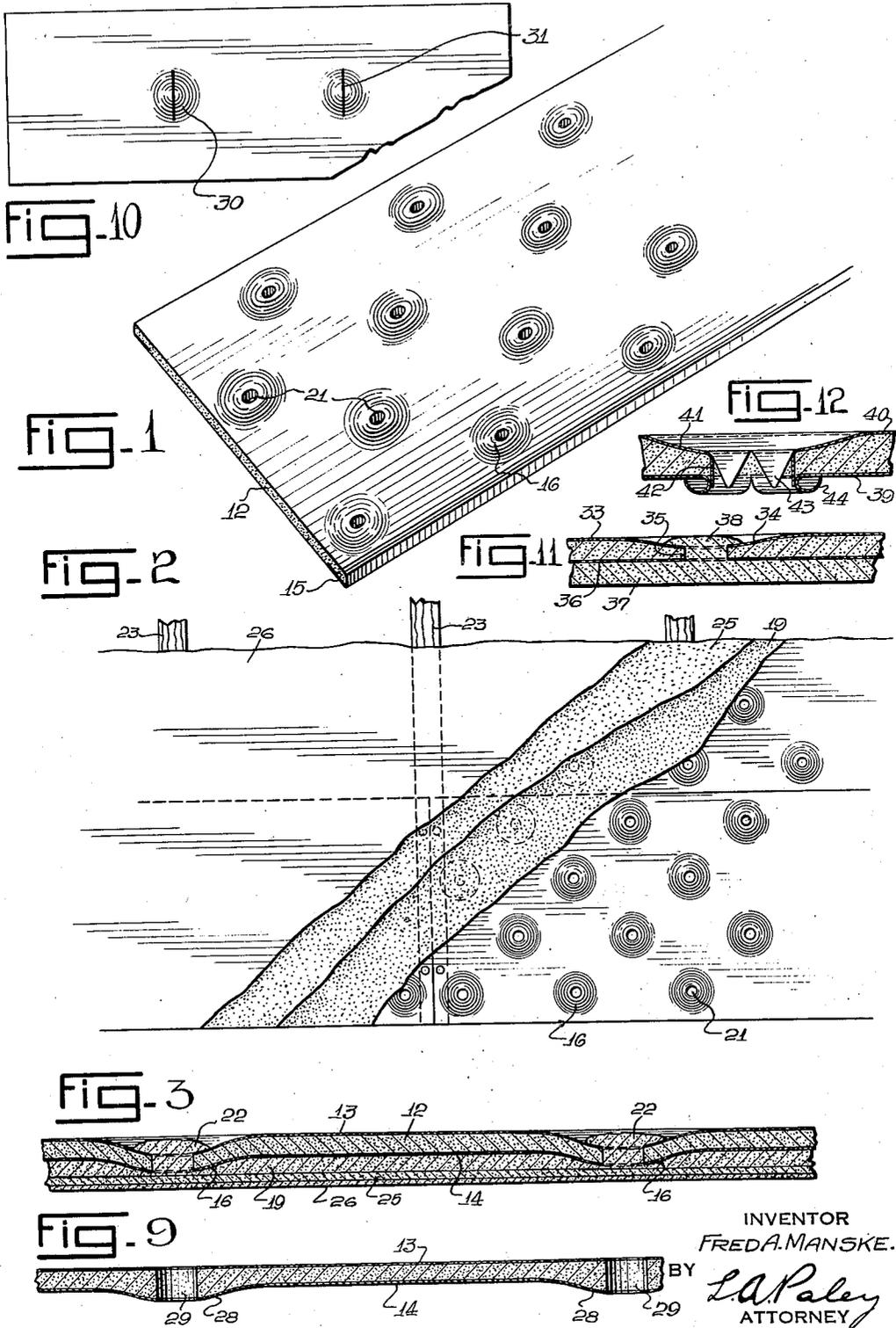
F. A. MANSKE

1,995,393

SELF FURRING PLASTER BOARD

Filed March 15, 1933

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

FIG-5

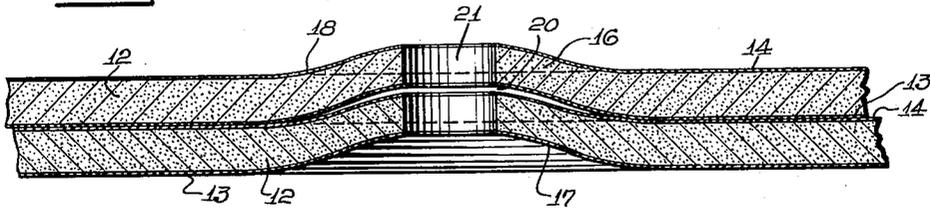


FIG-4

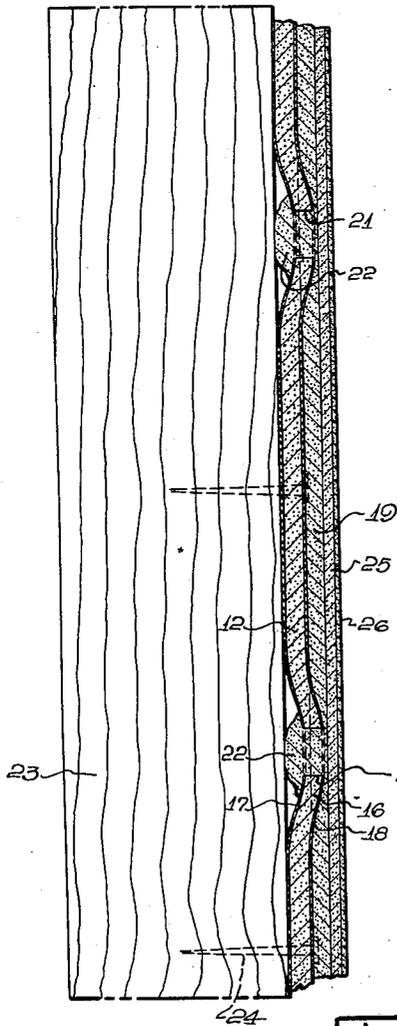


FIG-6

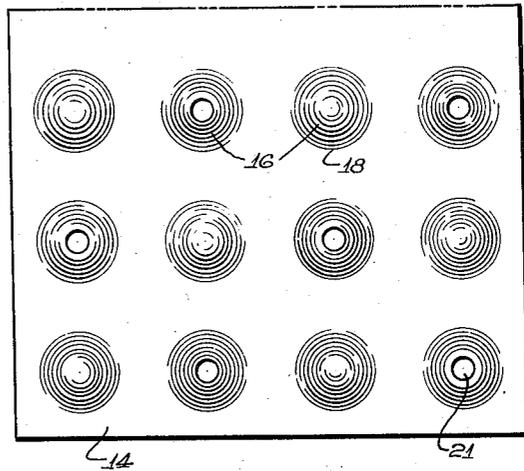


FIG-7

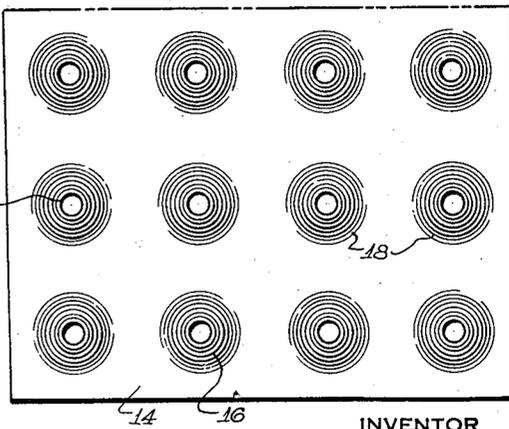
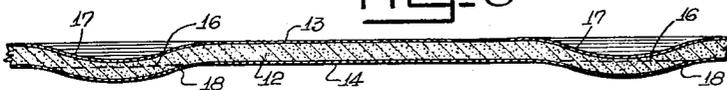


FIG-8



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# UNITED STATES PATENT OFFICE

1,995,393

## SELF-FURRING PLASTER BOARD

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Application March 15, 1933, Serial No. 660,805

5 Claims. (Cl. 72—124)

This invention relates to articles of manufacture used in building constructions, and has reference more particularly to self-furring plaster boards to be used as a base for a coating of plaster.

In the erection of the plastered walls of a building, it is standard practice to use flat plaster boards as a base for the plaster coat. The plaster boards are commonly nailed to wooden studs with their edges lying in an abutting relation to form board joints. One of the difficulties experienced in this type of construction, is that the plasterer has a tendency to apply too thin a layer of plaster over the faces of the flat boards. As a result of this economizing on plaster, the wall over the board joints is weak, and cracks are apt to form in the plaster due, for example, to stresses in supporting framework and foundations. In the past, it has also been customary to depend on the adhesion between the plaster and the paper cover sheet to hold the layer of plaster in position on the wall. However, under certain conditions, such as in the case of fire, the plaster layer separates from the plaster board and the wall fails prematurely as a result. In the manufacture of the flat plaster boards, the cost of drying is abnormally high as the steam from the core material cannot pass freely through the imperforate cover sheets as the board passes through the drying kiln.

An object of this invention therefore, is to provide a plaster board having spot grounds or furring projections on the front face for the purpose of forcing the plasterer to apply the proper thickness of plaster and thus decrease the probability of cracking of the plaster.

Another object of the invention is to provide a plaster board having keying openings adjacent the furring projections so that the plaster layer will be firmly and mechanically attached to the plaster board.

Another object of the invention is to provide a plaster board which has a lower cost of manufacture as a result of decreased drying time, less weight per square foot, etc.

A further object of the invention is to provide a self-furring plaster board in which the protuberances of one board will nest into the protuberances of an adjoining board, thus permitting shipment of the boards as bundled units; also to improve plaster boards in other respects hereinafter specified and claimed.

Reference is to be had to the accompanying drawings forming a part of this specification, in which

Fig. 1 is a perspective view of one end of my improved plaster board,

Fig. 2 is a fragmentary face elevation of a section of a wall with parts broken away to disclose the construction,

Fig. 3 is a transverse sectional view through the wall construction,

Fig. 4 is a vertical sectional view through a wall adjacent a stud,

Fig. 5 is a sectional elevation through two of my improved plaster boards in nested relation,

Figs. 6 and 7 are face views of modified forms of perforated plaster board,

Fig. 8 is a transverse sectional view through an imperforate plaster board with projections,

Fig. 9 is a transverse sectional view through a further modified form of plaster board,

Fig. 10 is a fragmentary plan view of a modified form of board with spot grounds, and

Figs. 11 and 12 are fragmentary sectional views through modified forms of plaster board.

The improved plaster board comprises a core 12 of cementitious material, such as a composition composed largely of gypsum together with other ingredients such as vegetable fiber, foam, etc. A rear paper cover sheet 13 is applied to one face of the core 12 during the manufacture of the plaster board, and a front paper cover sheet 14 is applied to the other face of the core 12. The cover sheet 14 is preferably folded about one edge of the core 12 and has a flap 15 which is adhesively attached to the inner edge of cover sheet 13. While a preferred type of board has been described, the term "plaster board" should be construed generically to include other desirable types of building board.

One of the salient features of the invention consists in forming the board at spaced points while still in a plastic state, to provide rounded spot grounds, nodes, projections or protuberances 16 on the front face of the board and mating rounded hollows 17 on the rear face of the board. The projections 16 on the face of the board are joined to the plane face of the board by gentle curves 18 so as not to interfere with the edge of a trowel as the plasterer applies a layer of plaster 19 to the face of the board. In forming the nodes 16, the forming dies are shaped to provide a radius of the hollow 17 somewhat less than the radius of the node 16 thus producing a space 20 between the hollows and nodes when the boards are nested (Fig. 5). This arrangement permits easier nesting of the boards when they are secured face to face in bundles for shipment. The nodes are preferably arranged in staggered relation (Figs. 1 and

2) but they may also be spaced in rectangular relation (Figs. 6 and 7).

All or some of the nodes 16 are preferably provided with a keying hole 21, so that when the plaster layer 19 is applied to the face of the board, a portion of the plaster will pass through the hole and form a bonding key 22 at the back of the board, thus materially increasing the fire resistance of the finished wall by preventing the plaster layer from breaking loose from the face of the board. The staggered relation of the nodes and hole is preferred as this staggered relation permits good bond of the plaster to the board, regardless of the position of a stud 23 to which the boards are secured by nails 24. Only a few of the holes will lie over the stud with the staggered arrangement and even with these holes, the plaster has ample space to form the keys 22 between the hollows 17 and the stud 23. After the scratch or base coat plaster 19 has been applied and dried, the second or "browning" coat of plaster 25 and finishing coat plaster 26 are applied in the usual way to form the finished wall structure. If desired, the holes 21 may be omitted, thus producing a board as shown in Fig. 8 with projecting nodes on the front face of the board which will insure the application of a reasonably thick coat of plaster. In the form of the invention shown in Fig. 9, spot grounds or nodes 28 are provided on the front face of the board, the hollows 17 being omitted leaving the back face of the board flat. Each of the nodes 28 has a keying perforation 29 as previously described in connection with the other forms of the board. In the modified form of the board shown in Fig. 10, only about two spot grounds or nodes 30 are used on the face of the board. If the board size is 16 inches by 48 inches, these two spot grounds preferably divide the board into three equal 16 inch spaces. A red or other colored marking line or indicator 31 may be provided across the rounded surface of each node 30 to indicate the position of the stud to the workman who nails the boards to the studs, the studs being commonly placed on 16 inch centers. The indicator line 31 may also indicate to the workman where a board may be cut when breaking joints between boards, in order to secure the best possible arrangement.

In the modified form of board shown in Fig. 11, the back face of the board 33 is provided with hollows 34 and a keying hole 35 passes through the board in each of said hollows 34. The front face 36 of the board is coated with a layer of plaster 37 which passes through the hole 35 and forms a key 38 in the hollow 34. In this form of board, the hollow 34 permits the plaster key 37 to form, even if the hollow is located directly over a stud.

The modified form of board shown in Fig. 12 has a smooth front surface 39 and a rear surface 40 which has hollows 41. Holes 42 are formed in the board in each of the hollows 41 by the use of a four cornered pointed punch so that the rear paper cover sheet forms outwardly extending flaps 43 which partially protects and reinforces the core of the board inside the holes 42. The paper cover sheet on the front face of the board forms flaps 44 which curl outwardly to form spot grounds on the front face of the board, thus insuring the application of a sufficiently thick layer of plaster to the front face of the board.

In manufacturing an improved board, such as that shown in Figs. 1 and 2, a standard board machine is used in a manner well known to the art.

Such a machine delivers the plastic core material 12 between the cover sheets 13 and 14. After the wet board has passed along the machine for a period sufficient to permit the core material to approach its setting point, the board is engaged by opposed chains of male and female dies which act on the two cover sheets to form the nodes 16 and hollows 17 into the boards just before the setting of the board core 12. The dies then disengage from the board and shortly after setting of the core 12, punches travel with the board a short distance and then return, to punch the holes 21 through the board at the nodes desired to perforate. Instead of punching the holes in the boards while wet, the boards with the formed nodes may be dried and bundled, the holes being drilled through the bundle of boards at the nodes by multiple spindle drills or the like.

My improved plaster board presents many advantages over the standard type of imperforate, flat boards and the following might be mentioned;—

1. The board is self-furring thus insuring a proper thickness of plaster over the board and reducing cracking of the plaster.
2. The perforated board provides a strong mechanical key for the plaster, even when the perforations are positioned directly over the stud, thus insuring a high fire resistance in a wall and preventing separation of the plaster from the board. A one hour fire rating can be obtained with my improved perforated board.
3. The perforations in the board cover sheets permit faster drying at a lower cost due to the freer passage of moisture.
4. The improved board is easy to apply to the studs and is easy to plaster over.
5. The board is lighter in weight thus reducing freight costs and providing easier handling by the workman.
6. The boards nest readily for bundling preparatory to shipment.
7. The board is strengthened by the reinforcing action of the nodes thus permitting the use of thinner cover sheets, a thinner core or both, with the same final strength of board.
8. The improved board provides better walls and ceilings in a building.

While I have described my invention as particularly applicable to plaster boards with cementitious cores and paper cover sheets, other types of panels or plaster boards, such as those made of fiber, may be used if desired.

I would state in conclusion that, while the illustrated examples constitute certain examples of the invention, I do not wish to limit myself precisely to these details, since manifestly the same may be considerably varied without departing from the spirit of the invention as defined in the appended claims.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. An article of manufacture comprising a plaster board having paper cover sheets and having projecting nodes on the front face of said board and mating arcuate hollows on the rear face of said board, said board being provided with a hole through said board at a plurality of said nodes so as to permit plaster applied to said front face to pass through said hole and form a key in a hollow without extending substantially beyond the rear face of said board.

2. An article of manufacture comprising a plaster board having a cementitious core and paper cover sheets, said board having nodes pro-

jecting from the front surface of said board to provide spot grounds to insure the application of a thick layer of plaster to said front face, said board having mating hollows on the rear face thereof to permit nesting during shipment one of said nodes having a hole passing through said board, the punched flaps of one of said cover sheets being pressed inwardly and bonded to said core so as to reinforce said board around the periphery of said hole.

3. An article of manufacture comprising a plaster board having spaced rounded nodes on one face and mating rounded hollows on the other face of said board, the radii of said nodes and hollows being different to provide nesting ability to said boards.

4. A building construction comprising a building frame, plaster boards secured to said frame,

said boards having displaced hollows positioned over said frame and mating nodes projecting from the front face of said board, one or more of said nodes being provided with a keying hole to permit plaster applied to the front face of said board to pass through said hole and form a key in said hollow and in front of said frame.

5. A building construction comprising a building frame, plaster board secured to said frame, said board having displaced hollows at spaced intervals, at least certain of said hollows extending over said frame, and keying apertures passing completely through said board and through at least some of said hollows, the apertured hollows over said frame permitting substantial plaster keys to be formed at the back of the board adjacent said frame.

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