June 9, 1931. M. S. WUNDERLICH 1,808,976

PLASTER BOARD

Filed June 16, 1930

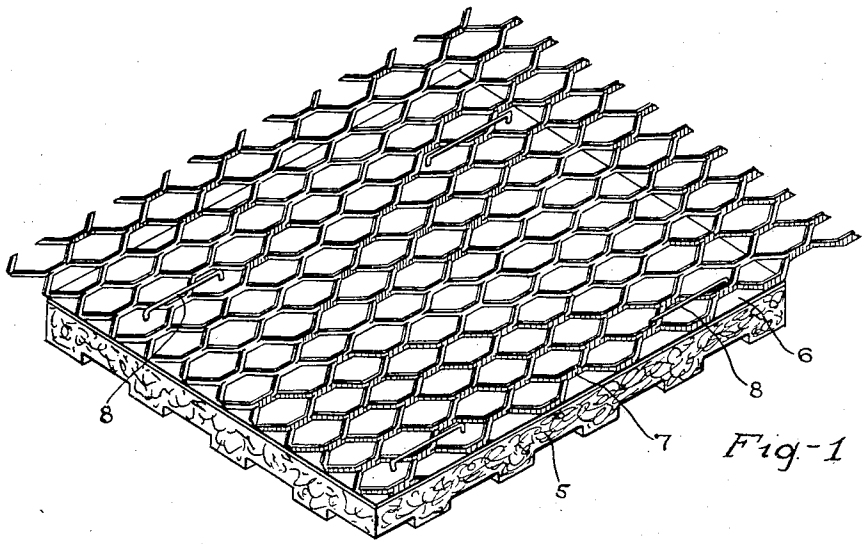


Fig. 1

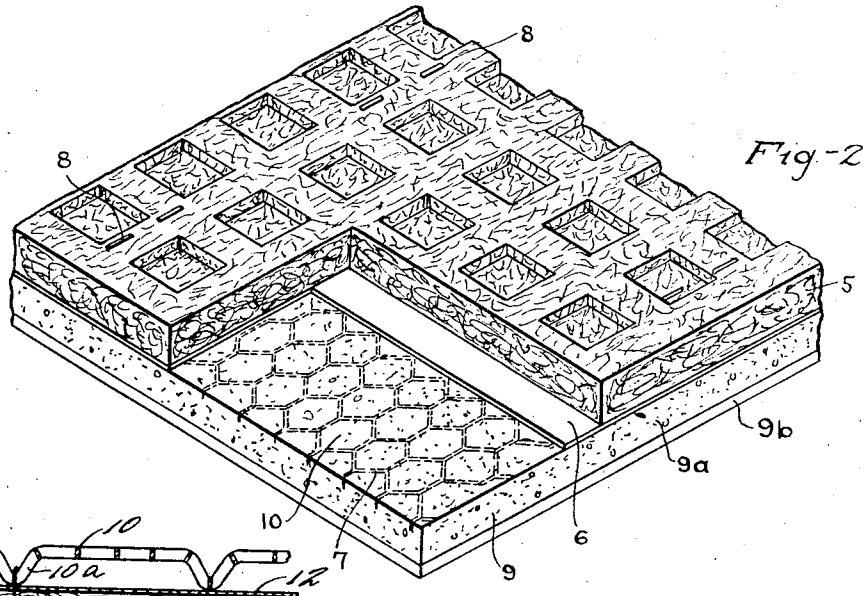


Fig. 2

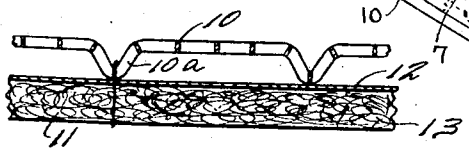


Fig. 4

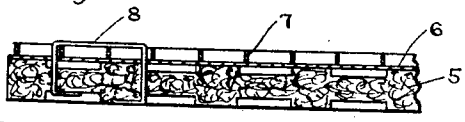


Fig. 3

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UNITED STATES PATENT OFFICE

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PLASTER BOARD

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This invention relates to a plaster and insulating board. In the structure of modern buildings, where plaster or similar substance is to be placed on a wall, various kinds of lathing are used. It is also common practice to use insulating or wall board of different kinds. It is also common practice to use expanded metal lath and this is generally nailed directly to the sheeting or to the studding. It has been proposed to make a plaster board having lath thereon and one form of such board is shown in the patent to Ellis 1,126,186, granted January 26th, 1915. The need has been felt for a plaster board which would have insulating qualities, which would have means for preventing the plaster coming in direct contact with the insulating board, and which would have a plaster receiving and holding layer or lath thereon of metal, rendering the board flexible in all directions or in directions at right angles to each other, and which would permit a uniform application of the plaster. It will be seen that the plaster board, such as shown in the Ellis patent, above referred to is not flexible in all directions, nor in directions at right angles to each other, and that the plaster will not be uniformly disposed relative to the board, as the lath covers up quite a large area of the board. This difference in the surface under the plaster and the difference in the thickness of the plaster layer is very apt to cause cracks in the plaster and to prevent the uniform hardening of the plaster.

It is an object of this invention, therefore, to provide a plaster board having a plaster receiving and holding layer, together with an insulating layer, which board is flexible in substantially all directions and particularly in directions at right angles to each other.

It is a further object of the invention to provide a plaster board which is flexible and which has an efficient means for receiving and holding the plaster thereon, and on which the plaster can be uniformly placed in relation to the insulating layer or its covering.

It is still another object of the invention to provide a plaster board, which can be made in blocks or pieces of comparatively small area and which comprises a uniform layer of insulating material, a uniform layer of water proof material covering the same, and a uniform metal layer of plaster receiving and holding material of integral and uniform formation together with means for fastening all of said layers together.

It is more specifically an object of the invention to provide a plaster board comprising a layer of fibrous insulating material of sufficient rigidity to retain its shape and be handled as a board but yet which is capable of being flexed, a layer of water proof paper covering said layer, and a layer of expanded metal lath covering said paper, together with means passing through all of the layers for securing them together. The layer of expanded metal lath preferably projects a short distance on the blocks or sheets of the board at two edges thereof, the sheets preferably being square or rectangular.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawings, wherein like reference characters refer to similar parts throughout the several views and wherein,

Fig. 1 is a perspective view of a block or sheet of the material constituting the present invention;

Fig. 2 is a perspective view of a piece of the material, the same being inverted and showing the plaster attached thereto, some parts being broken away;

Fig. 3 is a vertical section through a portion of the sheet shown in Fig. 1; and

Fig. 4 is a view similar to Fig. 3, showing a modified form of the invention.

Referring to the drawings, a plaster board is shown comprising an inner or bottom layer 5, which is formed of fibrous insulating material. While any form of fibrous insulating material may be used, preferably, and in the embodiment of the invention illustrated, the layer 5 is formed of felted fibers, of such material as shredded straw, corn stalks, hemp, excelsior shavings, and the

like. Such a felted sheet is disclosed and claimed in Letters Patent 908,681, granted to James E. Lappen, January 5th, 1909. The layer 5 is sufficiently rigid to retain its shape and be handled as a sheet or board but is flexible in various directions and is somewhat yielding. The material also comprises a water proof facing 6 overlying the layer 5. While the facing 6 can be variously formed, in the embodiment of the invention illustrated, it is shown as a thin sheet of water proof paper. While any good grade of water proof building paper may be used, preferably a fairly heavy paper, known to the trade as "Neponsit" is used. The sheet 6, of course, is quite flexible and bendable in any direction with layer 5. The material also comprises a third layer 7 which is formed of the well known expanded metal lathing. This material is formed by slitting a sheet of metal and then drawing the metal to expand it at the slitted portions, thus forming a series of polygonal openings. The lathing has a sort of honeycomb structure and is of appreciable thickness, the kind preferably used being between one-sixteenth of an inch and one-eighth of an inch in thickness. The three layers 5, 6 and 7 are secured or bound together by spaced fastening means, and in the embodiment of the invention illustrated these fastening means are shown as wire staples 8 having their bight portions overlying the layer 7 and the legs thereof extending through all three layers and being clinched on the inner or bottom side of the layer 5. As shown in Fig. 1, the sheet 7 extends some distance beyond the edges of layer 5 at two sides thereof. The material is preferably made in square or rectangular sheets.

In operation, the board may be tacked to the sheeting or studding, where the wall is to be made, and the layer 7 will be outermost. The plaster is then applied to the outer layer 7. The metal lathing 7 is well adapted for receiving and holding the plaster and has proven very efficient for this purpose in practice. The plaster layer on the material is shown as 9 in Fig. 2, the same being shown as having a rough coat or layer 9*a* and outer finishing coat 9*b*. Owing to the yielding nature of layer 5, and sheet 6, and to the fact that the fastening means 8 are spaced, the plaster finds its way to the inner side of the layer 7 and substantially covers the lath so that a smooth surface 10 is formed at the inner side of the layer 7 adjacent the paper layer 6. This feature of the plaster passing through the metallic lath causes the lath to be self-furring. This is of great importance as it insures a very secure and efficient bond for the plaster and the layer 5 is completely enclosed. It will also be noted that by using the expanded metal lath, the plaster is uniformly applied to the layer 6, as the plaster is uniform in said lath. The layer 7 is an integral piece and a very uniform layer of plaster and base, therefore, is thus obtained. This insures that the plaster will dry uniformly and the tendency to crack is practically eliminated. The board, as stated, is quite flexible and can thus be readily attached to surfaces which are not lying in one plane. A close fit can thus be had between the board and its supporting surface. This is a great advantage as it is often necessary to flex the plaster board somewhat in its application. With a board having rigid lath thereon this is impossible. Layer 5 is formed with depressions in its surface, illustrated as having the form of a frustum of a pyramid. These form air spaces when covered by the layer 6.

In Fig. 4 a modified form of the invention is shown, in which a layer 10 of specially formed self-furring expanded metal lath is used. This will be similar in form to the layer 7 shown in Fig. 1 already described, but the same is pressed to have transversely extending ribs 10*a*. These ribs will contact the layer 6 of paper which overlies the layer 5 of insulating material. Layer 10 will be secured by suitable fastening means such as staples 11 extending therethrough and through the layer 12 of waterproof paper and through the layer of insulating material 13. With such a form of metal lath, the plaster can pass to the rear thereof and the metal lath will be embedded in the plaster. Such a self-furring lath will be used where the insulating material is not yielding. With the yielding material as described in connection with Figs. 1, 2 and 3, the self-furring effect is obtained without having the lath spaced from the sheet 6.

From the above description, it is seen that applicant has provided a simple and efficient plaster board and one comprising a new combination of elements. The board has many advantages over the previous plaster boards which have been proposed. It forms a simple and efficient article of manufacture and serves the double duty of insulating board and lath. The material is flexible as stated, is easily and inexpensively made and can be easily and effectively applied. As stated, the layer of expanded metal lath is disposed within the plaster and between the plaster and the layer 6 or the waterproof facing. The metal is thus covered throughout its whole extent and is not subject to moisture, or to any circulation of air. This prevents any rusting or corrosion of the metal and adds to the life of the structure. Tests of building construction have shown that air under pressure, as in a high wind, will pass through rough plaster. However, should any air

pass through the plaster on the present board, it could not pass through the layer 6 which is air-tight and waterproof. A very air-tight construction is thus provided. The material has been amply demonstrated in actual practice and found to be very efficient and successful, and is being commercially made.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the parts without departing from the scope of applicant's invention, which, generally stated, consists in a material, capable of carrying out the objects above set forth, such as disclosed and defined in the appended claims.

What is claimed is:—

1. A plaster board comprising a comparatively thick layer of insulating material, a thin water proof sheet overlying said layer, a layer of expanded metal lath overlying said sheet and means extending through and securing said layers and sheet together.

2. A composite lath and heat insulating material, comprising a felted flexible insulating layer and a flexible layer of expanded metal lath secured thereto, said material being flexible.

3. A composite lath and heat insulating material comprising a flexible insulating body layer, a water proof facing sheet applied thereto, a layer of expanded metal lath secured thereto and metallic fastening members extending through all of said layers and securing the same together.

4. A composite lath and heat insulating material, comprising a flexible insulating body layer, a water proof sheet of thin material overlying said sheet, an integral sheet of expanded metal lathing overlying said layer and fastening means extending through said three elements for holding the same together.

5. A composite lath and heat insulating material, comprising a yielding layer of fibrous insulating material, a water proof facing applied to said layer and overlying the same, a layer of flexible expanded metal overlying said facing and spaced means for holding said layers together whereby in the application of plaster to said expanded metal, said first mentioned layer will yield and allow said plaster to pass to the rear of sheet metal layer thus forming an efficient bond.

6. A composite lath and heat insulating material, comprising a comparatively thick layer of insulating material, a layer of expanded metal lathing overlying said layer, and spaced means extending through said layers and fastening the same together.

7. A flexible composite lath and heat insulating material comprising a comparatively thick and bendable layer of fibrous insulating material, said layer having depressions formed in its surface, a sheet of water proof paper overlying said layer and covering said depressions, thus forming air cells, a layer of expanded metal lathing overlying said sheet, and means holding said layers and sheet together.

8. A wall structure including a layer of yielding fibrous insulating material, a sheet of water proof and air tight paper overlying said layer, a uniform layer of expanded metal lathing overlying said sheet, and a layer of plaster embedding said last mentioned layer and engaging said sheet, whereby said layer of metal lathing is enclosed between the plaster and said air tight sheet and circulation of air through said wall is prevented.

9. A composite lath and heat insulating material comprising a comparatively thick layer of yielding insulating material, a layer of expanded metal lathing overlying said layer, and spaced means extending through said layers and fastening the same together, said layer of expanded metal lathing being self-furring.

10. A composite lath and heat insulating material comprising a flexible layer of fibrous insulating material, a waterproof and airproof thin sheet of material overlying said layer, an integral layer of expanded metal lathing overlying said sheet, and spaced metallic fastening means extending through said three elements for holding the same together.

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