Aug. 13, 1935. D. H. PATTERSON, JR 2,011,183

METHOD AND APPARATUS FOR MAKING INSULATING BOARD

Filed April 11, 1933

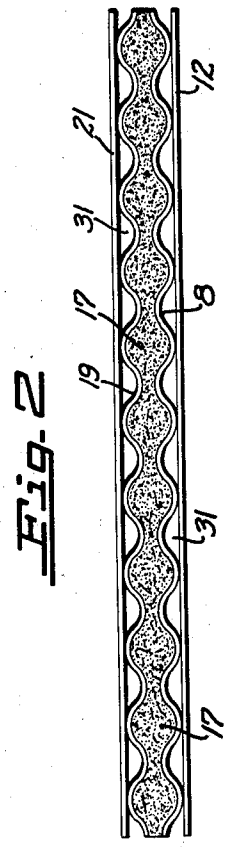


Fig. 2

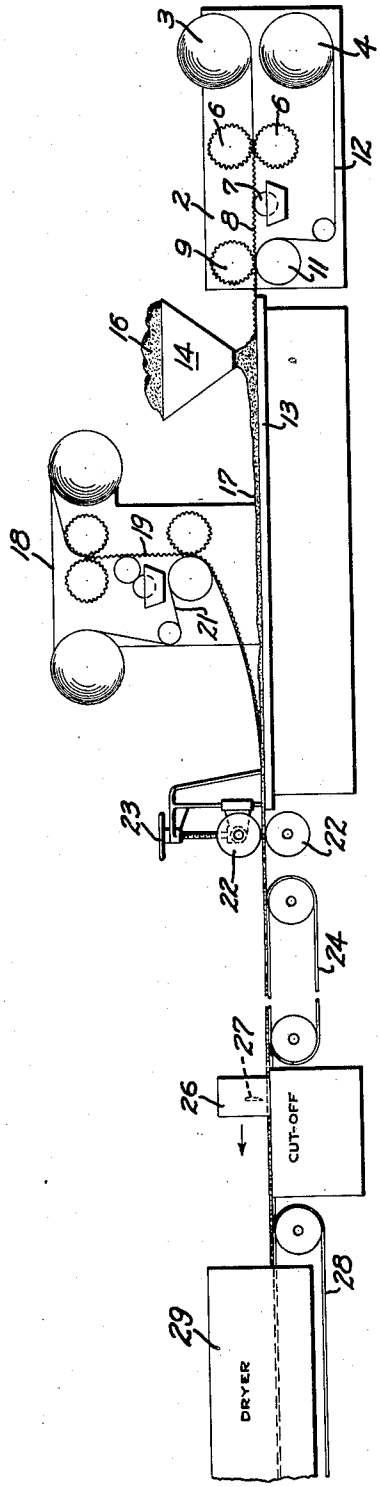


Fig. 1

INVENTOR.
DAVID H. PATTERSON, JR.
BY Charles S. Evans
HIS ATTORNEY

Patented Aug. 13, 1935 2,011,183

UNITED STATES PATENT OFFICE

2,011,183

METHOD AND APPARATUS FOR MAKING INSULATING BOARD

David H. Patterson, Jr., San Francisco, Calif.

Application April 11, 1933, Serial No. 665,478

4 Claims. (Cl. 154—28)

My invention relates to the making of insulating wall board sections, and more particularly to the making of such sections by a continuous process.

It is among the objects of my invention to provide a method for making sections of insulating wall board by an uninterrupted process, so that the sections may be produced rapidly and with a minimum of handling.

Another object of my invention is to provide apparatus for carrying out the method embodying my invention.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of my invention. It is to be understood that I do not limit myself to this disclosure of species of my invention, as I may adopt variant embodiments thereof within the scope of the claims.

Referring to the drawing:

Figure 1 is a diagrammatic view showing the apparatus embodying my invention.

Figure 2 is a side elevational view of the insulating board produced by the apparatus of Figure 1.

In terms of broad inclusion, the method of making insulating board embodying my invention comprises feeding a plurality of sheets along a path with the sheets superimposed one above the other. During the travel of the sheets, one of the intermediate sheets is corrugated, and an adhesive is applied between the corrugated sheet and an adjacent sheet. A cementitious filler is deposited between the corrugated sheet and another of the sheets, and a predetermined pressure is then applied to the traveling web of superimposed sheets to form the same into a composite board of determined thickness. The board is then allowed to continue unmolested along its path of movement until the filler has had opportunity to set. At a succeeding point along its path of movement the board is cut into sections. The sections are then subjected to drying for eliminating the moisture.

The apparatus for carrying out the method embodying my invention preferably comprises means for holding a plurality of supply rolls of sheet material, and means for continuously withdrawing the sheets from the rolls and advancing the same along a path with the sheets superimposed one over the other. Means are provided for corrugating an intermediate one of the sheets, and means are provided for applying an adhesive between the corrugated sheet and an adjacent sheet. Means are also provided for depositing a filler between the corrugated sheet and another of the sheets. Means disposed along the path of movement of the superimposed sheets are provided for applying pressure thereto to form the same into a composite board, and means are provided for adjusting the pressure on the sheets to control the thickness of the board. Means movable along the path of movement of the board are also provided for cutting the latter in sections.

In greater detail, and referring to Figure 1 of the drawing, a form of apparatus embodying the improvements of my invention comprises a frame 2 providing support for a pair of supply rolls 3 and 4 of suitable sheet material. The sheet or strip from the upper supply roll 3 passes between a pair of toothed rollers 6 and then over a gluing roll 7. The rollers 6 operate to corrugate the sheet and the roll 7 functions to apply an adhesive fluid to the lower ridges of the corrugations in the sheet. From the gluing roll 7 the corrugated sheet 8 passes toward a pair of pressure rollers, the upper roll 9 of which is toothed and the lower roll 11 of which is smooth.

The strip 12 from the lower supply roll 4 is suitably guided toward the rollers 9 and 11, and together with the corrugated strip 8 is directed between the pressure rollers. The latter rollers press the sheets together and function to effect a secure bond therebetween by the adhesive which was applied to the corrugated sheet 8. The teeth provided in the upper pressure roll 9 permit the sheets to be pressed together without disturbing the corrugations in the upper sheet.

From the pressure rollers the united sheets 8 and 12 continue along their path of movement and pass over the top of a suitable table 13 at which point a cementitious filler is deposited on the upper surface of the corrugated sheet 8. Any suitable means, such as the hopper 14, may be provided for dispensing the filling material 16. The dispensing of the material is preferably controlled so that a substantially uniform layer 17 of the filling material is provided over the upper surface of the corrugated sheet.

At a subsequent point along the path of movement of the strips a structural unit 18 containing mechanism similar to that housed in the frame 2 is provided. The united strips which issue from this unit are applied over the underlying sheets 8 and 12, so that the several sheets in the web being fabricated are superimposed one over the other. The layer 17 of filling material spaces the upper set of sheets from the lower and secures the two sets together. The mechanism in the secondary unit 18 is arranged so that the corrugated sheet 19 is adhesively united to the underside of the

plain sheet 21. Thus, when the united sheets are subsequently applied over the underlying sheets 8 and 12, the corrugated sheet 19 will contact the filling layer 17.

Means are also provided along the path of movement of the traveling web for pressing the superimposed sheets together to form the same into a composite board of predetermined thickness. This is accomplished by a pair of pressure rolls 22, one of which is adjustable by a suitable hand wheel 23 so that the rollers may be adjusted relative to the amount of their separation. Obviously the thickness of the board will depend upon the amount of this separation.

After emerging from between the pressure rolls 22 the composite board travels on a conveyor 24 for a sufficient length of time to allow the filler to set. The length of this conveyor will depend of course upon the amount of time which the filler requires to set. After coming off the conveyor 24 the board passes through a suitable cut-off device 26 which operates to cut the board into sections. The knife 27 of the cut-off device is mounted for travel along the path of movement of the board and in time with the movement of the latter so that the board is cut during its travel.

After passing from the cut-off device, the sections of board are carried on a conveyor 28 through a suitable dryer 29 in which moisture is evaporated from the board sections.

From the above description of a form of apparatus embodying my invention it will be seen that the method of fabricating the sections of insulating board is by a continuous process. The several strips which go to make up the product are peeled continuously from the supply rolls and all of the operations performed on and in conjunction with these sheets take place at successive stations along the path of movement of the sheets. It will be seen that the steps in the method of making the insulating board comprise those of continuously feeding a plurality of sheets along a path with the sheets superimposed one above the other, corrugating an intermediate one of the sheets, applying an adhesive between the corrugated sheets and an adjacent sheet, depositing a filler between the corrugated sheet and another of the sheets, applying pressure to the superimposed sheets, allowing the adhesive materials to set, cutting the resulting board into sections, and finally drying out the sections.

The product resulting from the particular apparatus illustrated in Figure 1 is shown in side elevation in Figure 2. The two outer sheets 12 and 21 are plain sheets, and the two inner sheets 8 and 19 are corrugated, while the filling layer 17 is interposed between the two corrugated sheets. The transverse air channels 31 provided between the corrugated sheets and the plain sheets add materially to the insulating properties of the board, as will be readily understood.

The filling material 16 used to make up the core 17 of the insulating board is preferably a composition of plaster and saw dust, which filler gives body to the composition board and adds to the strength and rigidity of the board as well as to its insulating properties. The sheet material employed is preferably a fibrous material, such as fiberboard or paper, and is preferably treated with rosin size to render the same more resistant to the passage of moisture.

It will be appreciated that the particular type of insulating board construction shown in Figure 2 is merely one of several forms which the product may take. For example, one of the corrugated sheets may be omitted, thus leaving a plain sheet against one side of the core 17. To produce such a board in the apparatus of my invention the corrugated sheet 19 is omitted at the unit 18, and the plain sheet 21 is merely lowered into engagement with the top surface of the filling layer 17.

I claim:

1. The method of making insulating board which comprises gluing a corrugated sheet to a flat sheet, and then depositing a filler on the glued corrugated sheet, whereby the corrugated sheet is prevented from flattening out under the load of said filler.

2. The method of making insulating board which comprises gluing a corrugated sheet to a flat sheet, depositing a filler on the glued corrugated sheet, laying another sheet on the filler, and then applying pressure to the sheets to form the whole into a composite board, whereby the corrugated sheet is prevented from flattening out under the load of the filler and the subsequently applied pressure.

3. Apparatus for making insulating board comprising means for feeding a flat sheet along a path, means for gluing a corrugated sheet to the flat sheet, and means for depositing a filler on the glued corrugated sheet, whereby the corrugated sheet is prevented from flattening out under the load of said filler.

4. Apparatus for making insulating board comprising means for feeding a flat sheet along a path, means for gluing a corrugated sheet to the flat sheet, means for depositing a filler on the glued corrugated sheet, means for laying another sheet on the filler, and means for applying pressure to the sheets to form the whole into a composite board, whereby the corrugated sheet is prevented from flattening out under the load of the filler and the subsequently applied pressure.

DAVID H. PATTERSON, JR.