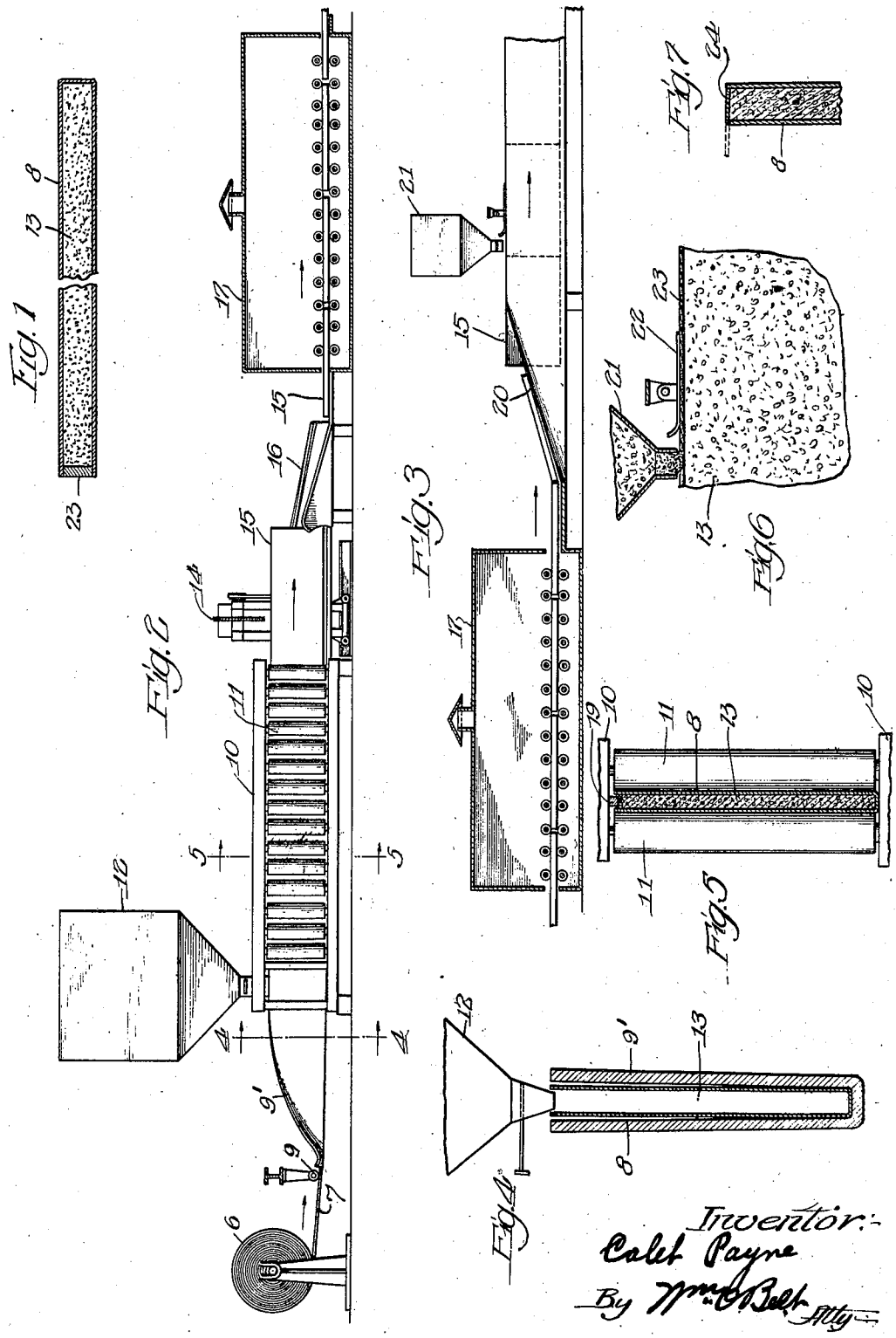
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MANUFACTURE OF WALL BOARD

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MANUFACTURE OF WALL BOARD

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The object of this invention is to manufacture a wall board of superior insulating quality which is light in weight and strong and substantial in structure; and a further object is to provide a novel method for speedily and economically producing this wall board.

Another object of the invention is to provide a novel wall board of superior insulating quality having a body of cellular structure produced by foamaceous material and having a suitable protective covering.

Another object of the invention is to form a continuous strip of protective material into a trough which moves continuously as it is formed, in upright position and open at the top, pouring a material into the trough to form the body of the board, this being preferably a foamaceous material which foams as it is poured into the trough and fills the trough and produces a cellular body, allowing this body to set sufficiently to permit the board to be handled, and drying the board thus formed.

And a further object of the invention is to form the body of wall board in a trough of protective covering and then sealing the edge of the trough by depositing a sealing material therein.

The invention has other objects in view incidental to the broad object of manufacturing a commercial wall board of superior quality in a simple and economical manner, which will appear in the detail description of a selected embodiment of the invention as diagrammatically illustrated in the accompanying drawings, referring to which

Fig. 1 is a sectional view of wall board made in accordance with my invention.

Fig. 2 is an elevation partly in section, showing diagrammatically an apparatus which may be employed for manufacturing wall board in accordance with my invention.

Fig. 3 is a similar view of additional apparatus which may be employed for sealing the open side edge of the wall board.

Figs. 4 and 5 are sectional views on the lines 4—4 and 5—5 respectively of Fig. 1.

Fig. 6 is a longitudinal sectional view of a portion of the board and means for protecting the raw side edge of the board.

Fig. 7 is a detail sectional view.

I contemplate using as a protective covering for my wall board the kind of paper which is now generally used for this purpose in separate sheets to form the sides of wall board. I prefer to provide the paper in a roll 6 from which it is drawn in the form of a strip or web 7 and folded into a trough 8 (Fig. 4) to receive the body material. The strip may be formed into a trough by any suitable means, such as a presser roller 9 and a former 9′ through which the strip travels to and through a pouring frame 10. This frame has a plurality of vertically disposed rollers 11 arranged in two parallel series between which the paper trough travels while it is receiving from a supply receptacle 12 located above the pouring frame adjacent the former 9′ the material for making the body 13 of the wall board. The pouring frame is of a length to maintain the trough in upright position for a sufficient time after the body material is poured thereinto for the body material to set to an extent which will permit the further treatment of the board. The two series of rollers are spaced apart to produce a board of desired thickness and they are of relatively small diameter and set comparatively close together to form a sufficiently continuous support on each side of the paper trough to maintain the trough in upright position while the body material is being poured therein and while the body material is setting sufficient to enable the board thus formed to be further treated.

I contemplate using a foamaceous material for making a cellular body for the board. The material is of a pouring consistency and is permitted to pour from the receptacle 12 into the trough at or about the front end

of the trough. This material is of a character which will be converted into foam after it enters the trough and in foaming the material is distributed in a substantially uniform manner in the trough from top to bottom thereof to form a cellular body of uniform thickness and substantially uniform cellular structure. As the body sets it becomes progressively self supporting and, if desired, the space between the rollers may be progressively increased to correspond with the progressive setting of the body material; but adjacent the pouring front end of the pouring frame the rollers should be set comparatively close together to support the trough in proper position with parallel sides and to prevent deformation of the sides.

The board is discharged from the pouring frame and is cut by a suitable cutter 14 into predetermined lengths 15 which pass from the cutter to a guide 16 of suitable construction which turns the length 15 from an upright to a horizontal position for convenience in running it through the dryer 17. This dryer may be of any suitable kind and it is preferably provided with a plurality of passes into which the lengths may be directed by means familiar in the arts to increase the capacity of the dryer since it is contemplated that the board will travel through the dryer at a slower rate of speed than the trough will travel through the pouring frame and the board lengths will be cut.

The wall board thus formed will be of a specified width, length and thickness; both sides of the board will have a protective covering of paper and one side edge, the bottom of the trough, will have a paper covering. But the opposite side edge, the top of the trough, will be raw, that is to say the body will be exposed. A board with the body exposed at one side edge may be satisfactory for some purposes, but I prefer to protect this side edge so that it will be as well finished for commercial purposes as the other side edge and be uniformly straight and parallel with the other side edge for its intended use. To this end the pouring frame may be provided at the top with means, such as a strip 19, to fit within the trough at the upper end thereof to form a guide for the upper edges of the side of the trough and a wall to limit and form the upper edge of the body. This strip 19 may be located to permit the body to form flush with the upper edges of the trough, but I prefer that the strip should project into the trough so that the upper edge of the body will be located slightly within the trough and below the upper edges of the sides of the trough leaving a recess extending longitudinally of the board along the edge thereof between the edges of the paper sides of the board. It is this recess which I fill with a material to protect the edge of the body and the edges of the paper sides of the board. The filling material may be compo pulp made of paper pulp and a binder or any other material suitable for the purpose. When the board length leaves the dryer 17 (Fig. 3) in a horizontal position it is turned to an upright position by a suitable guide 20 with the raw edge of the board up. Then the board passes under the discharge of a receptacle 21 which contains the paper pulp or other filling material and this material is deposited in the recess at the upper edge of the board. A smoother 22 is supported above the board and adjacent the receptacle 21 to remove surplus filler and to smooth the filler which is deposited upon the board. This material will set quickly to form a protective covering 23 for this side edge of the board. I may provide for depositing the filler on the board to form the protective strip 23 between the pouring frame and the cutter or between the cutter and the dryer, and the filler may be deposited while the board remains in the pouring frame, the latter frame being extended if found necessary or desirable for the purpose, and the receptacle 21 and the smoother 22 mounted on or above the pouring frame or adjacent thereto.

My invention provides for the manufacture of a novel wall board which is light in weight having superior insulating quality and capable of being made in standard or special sizes. I estimate that wall board made in accordance with my invention will weigh approximately one-third of the weight of corresponding commercial wall board at present in use, and this is of special importance in structural material because it enables wall board to be satisfactorily used in large sizes. A wall board of large size made in accordance with my invention will hold its shape and permit of handling without distortion or liability of being damaged to an extent and in a manner which is not possible under ordinary conditions with wall board of the kind at present manufactured. This is because it is so much lighter in weight for a given size than present commercial wall board. And its advantages in this respect increase with the increase in thickness as well as with the increase in area of the wall board being used. My invention provides a wall board of superior insulating quality because of the cellular character of the body of the board; and while this cellular body may appear to be of delicate and fragile structure it has sufficient strength when protected by a covering of paper or other suitable material, as contemplated by my invention, to be capable of use for such purposes as wall board may be used and to better advantage and with better results than wall board of present manufacture.

I have not attempted to show any means for drawing the covering material from the roll 6, or any means for moving the trough and the board through the pouring frame,

the dryer and the other parts of the apparatus, or other means, more or less necessary in connection with the apparatus and the method, which are now in use in different forms for different purposes and can be purchased in the open market or built as required, and which form no part of the present invention. Instead of sealing and protecting the raw side edge of the board with a protective covering 23 as shown and described, I may make one side of the trough wider than the board to be produced and then fold the projecting margin 24 down upon the raw edge of the board and affix this margin to the body so that the body will be protected by the one strip of covering upon both sides and both side edges. Any adhesive material may be used for affixing the margin 24 to the body if this adhesive is found to be necessary or desirable.

I am aware that changes in the method of manufacture, in the form, construction and arrangement of the apparatus, and in the materials used, and in the structure of the wall board may be made within reasonable limits without departing from the invention, it being understood that the disclosure herein is such as I consider to be well adapted for the manufacture of wall board in accordance with my invention; and I reserve the right to make all changes as fairly fall within the scope of the following claims.

I claim:

1. A method of manufacturing wall board which consists in forming a strip of covering material into a longitudinally extending trough of the general size and shape of the board to be produced, said trough being closed at one longitudinal side edge and open at the other longitudinal side edge and being arranged in upright position with the open edge uppermost, and depositing material in the trough to form the body of the board.

2. A method of manufacturing wall board which consists in forming a strip of covering material into a longitudinally extending trough of the general size and shape of the board to be produced, said trough being closed at one longitudinal side edge and open at the other longitudinal side edge and being arranged in upright position with the open edge uppermost, and depositing foamaceous material in the trough to form the body of the board.

3. A method of manufacturing wall board which consists in forming a strip of covering material into a longitudinally extending trough of the general size and shape of the board to be produced, said trough being closed at one longitudinal side edge and open at the other longitudinal side edge and being arranged in upright position with the open edge uppermost, depositing material in the trough to form the body of the board, and sealing the edge of the board at the open edge of the trough.

4. A method of manufacturing wall board which consists in forming a strip of covering material into a longitudinally extending trough of the general size and shape of the board to be produced, said trough being closed at one longitudinal side edge and open at the other longitudinal side edge and being arranged in upright position with the open edge uppermost, depositing material in the trough to form the body of the board, and depositing material on the body at the open edge of the trough to form a protective covering at said edge for the body of the board.

5. A method of manufacturing wall board which consists in forming a strip of covering material into a longitudinally extending trough of the general size and shape of the board to be produced with the trough arranged in upright position open at the top, and closed at the bottom and pouring foamaceous material into the bottom of the trough through the open top of the trough to form the body of the board within the trough.

6. A method of manufacturing wall board which consists in feeding a continuous strip of covering material, forming said strip into a longitudinally extending trough, passing said trough as it is formed through a pouring frame with the trough in upright position open at the top and closed at the bottom, and pouring material into said trough through the open top thereof to form the body of the board.

7. A method of manufacturing wall board which consists in feeding a continuous strip of covering material, forming said strip into a longitudinally extending trough, passing said trough as it is formed through a pouring frame with the trough in upright position open at the top and closed at the bottom, pouring material into said trough through the open top thereof to form the body of the board, and cutting said board while in upright position into commercial lengths.

8. A method of manufacturing wall board which consists in feeding a continuous strip of covering material, forming said strip into a longitudinally extending trough, passing said trough as it is formed through the pouring frame with the trough in upright position open at the top and closed at the bottom, pouring material into said trough through the open top thereof to form the body of the board, cutting said board while in upright position into commercial lengths, and feeding said lengths into a dryer and drying the same.

9. A method of manufacturing wall board which consists in forming a board with a body having a covering material on its sides, one edge of said board exposing the body between the side covering, and depositing soft compo

material upon said raw edge of the body to seal the same.

10. A method of manufacturing wall board which consists in feeding a continuous strip of covering material, forming said strip into a trough, passing said trough as it is formed through a pouring frame with the trough in upright position and open at the top, pouring material into said trough through the open top thereof to form the body of the board, and sealing the board at the top of the trough.

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