

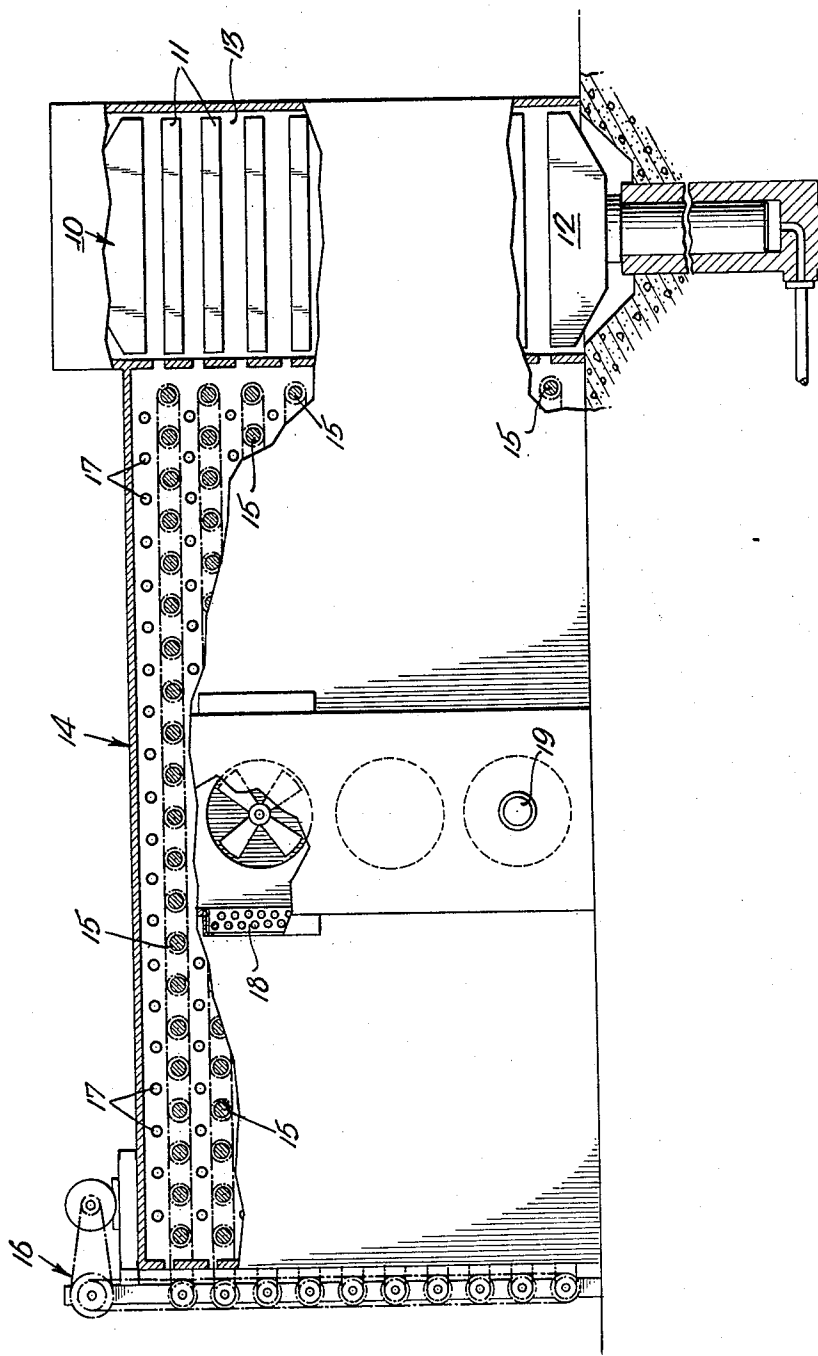
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METHOD OF TREATING SHEETS OF LIGNO CELLULOSE

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METHOD OF TREATING SHEETS OF LIGNO CELLULOSE

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1 Claim. (Cl. 162—206)

The present invention relates to a new and improved method for drying and pre-heating sheets of ligno-cellulose (wall-boards), to be fed into a heat-press for a treatment in accordance with the so called dry-pressure process. When manufacturing hard wall-boards in accordance with this mode boards are usually first manufactured as porous boards. The boards can be fed to the heat-press either directly from a dryer or from a store of earlier dried boards. The used press is substantially designed in the same manner as the presses, which are used for the manufacture of hard board in accordance with the so called wet method. The press is thus provided with a plurality of horizontal, superposed heating plates. A common number of heating plates is 21, and thus 20 sheets of hard boards can be manufactured simultaneously in the press. In order to give the sheets as good strength as possible and in order to diminish their hygroscopic properties the temperature of the sheets must be raised considerably above 100° C. This heat treatment is usually performed in the press. As there is no evaporation of moisture worth mentioning in the press in the dry-pressure process, the main part of the heat supplied in the press is used merely for heating the sheets. This heating will take a certain time. This time is rather long, owing to the low heat conductivity of dry ligno-cellulose. In order to reduce the press time as much as possible the boards have lately been pre-heated by means of alternating current of high frequency. This pre-heating is performed in such a manner, that a number of sheets are piled upon each other. Such a package of sheets is placed between two electrodes so designed that their plane surface substantially corresponds to the size of the sheets. After the package of sheets have been heated by the high-frequency electric current, the package is discharged from the heating device and the sheets are fed one by one into a rack located in front of the press. In this feeding rack the sheets are resting over each other to a number corresponding to that number of sheets, which can be treated at one and the same time in the press and all the sheets are then fed simultaneously.

The main draw-back of this known method for pre-heating is that the necessary apparatus is rather expensive. The efficiency of the electric generating means is furthermore low. To this comes the disadvantage—which seen from the view of quality is very serious—that the sheets have different temperatures, when they are fed into the press, even if the sheets have been given one and the same temperature in the heating device. The reason for this is that those sheets, which are firstly separated from the preheated package, have had time to cool down before the feeding rack in front of the press has been entirely filled and the sheets have been fed into the press. The main object of the invention is to eliminate these drawbacks and the invented method is characterized in that the treatment is performed in two separate steps—heat treatment and pressing—wherein the sheets are heat-

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treated in a chamber arranged in front of the press, in which chamber the sheets are treated in batches of superposed sheets of the same number as can be fed simultaneously into the press, whereafter the sheets—having reached the predetermined temperature—in batches are transferred directly to the press for the final treatment.

The drawing illustrates an apparatus for performing the method in accordance with the present invention.

An apparatus for the performance of the method is illustrated in the drawing and comprises a heat press 10 of multi-deck type and a heat treatment chamber 14 arranged in front of said press 10. The press is provided with a plurality of horizontal superposed heating plates 11 which are pressed against the opposite sides of the boards between the plates 11 by suitable pressure means 12. The apparatus is mainly characterized by superposed conveyors 15 in the heat treatment chamber 14 of the same number as the decks of the press 10, which conveyors are driven by one and the same driving device 16 for the transference of the sheets in batches directly into the press, and further by heating elements 17 in said chamber for heating the sheets by radiation or heating elements 18 together with means 19 for circulating a heating medium for heating the sheets by convection, or by both of these heating means in combination. The pressing plates 11 of the press may be heated or the pressing plates may be unheated and the press in full enclosed in a heat chamber 14.

By carrying out the method according to the invention for pre-heating the sheets the treatment time in the press will be very short. The capacity of the press will, therefore, be greater and it can be necessary to build the heating chamber to have room for a number of batches of sheets in the length direction of the chamber in order to get sufficient time for the heating. If the heating chamber is designed in this manner the sheets are to be transported through the chamber intermittently, each time a distance corresponding to the length of a sheet. If the heating time for instance is four times as long as the time for pressing, it will be necessary that the heating chamber has room for four batches of sheets. If the sheets are to be heated to such a high temperature, that there is a risk for dis-colouring by a greater heat supply at those points, where the sheets are resting on the supporting means, it may be convenient to slowly move the sheets for- and backwards on the conveyors between the above mentioned intermittent movements.

The scope of the invention will be evident from the succeeding claim.

What I claim is:

A method for making dense hardboard sheets of ligno cellulose or similar materials by the dry-pressure process in a multi-deck press having a number of decks comprising the steps of dividing the process into two separate stages by disposing a like number of previously-dried relatively thick sheets in superimposed spaced-apart relation in a stack, heat-treating said dry sheets in the stack in one stage uniformly to a predetermined temperature sufficient to enable reduction of said thick sheets to their final thickness and density, thereafter simultaneously advancing said stack of heat-treated sheets at said predetermined temperature directly without substantial loss of temperature into the multi-deck press having pressing plates on opposite sides of each sheet, and reducing said sheets to their final thickness and density in a separate stage by subjecting the sheets to pressure by said plates and heat at said predetermined temperature in said press.

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