Oct. 13, 1925. 1,556,575

M. K. ARMSTRONG

PLASTER BOARD

Filed Oct. 1, 1921

Fig. 1.

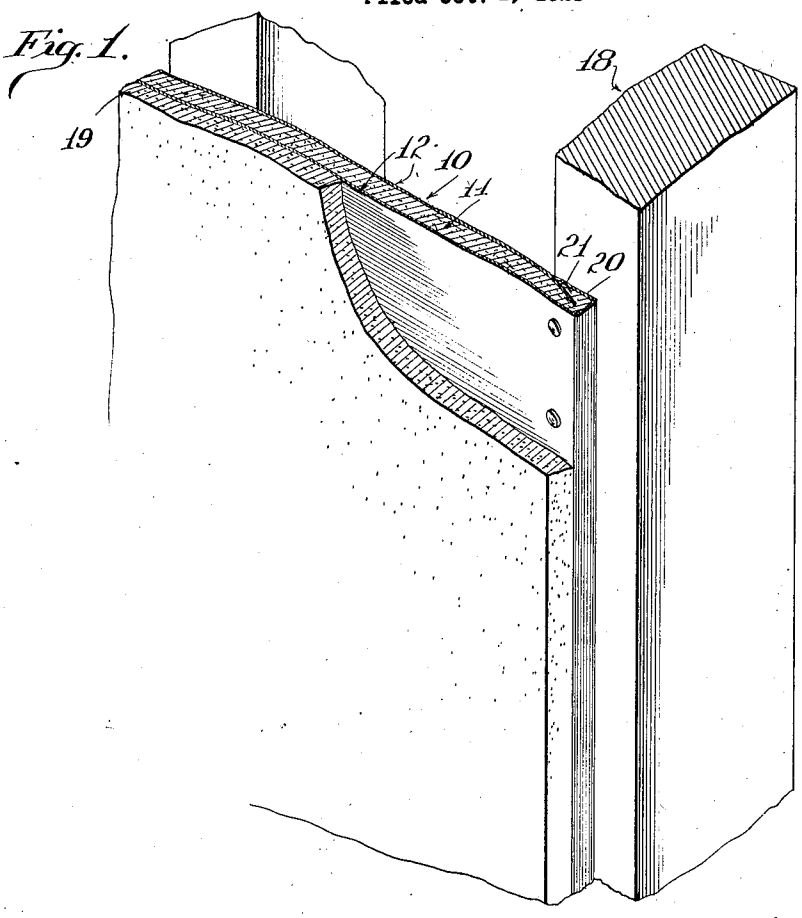
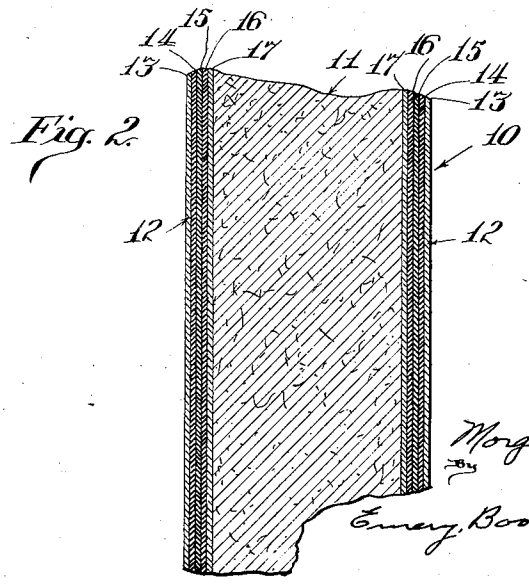


Fig. 2.



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UNITED STATES PATENT OFFICE.

MORGAN K. ARMSTRONG, OF WINNETKA, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE BEAVER PRODUCTS COMPANY, INC., A CORPORATION OF NEW YORK.

PLASTER BOARD.

Application filed October 1, 1921. Serial No. 504,755.

To all whom it may concern:

Be it known that MORGAN K. ARMSTRONG, a citizen of the United States, and a resident of the city of Winnetka, county of Cook, State of Illinois, has invented an Improvement in Plaster Board, of which the following is a specification.

This invention relates to composite board, known generally as plaster board. Among other objects, the invention is intended to provide improved boards having plaster receiving surfaces of uniform characteristics, whereby the plastered or otherwise coated surfaces will be of uniform and improved quality with a decreased tendency to crack at the joints between adjacent boards.

Another object is to provide a board which will retain its shape in a plaster ceiling or analogous location.

The invention consists in the novel combinations and constructions to be hereinafter described and claimed for carrying out the above stated objects and such other objects as will appear from the description and claims.

The invention is illustrated in a preferred embodiment in the accompanying drawing wherein:

Fig. 1 is a fragmentary perspective view of a plaster wall employing a composite board embodying features of this invention.

Fig. 2 is an enlarged section of a plaster board.

Like characters of reference designate like parts in the several figures of the drawing.

In the illustrative embodiment shown in the drawings, the composite board 10, comprises a substantially rigid body, or core 11, having covering material 12 on one or both faces thereof. The body 11 may be of any suitable material such as plaster, to which the covering material 12 is adapted to adhere.

The covering material is preferably of a fibrous character, such as heavy paper which is manufactured or treated so as to retard for a given period of time, the penetration of water or moisture, and the faces of which are adapted to adhere to plaster or the like.

Preferably the cover sheet is made of a plurality of plies, the outer plies, being unsized or adapted to adhere to or receive plaster, and the intermediate plies being treated or adapted to prevent the penetration of moisture through the sheet for a given period of time. For instance, in the manufacture of a paper covering material, the outer ply or plies on the outside of the sheet and also if desired, the outer ply or plies on the inside of the sheet next the plaster body, may be made from paper stock which is unsized or "slack-sized" and the intermediate plies may be made from stock which is sized to prevent the penetration of moisture by a suitable sizing such as resin. The term "slack-sized" is used to characterize fibre stock which is treated by or contains a compound which neutralizes any sizing which may exist in the stock and maintains the stock in unsized condition. The number of plies in the paper may be varied in order to provide a sheet of the required thickness and strength and in order to provide unsized and sized plies of suitable thickness and having the proper characteristics. For instance, it is desirable that the unsized outer layer be of sufficient thickness to properly and firmly retain or adhere to plaster or other composition employed. On the other hand, it is desirable that the unsized ply or plies, particularly those on the outside surface of the board, be thin enough or their water-absorbing capacity sufficiently limited that they will not absorb too great a quantity of water as to interfere with the crystallization of the plaster. The intermediate sized ply or plies should be so sized that they will prevent the penetration of any substantial quantity of moisture through the paper for a length of time sufficient to permit the convenient handling of the board during manufacture and to permit at least a partial setting of the plaster core and, after the board is used, to permit an adequate setting or drying of the plaster or other surfacing applied to the board.

In the illustrative form, shown in Fig. 2, the covering material, which has been drawn on an exaggerated scale to illustrate its structure, is a paper sheet, composed of five plies 13, 14, 15, 16 and 17, the middle three, 14, 15, and 16, of which are sized and the outer plies 13, and 17 are unsized. This paper may be made in what is known as a five cylinder paper machine. Obviously, the

number of sized and unsized plies or the total number of plies in the paper may be varied to suit particular requirements.

In Fig. 1 is shown an illustrative wall construction, employing a board embodying the invention above described. The wall comprises the usual supporting structure 18, to which the plaster board is nailed or otherwise secured. To the surface of the board is applied one or more layers 19 of plaster or other surfacing in the usual manner. The first coat of plaster adheres to the unsized surface of the covering material of the board, and the moisture retarding characteristics of the underlayer of the covering sheet prevent any water, particularly the water of crystallization content, from being absorbed out of the plaster surfacing into the paper and plaster core of the board. This insures a uniform and simultaneous drying and setting of the plaster or other surfacing on adjacent boards and the consequent uniform contraction of the plaster surfacing on adjacent boards.

The unsized outer layer of the covering sheet is so thin that even if its water-absorbing properties vary for different boards, this factor will not appreciably interfere with the uniform setting and drying of the surfacing. But it is seldom possible to obtain wholly unsized paper for covering sheets which is sufficiently uniform in its effect upon the plastered surface that the plaster on adjacent boards will act alike. The water-absorbing properties of and the speed at which water penetrates unsized covering paper of this type, frequently vary to such an extent that the plaster surface in one board will set and dry long before the surface on the adjacent board has set. This causes uneven and irregular contraction of the plastered surfaces and results in cracks at the joints between the boards. Frequently the water of crystallization content in the plaster surface is partially absorbed by the paper and plaster core of the board, leaving the plaster surface chalky and weak when it is dry.

The improved board may be used on ceilings and in similar situations and plastered over without the danger of sagging. The water from the plaster cannot appreciably penetrate the paper and enter the plaster core to soften it and permit it to sag or warp.

The illustrative plaster board may be made in any appropriate manner. For instance, a bottom cover-sheet may be led past a chute which deposits plaster thereon, after which a top sheet is placed upon the plaster and the board thus formed passed between a pair of rolls which firmly unite the cover sheets with the plaster. If desired the margins of the bottom sheet may be progressively folded up and over the margins of the top sheet as shown at 20, Fig. 1, a layer 21 of plaster being employed to firmly cement the folded margins in place. The provision of a sized paper having unsized surfaces results in a firm bond between the margins of both sheets and the plaster layer 21.

As will appear to those skilled in the art, the invention is applicable to composite boards and the like made of materials which are functionally equivalent to, but specifically different from the plaster and paper referred to above. Obviously, the invention is not limited to the particular embodiment illustrated but may be variously modified. Moreover, certain features may be advantageously employed in various combinations and subcombinations and need not all be used conjointly.

I claim:

1. A composite board, comprising in combination a body of plaster or the like and covering material adhering to the surface thereof, said covering material having both surfaces of a character to receive and adhere to plaster but arranged to prevent any substantial penetration of moisture therethrough.

2. A composite board comprising, in combination, a substantially rigid body and covering material adhering thereto, said material having unsized surfaces and a sized center.

3. A composite board comprising, in combination, a substantially rigid body and covering material adhering thereto, said covering material having absorbent surfaces and a moisture retarding center.

4. A composite board comprising, in combination, a body of plaster or the like and covering material therefor adapted to retard the penetration of moisture through the same, the inner and outer surfaces of said material being adapted to adhere to plaster.

5. A composite board comprising, in combination, a body of plaster or the like, covering material therefor consisting of a plurality of plies, an intermediate ply of which is sized, and the outer plies being adapted to adhere to plaster.

6. A composite board comprising, in combination, a body of plaster or the like, a paper covering sheet therefor consisting of a plurality of plies, the outer plies being unsized and an intermediate ply being sized.

7. A composite board comprising, in combination, a body of plaster or the like, paper covering sheets therefor consisting of a plurality of plies, the plies at the exposed surface of the board being unsized and certain inner plies being sized.

8. A composite board comprising, in combination, a body of plaster or the like, fibrous covering material therefor having an outside unsized layer and an inner sized layer.

9. A plaster board comprising in combi-

nation a plaster body; covering material adhering to said plaster body, said covering material being folded around the edges of said plaster body to envelope the same, and having its margins arranged in overlapping relation, the overlying margin being cemented in place by an intervening layer of plaster; said overlapping margins being treated to retard moisture penetration, but having their surfaces adjacent said layer of plaster treated to cause them firmly to adhere to said layer of plaster.

10. A plaster board, comprising in combination, a plaster body; covering material adhering to said plaster body and treated to retard moisture penetration; said covering material being folded around the edges of said plaster body to envelope the same and having its margins arranged in overlapping relation, the overlying margin being cemented in place by an intervening layer of plaster; said margins having their surfaces adjacent said plaster layer unsized to cause said plaster layer to adhere firmly thereto.

11. A plaster board, comprising in combination, a plaster body; covering material adhering to said plaster body, and covering its faces and reinforcing the same; said covering material having surfaces to which plaster readily adheres but treated to retard moisture penetration.

In testimony whereof, I have signed my name to this specification.

MORGAN K. ARMSTRONG.