Nov. 24, 1925.

1,562,499

G. H. ELLIS

INSULATING PLASTER BOARD

Filed Aug. 8, 1923

Fig. 2.

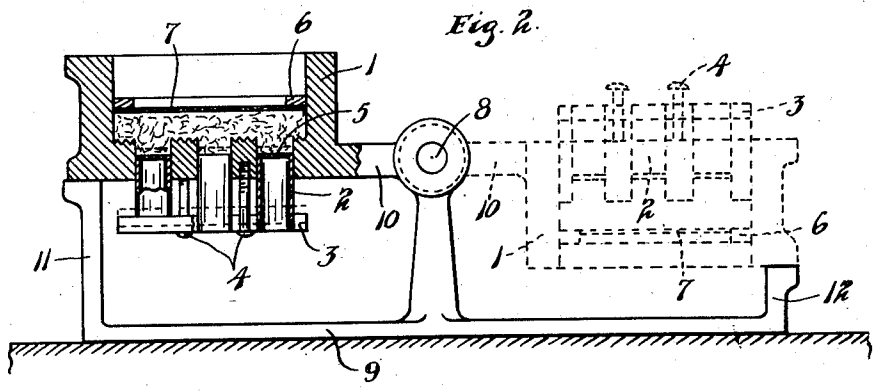


Fig. 1.

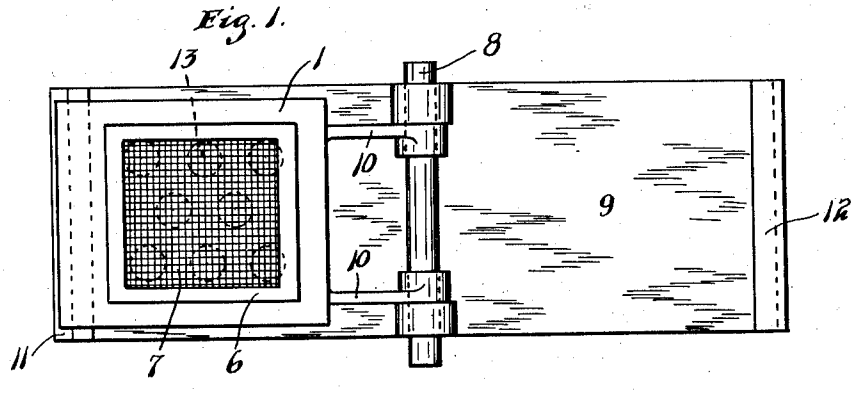


Fig. 3.

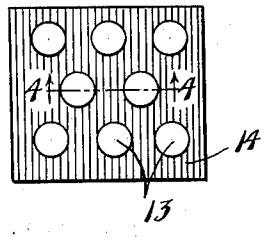


Fig. 5.

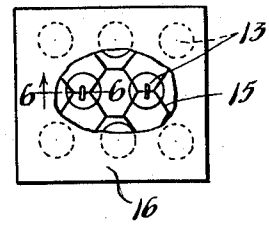


Fig. 4.

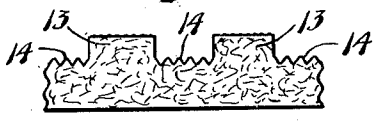
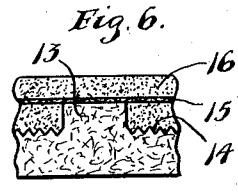


Fig. 6.



INVENTOR.
GEORGE H. ELLIS.
BY HIS ATTORNEY.
James F. Williamson

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UNITED STATES PATENT OFFICE.

GEORGE H. ELLIS, OF ST. PAUL, MINNESOTA.

INSULATING PLASTER BOARD.

Application filed August 8, 1923. Serial No. 656,330.

To all whom it may concern:

Be it known that I, GEORGE H. ELLIS, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Insulating Plaster Board; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a plaster board and method of making the same. Such boards are now widely used commercially for holding plaster or stucco, both in interior and exterior building construction. The board of the present invention is made of compressed fibrous material and comprises a flat body having plaster holding projections thereon. In the prior art, the body of the board has been formed with depressions of various kinds in which the plaster was supposed to enter so as to be held in position or locked in place.

It is an object of the present invention to provide a board comprising a flat body which has spaced members of comparatively small area projecting therefrom instead of having depressions formed therein.

It is a further object of the invention to provide such a board in which the projections are regularly formed and regularly spaced and have their top areas in the shape of regular closed figures and have side walls substantially normal to the surface of the board, said surface being corrugated between said projections.

It is still another object of the invention to provide a method of making such a board whereby the projections will have their top surfaces compressed to a greater degree than the body of the board.

These and other objects and advantages of the invention will be apparent from the following description made in connection with the accompanying drawings in which

Fig. 1 is a plan view of one form of apparatus used in the process;

Fig. 2 is a central vertical section of Fig. 1, showing in dotted lines the apparatus in another position;

Fig. 3 is a top plan view of the finished board;

Fig. 4 is a vertical section taken on the line 4—4 of Fig. 3;

Fig. 5 is a top plan view showing one of the uses of the board having a portion thereof broken away; and

Fig. 6 is a vertical section taken on the line 6—6 of Fig. 5, shown on an enlarged scale.

The improved insulated lath board may be commercially made at low cost from various different fibers, such, for example, as cereal straws distintegrated and pulped and preferably reduced approximately to what is known as "half stock." However, it has been found in practice that the board may, in point of cheapness of manufacture and efficiency of product, be made from pulped waste paper, which paper may be easily obtained in large quantities at low cost in practically all countries and especially in the United States.

In using the waste paper, the sulphite and better grades of paper can be sorted and reused to make a high grade paper, while the colored paper may be sorted out and the dye stock reclaimed therefrom. By this practice, the salvage obtained in handling the paper will pay for the cost of the same, so that the portion of paper used in making the lathboard costs practically nothing. Waste paper also contains sizing which, to a considerable degree, renders the board made therefrom water proof. The waste paper is pulped, but need not be and preferably is not entirely disintegrated. It is, however, reduced to a pulp of such character that it may be molded or pressed to the desired form.

The board of the present invention is an improvement upon that disclosed and claimed in my application filed April 2nd, 1923, Serial Number 629,402 which application has matured into Patent No. 1,510,662, granted October 7, 1924.

In constructing the board by the present method the same is formed with spaced projections on one surface thereof between which the plaster is adapted to be placed to be held in position thereby. These projections, as shown in Figs. 3 and 4, have their top areas formed as regular closed figures, preferably circular, and have their side walls substantially perpendicular to the plane of the board. The projections are of greater dimension than those disclosed in my prior application and the spaces between the same are larger relatively to the diameter of the projections.

One form of apparatus capable of use in

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the method of making the board is shown in Figs. 1 and 2. This apparatus comprises a box-shaped mold 1 illustrated as of rectangular form having in its bottom a plurality of spaced apertures or passages. Members 2 are adapted to fit and slide in said passages, which members may be of any desired shape in cross section but which are illustrated as being circular in cross section. The members 2 are provided with flat perforated surfaces facing into the box 1 and said members are also carried by a plate or crosshead 3 slidably mounted on guide members 4 secured to the box 1 and which are illustrated as being in the form of headed bolts, the heads of which limit the movement of the crosshead 3. When the crosshead is in its outermost position, the perforated flat surfaces 5 of the members 2 are disposed in the passages in the box 1 at some distance below the bottom of the box. The portion of the bottom of the mold 1 between said passages is formed with parallel upstanding ridges of comparatively small height and substantially triangular in cross section. With the members 2 in this position a layer of semi-fluid fibrous material from which the board is made is placed in the mold and a frame 6 which fits the mold is placed thereon, which frame comprises for practically its entire extent of surface, a screen 7. The material is then compressed by pressure exerted between the frame 6 and the bottom of the mold. The water in the material can readily escape through the screen 7 and through the perforated surfaces 5. Owing to the fact that the material is only partly fluid and also due to the fibrous nature thereof, the material between the frame 5 and the imperforate bottom of the mold does not flow outwardly so that the material is evenly distributed, but such portion of the material is compacted to a greater extent than the portion of the material which lies between the frame 6 and the perforated surfaces 5. After the material has been sufficiently compressed the frame 6 and screen 7 are held stationary and the crosshead 3 and members 2 are given a slightly inward movement as to the position indicated in dotted lines in Fig. 2. This movement acts to further compress the material adjacent the tops 5 of members 2 and all of said members are brought to a common plane. After this movement of members 2, the frame 1 is swung about a shaft 8 carried by the frame 9, which shaft and frame support the mold box 1 to the position indicated in dotted lines in Fig. 2. The frame 1 is provided with a pair of arms 10 carrying lugs at their outer ends through which passes the shaft 8. When the mold is in the position shown in full lines in Fig. 2 is is supported upon an upright wall 11 of the frame 9 and when it is swung to the position shown in dotted lines it is supported upon the lower wall 12. When the mold is in the position indicated by dotted lines, the crosshead 3 can be pressed downwardly sliding on the guide rods 4 and the layer of material forming the board will be pressed out of the mold. The form of the board as it is thus taken from the mold is clearly shown in Figs. 4 and 5. One surface of the board has formed thereon a series of parallel ridges or corrugations 14 of comparatively small height and said surface also has projecting therefrom a plurality of projecting cylindrical members 13 having flat outer surfaces. These members are spaced along a line joining their centers a distance considerably greater than half their diameter. The perforations in the surfaces 5 of the members 2 also cause a slight roughness on the flat outer surface of the projections 13 on the board. The plasterboard is now dried and then ready for use.

It is thought the use of the board will be obvious from the previous description. The sections of the board will be nailed to the studding or surface of the building to be plastered and the plaster, stucco or similar material will be plastered onto the board between and over the projections 13. The plaster or similar material is easily pressed over the ribs or corrugations 14 and into the shallow channels therebetween. The corrugations 14 exert a very considerable holding effect upon the material placed thereon, the principal holding effect however being exerted by the members 13. The extra hardened surfaces of members 13 which all lie accurately in one plane render it possible to place an even thin coat of plaster thereover. With plaster it will only be necessary to cover the surface of the members 13 with a very thin layer of plaster, the main layer of plaster extending between said projections. The use of the board, therefore, effects quite a saving in the volume of plaster used over boards in which the plaster was held in depressions of considerable depth in the surface thereof. A sufficient layer of plaster must be placed over the projections 13 to cover and conceal the same and a good depth of plaster between the projections is therefore assured. The plastering job thus can not be slighted and an objectionably thin coat of plaster administered. Considerable difficulty has been experienced with stucco plaster which is commonly used on the exteriors of buildings in getting the stucco into sufficiently close contact with the supporting material. Such stucco is commonly placed on metal lath of various forms. Experiments and investigations on actual pieces of work have shown that only a comparatively small area of the metal lath is efficiently contacted by the stucco. The indentations or spaces formed

in metal lath must be sufficiently small to hold the stucco and said lath must also constitute the reinforcing means for the stucco. With applicant's device, a screen 15 of large mesh can be laid over the tops of the members 13 and secured thereto, as shown in Figs. 5 and 6, and will form the reinforcing means for the layer of stucco 16. The said screen will be held in proper position relative to the said layer by the members 13 and owing to the larger mesh of the screen there will be no difficulty in getting the stucco into the meshes thereof. The stucco will be locked in position by the members 13 between which it will readily enter. A very compact and efficient reinforced layer of stucco is thus formed with the reinforcing medium in the correct position.

The board made, as above described, is not only a very good insulator but is quite strong and tough, owing to the fibrous material therein.

After the board has been properly dried the surface containing the projections 13 and 14, as well as said projections may, if desired, be coated or impregnated with any suitable water-proofing material, such as coal tar, varnish, silicate of soda or any other of the known water proofing or fire proofing substances.

From the above description it is seen that applicant has provided a lathboard of great simplicity and efficiency as well as a novel method of producing the same. The body of the board between the projections is quite compact, while the projections themselves have very compact outer portions to form an efficient holding means for the plaster. The high insulating qualities of the board render the same capable of being used both as a sheathing and as a lathing so that the board can be used on the exterior of a building without the wooden or other sheathing usually employed.

It will, of course, be understood, that various changes may be made in the form, composition, details and arrangement of the board structure and in the various steps of the process without departing from the scope of applicant's invention, which, generally stated, consists in a method and product capable of carrying out the objects enumerated and such as shown and described and set forth in the appended claims.

What is claimed is:

1. A plasterboard comprising a flat body of fibrous material having spaced projections extending from one surface thereof, said projections being spaced from each other in all directions, the surface of the board between said projections being ribbed or corrugated.

2. A plasterboard having regularly formed and regularly spaced projections thereon, said projections being spaced a distance greater than half the diameter of said projections, said board being corrugated between said projections.

3. A plasterboard comprising a flat body of fibrous material having substantially cylindrical projections extending from one surface thereof, each projection being spaced from the surrounding adjacent projections substantially the same distance, the surface of said board between the projections being provided with adjacent parallel V-shaped ribs.

In testimony whereof I affix my signature.

GEORGE H. ELLIS.

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