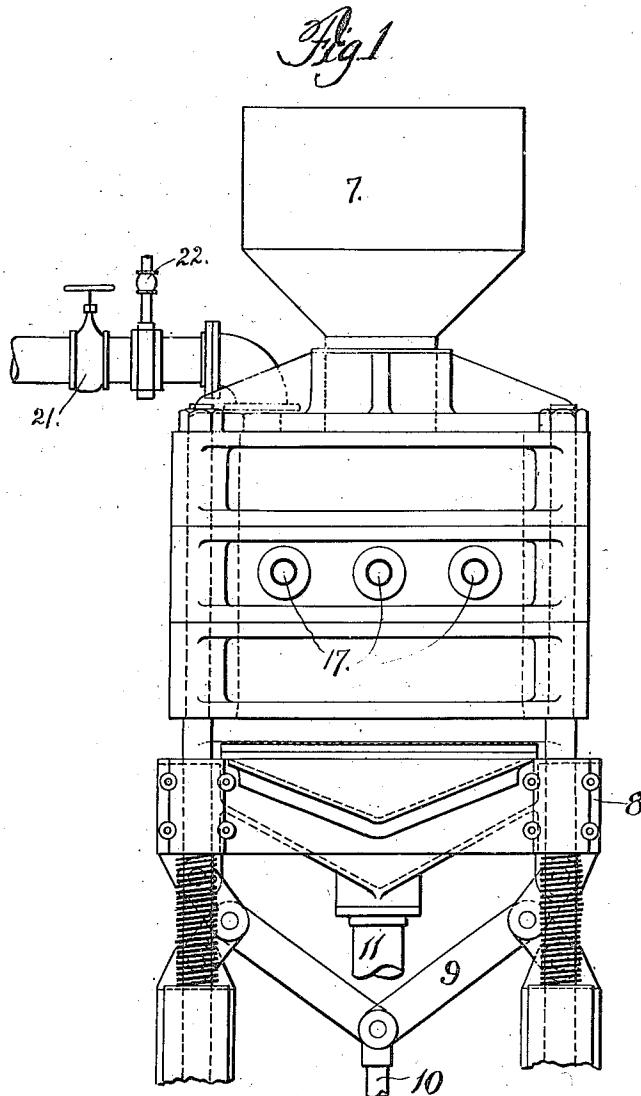


J. W. VOGLESONG.  
METHOD OF MAKING PLASTER BOARD.  
APPLICATION FILED JULY 13, 1908.

999,474.

Patented Aug. 1, 1911.

2 SHEETS—SHEET 1.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 2.

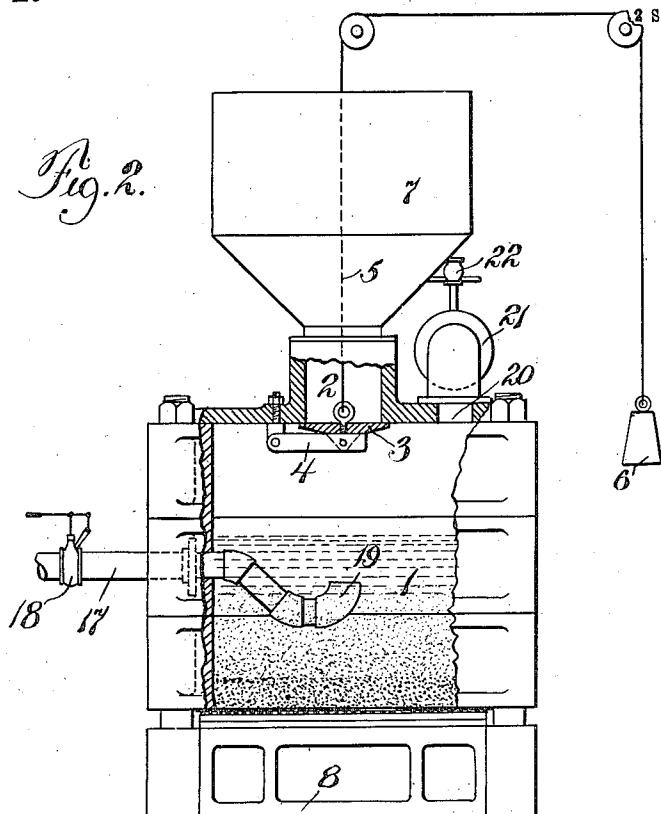


Fig. 3.

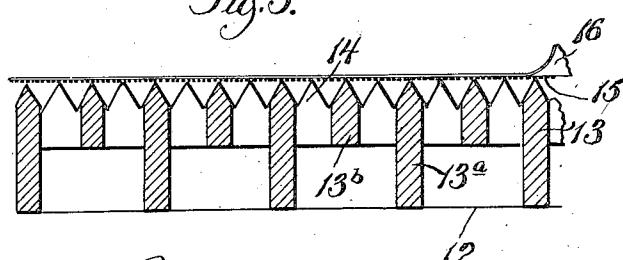
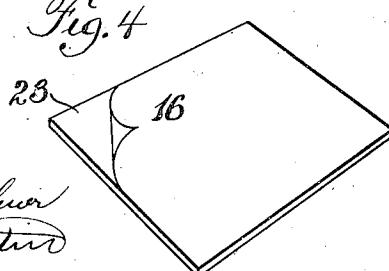


Fig. 4



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# UNITED STATES PATENT OFFICE.

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## METHOD OF MAKING PLASTER-BOARD.

999,474.

Specification of Letters Patent. Patented Aug. 1, 1911.

Application filed July 13, 1908. Serial No. 443,203.

To all whom it may concern:

Be it known that I, JOHN W. VOGLESONG, a citizen of the United States, residing at Elyria, Ohio, have invented certain new and 5 useful Improvements in Methods of Making Plaster-Board, of which the following is a specification.

This invention has reference to an improved method of making plaster board 10 formed primarily of a mixture of plaster of Paris or stucco, and water, to which in some cases it is desirable to add a relatively small quantity of cement, and in conjunction with which mixture some kind of binding material such as wood fiber or wood fiber 15 mixed with paper cuttings is generally employed.

The first of the objects of my invention is the provision of an improved method or process 20 of making plaster board or plaster structures of various shapes, such for example as fire-proofing or partition blocks which will secure a high degree of compactness of the material employed, a uniform 25 distribution of the substances entering into the formation of the product, and which can be operated with great facility, and also such rapidity as insures economical production.

30 A further object of this invention is the provision of a method of the character specified which can be operated continuously with a given set of mechanical devices, without so choking up the passages of the forms employed as to require the expenditure of considerable time and trouble to have them sufficiently freed of the material to be used over again.

The above, as well as such other objects 40 as may hereinafter appear, I attain in the present practice of my invention in connection with the utilization of a certain form of apparatus which in order to more clearly explain the improved steps constituting my 45 process, I have illustrated in the accompanying drawings wherein—

Figure 1 shows in side elevation such an 50 apparatus as the one I prefer to use, in which flat plaster board is manufactured, the parts as indicated in Figure 1 being shown with the movable bottom of the forming chamber in lowered position ready for the removal of one of the boards after it has been formed;

55 Figure 2 indicates partly in section, the arrangement of the interior of such pressure

chamber, with the various parts in position for the formation of a plaster board;

Figure 3 is an enlarged view of a detail of the arrangement of devices constituting 60 the former which I use, and

Figure 4 is a view in perspective, showing a board that has been made in accordance with my invention, with fabric or cloth which I employ partially stripped off at one 65 corner.

Referring now more particularly to Figure 2, it will be seen that I have therein indicated a pressure chamber 1 arranged with a supply opening 2 above the same adapted 70 to be closed by a valve or similar contrivance 3 constructed to bear outwardly against the inner upper face of the chamber as shown, and supported upon a pivoted lever 4 in a manner so that it may be held normally 75 closed by means of the cord 5, either by counterweight 6 or other convenient means, while above the opening 2 I arrange a hopper 7 designed to first receive the material which is to be utilized in the formation of 80 the board or other product.

The lower end of the pressure chamber 1 is open, but is arranged to be closed by means of a movable bottom part or chase 8 constructed to be raised and lowered by 85 some suitable mechanism such for example as the toggle levers 9 indicated in Figure 1 which may be actuated from a piston rod 10 operated by fluid pressure or any other suitable means. The board or chase 8 is constructed in a kind of grating with a drainage or outlet pipe 11 to take off the liquid or water used after it has been pressed through the form, and upon the upper surface 12 of the chase 8 or the bars of the 95 same, is arranged preferably a bronze grating 13 shown more in detail in Figure 3, which has cross bars 13<sup>a</sup> and smaller cross bars 13<sup>b</sup>, as well as a plurality of small points or supports 14 formed on the bridges 100 that connect the cross bars 13<sup>a</sup> and 13<sup>b</sup>, by means whereof I support a strong wire gauze or closely woven wire netting 15 which in the formation of a plaster board by my improved process has upon its upper surface a 105 sheet or layer of muslin or similar cloth or fibrous material marked 16.

As a convenient means for introducing water into the chamber 1, I arrange a plurality (here showing three) of inlet pipes 110 17 having some form of quick opening valve device such as indicated at 18, and extended

- within the pressure chamber in the shape shown in Fig. 2, so that the water discharging from the nozzles 19 will be directed upwardly in order not to have the effect of causing heavy flow of water to wash the upper surface of the muslin or gauze upon the former, or the material resting thereon after it is introduced. The water pressure employed is preferably about two pounds.
- 10 As a means for introducing compressed air or other similar fluid pressure into the compression chamber 1, I provide an air inlet opening 20 shown with a suitable inlet valve 21 with which is also associated another outlet valve 22 to be used for exhausting the air pressure after the formation of a board has taken place.
- In carrying out my improved process the steps are substantially as follows.
- 20 The base or bottom portion 8 having been elevated from the lowered position shown in Figure 1 to the position shown in Figure 2 and being held rigidly and tightly in place against the pressure chamber 1, with the bronze grating 13, the wire gauze 15, and the muslin or cloth 16 all in the position shown in Figure 3, the water valve 18 is opened to cover the muslin or fibrous sheet with a thin layer of water; and almost simultaneously the material to be used (composed preferably of a certain percentage of plaster of Paris, wood fiber, and water, with a small amount of cement added)—which had previously been dumped into the hopper 7—is by quick opening of the material valve 3, allowed to fall into the water which covers the muslin which forms the upper surface of the former, the material spreading uniformly over the thin layer of water so as to cover the bottom of the pressure chamber. While the water supply valve 18 is opened almost simultaneously with, or just before, the dumping of the material, the water is allowed to flow longer (say about two seconds or more), or until the chamber is approximately two-thirds full, or as much water has been admitted as is required in the operation, this water rapidly filling the chamber above the material, which latter rests near the bottom, but the water is not allowed to fill the entire chamber, there being some space left above the water within which, after the water is shut off—which is next done—air or other analogous elastic fluid pressure may be admitted through the supply valve 21, the air pressure acting upon the upper surface of the water, under a load of anywhere from sixty to one hundred pounds or whatever may be required to secure the necessary degree of compactness, serving to press the water downward, depositing the material upon the muslin sheet, and heavily compacting the material, the liquid after it passes through the sheet and grating, draining off

through the drain or outlet pipe 11 indicated in Figure 1. In practice, the pressure is admitted at first slowly, say for about 20 seconds, and then held on approximately ten to fifteen seconds more, after which the air is shut off and allowed to exhaust from the valve 22, and the water having been all driven out of the pressure chamber 1 through the bottom thereof, by the air, the chase or bottom piece 8 is lowered and the plaster board removed, the muslin or fiber sheet 16 serving to keep the wire gauze 15, or other grating employed, from becoming clogged up by the material, as would happen were no cloth or other fibrous sheet utilized. After the plaster board has been formed and taken out of the machine, the cloth or fiber sheet 16 can be removed by peeling it off as indicated in Figure 4 wherein the plaster board is represented at 23, and the cloth is shown as having been pulled away at one corner. The board is then thoroughly dried by any suitable means.

If desired, the cloth utilized can be employed over again by washing it to clear it of the plaster and other material, and by the use of the cloth the wire gauze and other parts of the former can be operated over and over again repeatedly and continuously without difficulty and without cleaning.

With reference to the utilization of cement in connection with plaster of Paris and other ingredients, it is to be noted that I found the employment of a small quantity of cement increases the facility with which the water can be passed through the board, and thus shortens the length of time required to complete the operation. The cement also acts as a binder itself, and aids in forming a superior quality of product.

In preparing the materials before they are dumped into the hopper, it is preferable first to mix the plaster of Paris and the cement dry, then to add water to this until it has about the consistency of cream, and then dump this into the hopper in which the water carrying the fiber has been placed, and the water containing the fibrous material should be kept agitated by some suitable means until such time as the stucco and cement are added to it, in order to properly hold the fibrous material in uniform suspension. I have found in carrying out my improvement that good results are obtained by the use of a small quantity of cut or broken paper bits in connection with the fiber, as the paper apparently helps to bind the wood fiber, and thus the whole makes a stronger board.

One thing to be noted in successfully carrying out my process is the fact that in handling plaster of Paris in conjunction with water, and certain cements especially, quick action is required in order to avoid

setting or crystallization before the formation of the article which is being made, which would spoil the result. The body of water added to the mixture just before the air is applied serves the important function of uniformly compacting the deposit of material and solidifying it, the flow of the water through the mass carrying the particles of material into closer association and giving the upper portions of the mass a compactness which would be lacking if the air pressure were applied directly to the mixture.

In making a board approximately 32x36 inches and  $\frac{1}{4}$  inch in thickness, I use about five gallons of fiber-carrying liquid and one gallon of liquid which carries the plaster of Paris and a small percentage of cement, the proportions being about one part of cement to ten parts of plaster of Paris, and to the said six gallons of material which is dumped from the hopper into the pressure chamber I add approximately—through the three water inlets shown—some eight gallons more or less of water, making a total charge of about fourteen gallons. These proportions may of course be somewhat varied without departing from the spirit of my invention.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent, is the following:

1. The herein described method of making plaster board and the like, which consists in putting a mixture of plaster of Paris and water in a pressure chamber, admitting additional water to said mixture in said chamber before the solids of the mixture have settled, and then cutting off the admission of water and then increasing the air pressure in the chamber above the fluid to deposit the solid matter upon the former and press the water out therethrough.

2. The method of forming plaster board and the like, which consists in placing a mixture of plaster of Paris and water upon the former of a pressure chamber, admitting an additional quantity of water into said chamber before the solids of the mixture have settled, and then admitting air or like fluid under pressure to the chamber, first comparatively slowly and then with increased rapidity until the desired pressure is secured.

3. The method of forming plaster board and the like, which consists in placing a mixture of plaster of Paris, fibrous material and water upon the former of a pressure chamber, admitting an additional quantity of water into said chamber before the solids of the mixture have settled, and then increasing the air pressure in the chamber

above the fluid to deposit the solid matter upon the former and press the water out therethrough.

4. The method of forming plaster board and the like, which consists in placing a mixture of plaster of Paris, cement, and water upon the former of a pressure chamber, admitting an additional quantity of water into said chamber before the solids of the mixture have settled, and then admitting air or like fluid under pressure to the chamber to deposit the solid matter upon the former and press the water out therethrough.

5. The method of forming plaster board and the like which consists in maintaining water containing fibrous material in agitation, adding plaster of Paris thereto, introducing the mixture upon the former of a pressure chamber, admitting a quantity of water to the chamber before the solids of the mixture have settled and then applying air or like pressure to the chamber to force the water out through the former.

6. The method of making plaster board and the like, which consists in placing a mixture of plaster of Paris and water upon the former at the bottom of a pressure chamber, admitting a quantity of water upwardly into said chamber, under a low head, and then admitting air or like fluid under pressure to the chamber to deposit the solid matter on the former and press the water out therethrough.

7. The method of making plaster board and the like, which consists in placing a mixture of plaster of Paris and water upon a previously admitted layer of water resting on the former at the bottom of a pressure chamber, and then admitting air or like fluid under pressure to the chamber to deposit the solid matter on the former and press the water out therethrough.

8. The herein described method of making plaster boards and the like, which consists in continuously admitting a supply of water to a pressure chamber provided with a former at its bottom, while a mixture of plaster Paris and water is being dumped on the former, and after such mixture has been dumped cutting off the supply of water and admitting air or like fluid under pressure to the chamber to deposit the solid matter upon the former and to press the water out through the former.

In testimony whereof I have hereunder signed my name in the presence of the two subscribed witnesses.

JOHN W. VOGLESONG.

Witnesses:

FRANCES B. WILKINSON,  
H. WELLS.