Oct. 14, 1930. J. H. DELANEY 1,778,008

PLASTER BOARD

Filed Aug. 10, 1929

Fig. 1.

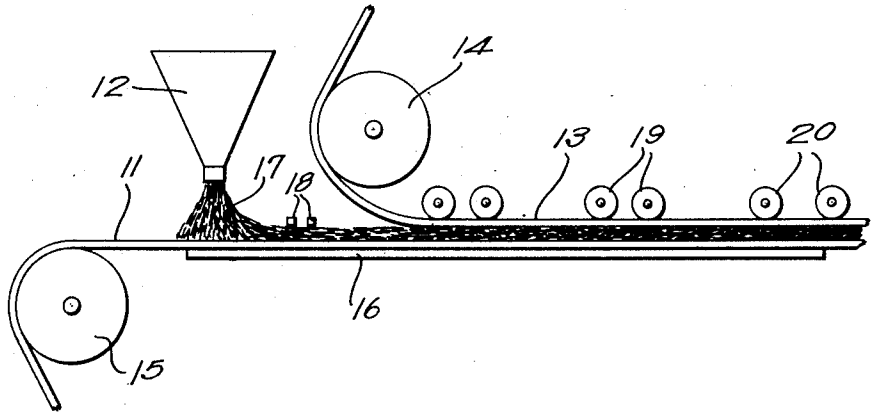


Fig. 2.

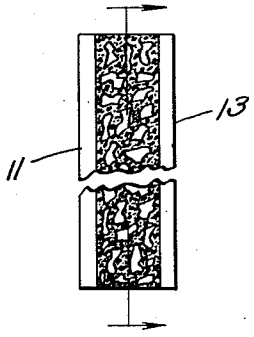
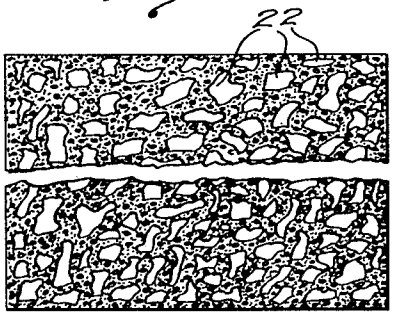


Fig. 3.



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PLASTER BOARD

Application filed August 10, 1929. Serial No. 385,006.

This invention relates to a plaster board; that is, a board having a backing of paper or pasteboard, to which is adherent a layer of plastic material, such as gypsum. Such a board may have a backing on both sides of the material, or only on one side, as desired.

Such plaster boards are in general well-known. It is, however, an object of my invention to provide a plastic board that is very light in weight, withal strong and inexpensive.

In my prior application, Serial No. 278,537, filed May 17, 1928 for wall covering and method of making same, I describe a scheme for manufacturing plaster board, especially porous plaster board. My present application is a continuation in part of said prior application.

It is more particularly another object of my invention to utilize, for the sake of lightness, material that is in the form of layers, such as mica or zonolite, in conjunction with the gypsum binder. Such material is very inexpensive, as it occurs in immense deposits in many parts of the country. It renders the board light in weight, and if the particles used are such that can pass a screen no finer than sixteen mesh, it does not detract from the strength of the finished product. This I believe is due to the fact that the coarse particles (which may be as large as a quarter of a dollar) interlock one with another, and even if the gypsum does not cohere with the mica or zonolite, this interlocking affords a large resistance to bending strains. Especially is this effect produced where comparatively large amounts of the zonolite or mica are used; say from 5 to 80 percent by volume of the total space occupied by the material between the backings, whether such material be porous or solid.

It is another object of my invention to provide a plaster board that presents a novel and pleasing appearance, occasioned by the use of the brilliantly reflecting pieces of mica or zonolite.

My invention possesses many other advantages, and has other objects which may be made more easily apparent from a consideration of one embodiment of my invention. For this purpose I have shown a form in the drawings accompanying and forming part of the present specification. I shall now proceed to describe this form in detail, which illustrates the general principles of my invention; but it is to be understood that this detailed description is not to be taken in a limiting sense, since the scope of my invention is best defined by the appended claims.

Referring to the drawings:

Figure 1 is a diagram of machinery by the aid of which my improved plaster board can be manufactured;

Fig. 2 is a side view of a board embodying the invention; and

Fig. 3 is a sectional view, taken along plane 3—3 of Fig. 2.

In the practice of my invention, I use a binder such as gypsum, which can be if desired, caused to effervesce in order to provide a material capable of absorbing sound, or of heat insulation. Thus a suitable amount of divided effervescing material is incorporated in the binder; for example, aluminum sulphate and calcium carbonate. Preferably one or the other of these two materials is in granular form. I find that when the effervescence occurs, the granular particles travel through the binder due to the evolution of the bubbles, and larger bubbles, more uniformly distributed, are secured. Aggregate having lightness is added to the binder. I prefer zonolite for this purpose, as it presents a pleasing appearance and is very bulky for its weight. Zonolite also has the advantage of rapidly absorbing moisture; and thus the surrounding gypsum is hardened much more rapidly than otherwise. In place of zonolite, mica can be used.

As regards proportioning of the ingredients for the whole filler, the flaky material in the form of zonolite or ordinary mica, must be coarse enough to cause interlocking of the particles; say coarser than any particle that passes through a sixteen mesh. From 5 to 80 percent by volume of the complete mix (including the space occupied by air in case a porous mix is used) can be occupied by the mica, either in common form, or exfoliated in the form of zonolite.

This filler material is of course well mixed, and can be laid onto a pasteboard base, such as 11, Fig. 1, by the aid of a hopper 12. Only one of the two effervescing ingredients is included in the filler mix. The other is spread over the paper 11. Thus the evolution of bubbles begins only after the filler leaves the hopper 12, and there is no disturbances in the hopper itself. If desired, a covering 13 of pasteboard can also be provided. To facilitate manufacture of the material, the base 11 and cover 13 can be fed over rollers such as 14, 15 and above a table or support 16. The filler 17 can be introduced between the two rolls 14 and 15, and the stationary transverse bars 18 can be used to prevent an excess of the filler from entering between the two coverings 11 and 13. Presser rolls 19 and 20 act on the two coverings 11, 13 after the filler 17 is introduced, in order to confine the thickness of the completed wall board to a definite value. Continued movement of the pasteboards 11 and 13 as by the aid of driving rolls, carries the three layer material over the table 16 to a place where it can be dried and sawed as desired. Expansion of the material due to continued effervescence, however, occurs even after it passes the presser rolls.

I find that due to the evolution of bubbles in filler 17, while the coverings 11 and 13 are being placed thereover, causes these coverings to cling to the filler without the aid of any other adhesive material.

After the material dries, it has the appearance of a three layer block, shown in Fig. 2. In this figure, the coverings 11 and 13 are shown, disposed on each side of the dried filler 17, shown as having pores and voids. These voids assist in drying out the material quickly.

Fig. 3 shows a section of the new plaster board. Pieces of embedded mica or other flaky material are indicated at 22. These may be of varying sizes, but coarser than any that would pass a sixteen mesh.

If it be attempted to utilize smaller pieces than that specified, the gypsum could not hold them strongly together. Apparently, the small particles, not interlocking, destroy the strength of the plaster board because the gypsum does not adhere thereto. If the particles are made larger, they interlock with one another and they therefore resist any breaking strain.

In the following claims the term "mica" is intended to apply to ordinary mica as well as exfoliated mica, such as zonolite.

I claim:

1. In material of the character described, a plastic spongy binder, and mica pieces coarser than material passing through a sixteen mesh, embedded in the binder.

2. In material of the character described, a gypsum binder, and mica pieces coarser than material passing through a sixteen mesh, embedded in the binder.

3. A plaster board, including a porous gypsum binder, a backing adhering thereto, and mica pieces embedded in the binder.

4. A plaster board, including a porous gypsum binder, a backing adhering thereto by means of the voids in the gypsum, and mica pieces embedded in the binder.

5. A plaster board, including a plastic spongy binder, a backing adhering thereto, and mica pieces coarser than material passing through a sixteen mesh, embedded in the binder.

6. A plaster board, including a plastic spongy binder, a backing on each side thereof, and mica pieces coarser than material passing through a sixteen mesh, embedded in the binder.

7. A plaster board, including a gypsum binder, a backing adhering thereto, and mica pieces coarser than material passing through a sixteen mesh, embedded in the binder.

8. A plaster board, comprising a composition of a plastic spongy binder and mica flakes, said mica flakes occupying from 5 to 80 percent by volume of the composition.

9. A plaster board, comprising a composition of a plastic spongy binder and mica flakes, said mica flakes occupying from 5 to 80 percent by volume of the composition and being of a size that will not pass through a sixteen mesh screen.

10. A plaster board comprising a base and a facing, said facing consisting of a composition the major ingredient of which is coarse mica flakes, and a porous binder of an amount capable of binding the flakes one to the other and to the base.

11. An ornamental plaster board comprising a composition of brilliantly reflecting micaceous flakes and a binder.

12. An ornamental plaster board comprising a facing including a composition of brilliantly reflecting zonolite flakes and a binder, said binder acting to insure the adherence of the flakes to a backing.

13. An ornamental plaster board comprising a composition of brilliantly reflecting micaceous flakes and a porous gypsum binder.

14. An ornamental plaster board comprising a base and a facing of brilliantly reflecting micaceous flakes of a size not capable of passing through a sixteen mesh, and a porous gypsum binder.

15. A plaster board, including a gypsum binder, facing sheets adhering thereto, and mica pieces coarser than material passing through a sixteen mesh embedded in the binder.

In testimony whereof I have hereunto set my hand.

JOHN H. DELANEY.