H. E. BROOKBY.

COMPOSITION WALL BOARD AND METHOD OF MAKING THE SAME.

APPLICATION FILED NOV. 12, 1921.

1,428,827. Patented Sept. 12, 1922.

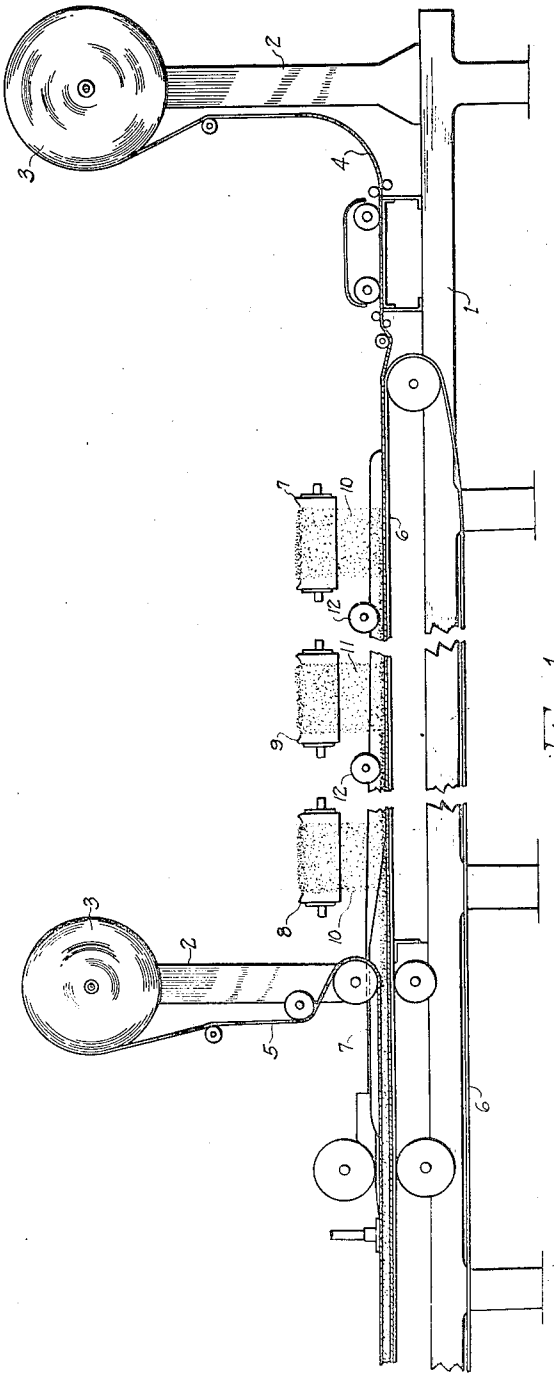


Fig. 1.

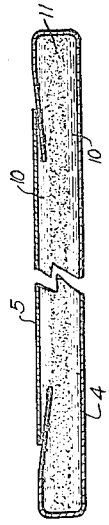


Fig. 2.

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Patented Sept. 12, 1922.

1,428,827

UNITED STATES PATENT OFFICE.

HARRY E. BROOKBY, OF EVANSTON, ILLINOIS, ASSIGNOR TO UNITED STATES GYPSUM COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

COMPOSITION WALL BOARD AND METHOD OF MAKING THE SAME.

Application filed November 12, 1921. Serial No. 514,731.

To all whom it may concern:

Be it known that I, HARRY E. BROOKBY, a citizen of the United States, residing at Evanston, in the county of Cook and State of Illinois, have invented new and useful Improvements in Composition Wall Board and Methods of Making the Same, of which the following is a specification.

This invention relates to improvements in composition wallboard and the method of making the same.

Wallboard has been made from calcined gypsum, or a mixture of calcined gypsum and sawdust, encased between covers of paper and made in such a form that it may be attached to the studding of a building and be ready for papering or painting without the necessity of first giving it a coat of plaster.

It is an object of this invention to produce a wallboard of the same characteristics, having the same use as the calcined gypsum or composition wallboard above described, and the additional advantage of being of considerably less weight.

Plaster wallboard, as now made, using calcined gypsum and sawdust, or similar organic aggregates, weighs between 1750 to 2000 pounds, when 3/8″ thick, per thousand square feet. At present it is customary to lighten the weight of said board by incorporating with the gypsum filler a sawdust addition, usually from five to ten per cent by weight, and it is an object of this invention to further lighten the board by replacing a part of the gypsum itself with some suitable light weight, fireproof mineral.

I have discovered that diatomaceous earth may be advantageously employed for this purpose. Powdered calcine gypsum, in its dry state, loose, weighs between sixty and seventy pounds per cubic foot, while diatomaceous earth in the same state weighs between six and twelve pounds per cubic foot. Diatomaceous earth is a natural product known to the chemical industy as kieselguhr, guhr, infusorial earth, siliceous earth, diatomaceous earth, fossil flour, tripolite, tripoli and also by the commercial trade name of celite. It is a soft, white, earthy rock, or conglomerant composed of siliceous skeletons of small aquatic plants, known as diatoms, consisting mainly of silica and silicates in varying proportions, and is capable of taking and holding four times its weight of water.

Diatomaceous earth fulfills the requirements of such a mineral, except that mixtures of it and gypsum in the plastic state do not adhere to the paper forming the outer coverings of such wallboards when the boards are dried. In the trade this effect is known as "peeling" and the boards are known as "peelers", that is, where the covering material is not particularly well attached to the mineral filler. In practice, the mixture of gypsum and sawdust alone when mixed into the plastic state, sticks to this covering material and does not peel when dried. This improved method of producing wallboard keeps the diatomaceous earth from contact with the paper, by providing each of the outer paper coverings with a thin coating of gypsum in its plastic state, and the diatomaceous earth mixture forming the inner core, is placed between these two gypsum-coated covering papers. Consequently, the paper does not peel, for the dried finished board still furnishes gypsum paper contact only. Thus by giving the mineral core the proper composition of gypsum and diatomaceous earth, almost any variation in the weight of the board can be secured, and still the covering material can be just as firmly attached to the board as ordinary wallboard.

In a finished wallboard, 3/8″ thick, the two paper covers would represent 2/32″, the gypsum coating to each one 4/32″ (1/16″ on each cover) and the inner core of diatomaceous earth mixture would be 6/32″ or 1/2 the thickness of the board. If the diatomaceous earth mixture used as the core weighs 10 pounds per cubic foot which is 1/6 the weight of gypsum, and the wallboard has half of its volume made up of the core there this wallboard would weigh approximately one-half the weight of a gypsum wallboard plus the weight of the diatomaceous earth mixture core, or 1000 pounds plus 167 pounds making a total of 1167 pounds per thousand square feet of the improved board, 3/8″ thick.

The composition of the core may be diatomaceous earth alone, a mixture of the earth with calcined gypsum, a mixture of the earth with calcined gypsum and sawdust, or a mixture of the earth with an adhesive to give it rigidity when dry, in proportion to the weight desired.

While the preferred form of article preferred form of core, and a suitable and preferred means for manufacture are illustrated on the attached sheet of drawing, it is to be understood that detail changes, such as the thickness of the core or bonding layers or the proportions of the core mixture, or different method of distributing the plastic materials onto the bed, may be made without departing from the scope of this invention.

In the drawings:

Figure 1 is a view of side elevation, with parts broken away, of a form of machinery that may be used in the fabrication of the composition wallboard in accordance with this invention.

Figure 2 is a view in section of this improved wallboard, with parts broken away, illustrating the composition and the folded longitudinal edges.

The machine illustrated is of the usual general construction as heretofore used in the manufacture of plaster wallboard and comprises a base 1 with spaced apart supports 2 supporting rolls of paper 3 of the proper width and character for the cover sheets 4 and 5 of the wallboard. An endless belt 6 passes over rollers on the base which supports the bottom cover sheet 4 between the supports 2 and the encased board after it leaves the forming mechanism 7. The forming mechanism comprises means for turning over the edges of the lower cover sheet 4 to enclose the edges of the wallboard before the feeding of the upper cover sheet 5 thereover, all of which construction is well known in this art.

Conveyors 7 and 8 are provided adjacent each paper roll support 2 with a third conveyor 9 interposed between them. These conveyors are all of the same general construction and used in conveying a plastic mixture of calcined gypsum, sawdust and water and depositing the plastic mass upon the bottom cover sheet in the fabrication of plaster wallboard, however, in this case, the outer conveyors are utilized to deposit a thin layer of calcined gypsum 10 while the intermediate conveyor deposits a plastic mass of diatomaceous earth mixture forming a core 11. The three conveyors are spaced sufficient distances apart to allow sufficient set of the plastic bottom layer on the under cover sheet, of the core mixture and of the plastic upper layer thereon and allow of the spreading of each, preferably by spreading rolls 12, without intermingling the ingredients before the application of the upper cover sheet. The remainder of the machine is preferably of the usual construction.

It is therefore seen that by this method a composition wallboard is formed which comprises a core 11 lighter in weight than calcined gypsum having a layer 10 on each side that bonds thereto and to the cover sheets.

What I claim is;

1. A composition wallboard comprising cover sheets with layers of cementitious material bonded thereto and a core of lighter plastic material bonded to said layers.

2. A composition wallboard comprising cover sheets with layers of calcined gypsum bonded thereto and a core of lighter plastic material therebetween and bonded thereto.

3. A composition wallboard comprising cover sheets with layers of calcined gypsum bonded thereto and a core of a diatomaceous earth mixture therebetween.

4. A composition wallboard comprising a core of bonded diatomaceous earth with a thin layer of calcined gypsum on each side bonded thereto and cover sheets bonded to the gypsum layers.

5. The method of fabricating composition wallboard comprising the provision of a cover sheet, the depositing thereon of a layer of plastic cementitious material adapted to bond thereto, the depositing on such layer of a core of lighter plastic material adapted to bond with said layer, the depositing upon the core of a layer of the same material as the first and the laying of a second cover sheet over said last layer.

6. The method of fabricating composition wallboard comprising the provision of a cover sheet, the depositing thereon of a layer of plastic calcined gypsum thereon, the depositing on such layer of a core of lighter plastic material adapted to bond thereto, the depositing upon the core of a layer of plastic calcined gypsum and the laying of a second cover sheet over said last layer.

7. The method of fabricating composition wallboard comprising the provision of a cover sheet, the depositing of a layer of plastic calcined gypsum thereon, the depositing on such layer of a core of plastic diatomaceous earth mixture, the depositing upon the core of a layer of plastic calcined gypsum and the laying of a cover sheet upon said last layer.

8. The method of fabricating composition wallboard comprising the provision of a cover sheet, the forming of a thin layer of plastic calcined gypsum thereon, the forming of a core of plastic bonded diatomaceous earth thereon, the forming of a thin layer of plastic calcined gypsum upon the said core and the provision of a sheet upon the last layer.

HARRY E. BROOKBY.