May 2, 1939. J. FERLA 2,156,382

METHOD FOR TREATING COMPOSITION BOARDS

Filed Feb. 17, 1937 2 Sheets-Sheet 1

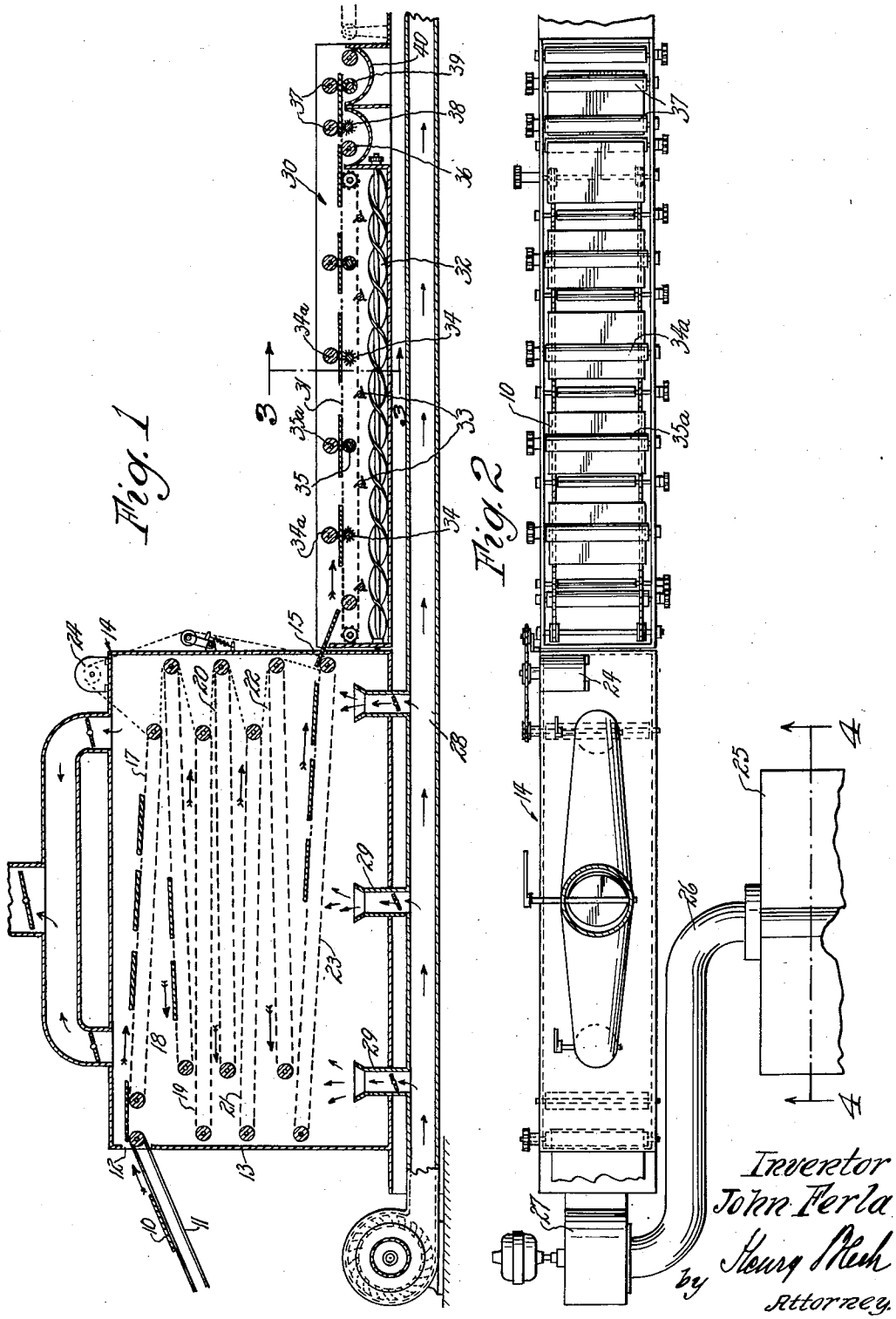


Fig. 1

Fig. 2

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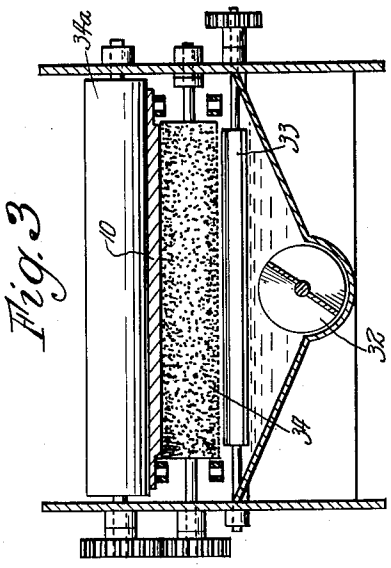


Fig. 3

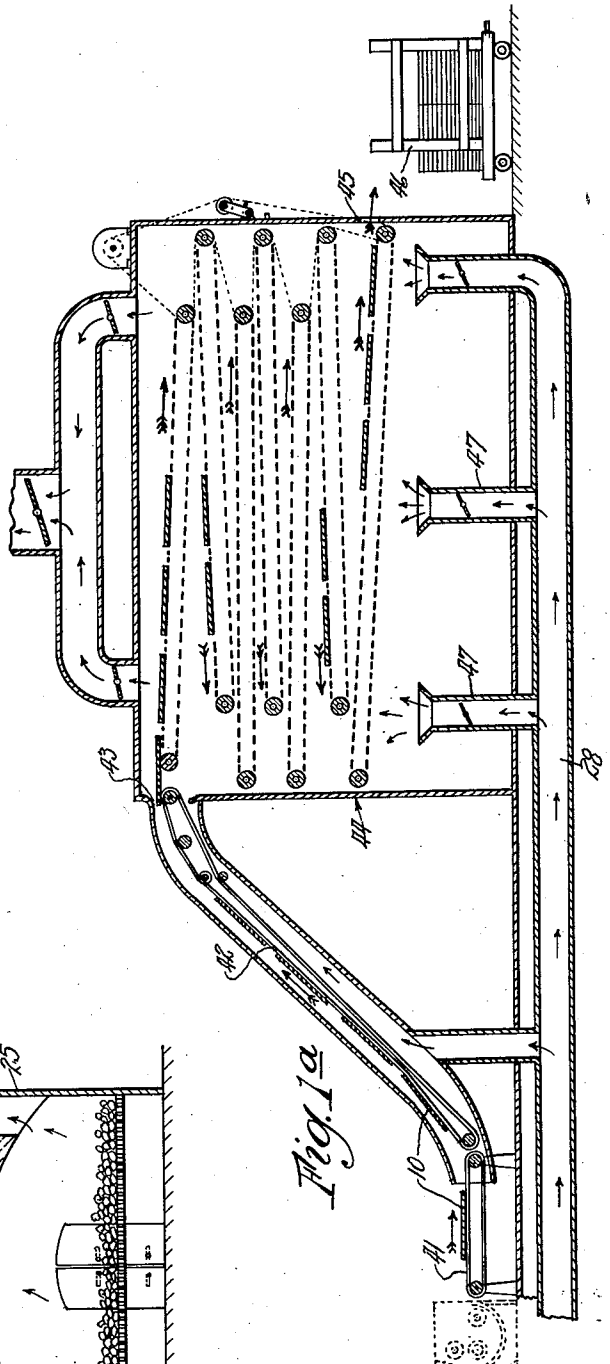


Fig. 1a

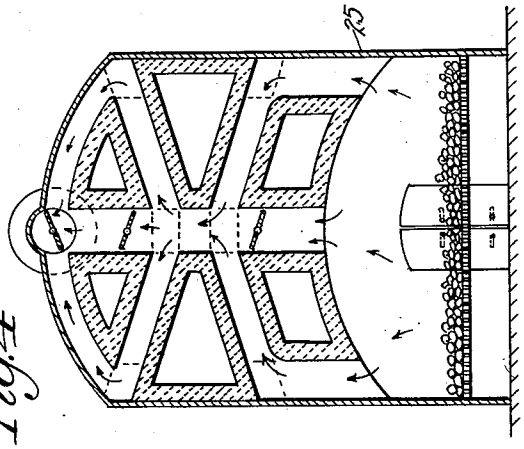


Fig. 4

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METHOD FOR TREATING COMPOSITION BOARDS

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4 Claims. (Cl. 91—70)

The invention relates to a method of and means for treating composition material and particularly concerns a method of drying, painting, and redrying composition material.

It is an object of the invention to provide a novel method of drying, painting and redrying composition material in a continuous operation.

A further object aims at providing a method for continuously and automatically drying, painting and redrying material.

Another object aims at conducting the material to be dried through a heated zone in a serpentine path, so as to reduce the length of the zone.

A further object aims at maintaining a bath of paint at constant consistency to apply an even coat of paint.

A still further object aims to provide means for maintaining the upper portion of the bath in a quiescent state.

Other and equally important objects of the invention will become apparent from a perusal of the invention, which is described in the following specification, particularly pointed out in the claims forming a part thereof, and illustrated in the accompanying drawings, in which:

Figs. 1 and 1*a* are continuations of each other and illustrate a sectional elevation of the apparatus of carrying out my improved method.

Fig. 2 is a plan view of the parts shown in Fig. 1.

Fig. 3 is a section on the line 3—3 of Fig. 1; and

Fig. 4 is a section on the line 4—4 of Fig. 2.

The composition material, normally produced as boards 10 by a dry or semi-dry method, is placed on an inclined conveyer 11 leading to an opening 12 in the front wall 13 of a drying oven generally designated by 14. A plurality of endless inclined conveyers are installed in the oven in superposed relation and so arranged that the board 10 is carried from the front to the rear to be discharged onto the next conveyer which is driven in opposite direction to the topmost conveyer and discharges the board onto the next lower conveyer moving in like direction as the topmost conveyer, and this is repeated until the board reaches the discharge opening 15 of the oven.

As shown, the top conveyer 17 is inclined rearwardly and downwardly and reaches a point sufficiently spaced from the rear of the oven so that the board may drop onto the conveyer 18 which is inclined forwardly and downwardly and reaches a point sufficiently spaced from the front of the oven to permit a board to drop onto a conveyer 19.

The conveyers 20, 21 and 22 are similarly arranged so that the board is conveyed in a zigzag or serpentine path until it is discharged onto the lowermost conveyer 23 which discharges the board through the opening 15. A motor 24 supplies driving force to the various conveyers.

A furnace generally designated by 25 generates carbon dioxide or any other suitable gas or vapor and is connected by a pipe 26 to a suction fan 27, which delivers the gas to a header 28 which, by a plurality of short tubes 29, communicates with the oven 14 which is maintained at a temperature ranging between 90 and 100° F. for preliminary drying of the material.

It is obvious that by reason of the circuitous path in which the boards are conveyed from the ingress to the egress opening of the oven, a comparatively short drying oven may be employed and still the necessary time during which the boards are exposed to the drying action may be had, as if a long oven were employed. Adjacent to the drying oven a tank or bath, generally designated by 30, is arranged, in which an endless conveyer 31 carries the boards 10 from one end to the other, while the same are still in very warm condition.

The paint, in liquid form, is maintained at a level to contact the underside of the boards. In the bath is a longitudinal agitator 32 near the bottom thereof to keep the liquid paint in agitation and to maintain uniform consistency. Above the agitator 32 and near the upper level of the liquid are a plurality of transverse agitators 33 which counteract the turbulence of the liquid caused by the agitator 32 and provides a quiescent zone near the boards. Brush rollers 34 and rubber rollers 35, cooperating respectively with rollers 34*a* and 35*a*, apply the paint to the underside of the boards, which, by reason of their being heated, afford absorption of the paint at the contact surface.

Upon emergence from the bath, the boards travel on rolls 36 and pass between upper rollers 37 and a cooperating brush roller 38 and rubber roller 39, which remove excess paint and leave a coat on the board of uniform thickness. The excess paint drips into troughs 40 from where it may be reclaimed for further use.

The boards are then discharged onto an endless conveyer 41 and rise on an inclined conveyer 42 into the egress opening 43 of a drying oven generally designated by 44. The drying oven is similar in construction and function to

the oven 14, so that a description thereof is thought superfluous.

When the boards emerge from the drying oven 44, the film of paint has become very hard and, due to the surface absorption of the paint, the latter forms a homogeneous structure with the composition board and adheres thereto, as if the film of paint were a unitary integral structure with the composition board, withstanding mechanical influences, such as pressure, jars, etc., and withstanding atmospheric conditions, so that at no time will there be a separation between the film of paint and the composition board, nor a change in appearance.

The boards 10 emerge at the egress opening 45 whence they are piled onto a truck 46.

It is, of course, obvious from the drawings that the header 28 is connected by a plurality of tubes 47 to supply the hot gases or vapors to the oven 44 wherein the boards are conveyed in a serpentine path between ingress and egress from the oven 44. The boards, both in the ovens 14 and 44, starting out from the top, are first exposed to a certain temperature which increases as the boards descend.

While the drawings show a preferred embodiment of the apparatus for carrying out my method, various changes and modifications may be made without departing from the spirit of the invention.

I, therefore, do not limit myself to the particular sequence of steps forming my new method.

I claim:

1. The method of treating composition boards, including the steps of placing the boards in a heated zone, maintaining said boards in said zone for a considerable time while in motion, and subsequently conducting said boards over a bath of paint to afford absorption and covering of the paint on one surface of said boards only.

2. The method of treating composition boards, including the steps of conveying the boards through a zone of variable temperatures, subsequently passing the boards over a bath of paint, agitating the bath to maintain constant consistency but leaving the supernatant layer quiescent, and contacting the underside of the boards with the quiescent layer.

3. The method of treating composition boards, including the steps of conveying the boards through a zone of variable temperatures, passing the boards over a bath of paint, agitating the bath to maintain constant consistency but leaving the supernatant layer quiescent, contacting the underside of the boards with the quiescent layer, and subsequently removing excess paint from the board.

4. The method of treating composition boards, including the steps of conveying the boards through a heated zone in a circuitous path, passing the boards over a bath of paint to afford absorption and coloring of one surface, maintaining the bath at constant consistency but leaving the supernatant layer quiescent, removing excess paint from the boards, and subsequently passing the boards through another heated zone in a circuitous path for re-drying to thereby produce a film of paint in homogeneous relation to the composition board.

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