The invention relates to the production of hot pressed fibrous lignocellulose articles such as boards. More particularly, the invention relates to a combination with a press of a board positioner which means the hot pressed product may be more efficiently and economically handled and produced in large scale operation.

In the process of producing hot pressed products such as felted lignocellulose board, the boards are supported on traveling caul plates which are assembled in a press loading mechanism, such mechanism being designed to simultaneously feed the plates carrying the board into the press openings. The plates carrying the pressed product are simultaneously withdrawn by suitable means from the press.

In carrying out such operation it has been found highly important to position the lignocellulose mat, board or article in proper relationship to the press platens.

Features including all the details of construction are shown along with the method and broader ideas of such means.

Features, objects and advantages of the invention will be set forth in the descriptions of the drawing following part of this application, and in said drawing:

Figure 1 is an elevation view showing a portion of a press with the invention applied thereto and with the plate positioning mechanism located in the active operating position and in the inactive position in dotted lines; and

Figure 2 is a top plan view with portions broken away of a caul plate used for carrying the product article to be pressed.

The press in conjunction with which the present invention is used is of the type which has a plurality of superimposed horizontally disposed pressing elements with means (not shown) for causing the elements to assume a space relation to receive articles to be pressed and then bringing them together substantially simultaneously to perform the pressing operation. Some of these presses have as many as 20 pressing elements or plates and the surface area of each plate is about 4½ feet by 16½ feet. When using a press with such a relatively large number of pressing elements it is, of course, advantageous to simultaneously feed the unpressed articles to the press and to simultaneously withdraw such articles after pressing. The articles to be pressed are placed upon what may be termed a traveling caul plate. These plates are accumulated in a loading device adjacent the press. All 20 of the plates carrying the articles to be pressed are by suitable means (not shown) moved into the press at one time. The plates carrying the pressed article are removed at one time by means (not shown). The press frame is indicated at 10 and the pressing elements at 12. These pressing elements are generally hollow and suitable means (not shown) is provided for introducing steam or other media for heating them. The invention is not concerned with the press structure per se, but with the method and means for controlling the positioning of the plates carrying the article to be pressed with respect to the pressing elements. Where the traveling caul plate system is used the press is usually loaded from one side and discharged from the opposite side. The caul plates 14 are usually provided with a handle-like member 16 which is for the purpose of enabling the unloader to withdraw the plates carrying the pressed article from the press. After the twenty caul plates are loaded into the press and before the press is closed, the press positioner is caused to take the position shown in full lines, Figure 1 thus assuring the articles are in proper relationship to the pressing elements.

As shown in Figure 1 there is secured to the frame 10 of the press, brackets 18. To these brackets 18 are secured fluid cylinders 26. The fluid cylinders 20 may be either air or hydraulically operated. These cylinders are pivotally connected to the bracket 18 at 22. The pistons 24 which are operatively mounted in the cylinders are connected to arms 26. The arms 26 are pivotally connected to the pistons 24 at 28 and the path of the travel of the piston is in the form of an arc as indicated at 27 in dotted lines. The arm 26 is pivotally mounted on the frame 10 at 30. Mounted on the same pivot are arms 32 which are adapted to move upon the movement of the arm 26. It is to be understood that the arms 26 and 32 may be formed integrally so long as upon the movement of the arm 26 the arm 32 moves therewith. The arms 32 are rigidly connected to pusher bars 34, it being important that the point of attachment of the arm 32 to the pusher bar 34 shall be substantially in the same place as the pivot point 30 connecting the arms 26 and 32. Upon the movement of the piston 24 the arms 26 and 32 take the position shown in dotted lines in Figure 1. In the position shown in dotted lines the plates carrying the fiberboard can be moved into and out of the press without interfering with the pusher bars 34.

Connected to each of the fluid cylinders 20 are flexible hoses 36 and 38. These flexible hoses are connected to the fluid supply lines 40 and 42 respectively. The supply lines 40 and 42 have mounted therein suitable speed control valve 44. The fluid such as air is supplied by conduit 46 upon any suitable source (not shown). Mounted between the sources of supply and the conduit 40 and 42 are control valves 48. These valves control the flow of fluid to and from the cylinders 20. As shown in Figure 1 the control valves 48 are separate, but it is to be understood that they preferably should be operated simultaneously.

The operation caul plates carrying the article to be pressed are accumulated in the press loader. When a sufficient number of plates carrying the articles to be pressed are accumulated, the press is opened and the plates forced into the press openings. The press is then closed and when the press starts to close the pusher bars 34 are caused to operate which results in the positioner bars 34 contacting the members 16 on the plates and thus positioning the plates and the article to be pressed in proper alignment with the pressing elements. It is to be understood that the pusher bars 34 hold the plates 14 in proper alignment until the pressing elements are closed which prevents any movement of the article to be pressed during pressing position of the cycle. After the articles have been through the pressing cycle the pusher bars are returned to the position shown in dotted lines in Figure 1 and the plates and the pressed articles are removed from the press.

The hydraulically operated ram 8 which is operatedly connected to member 9 provides means for moving the series of platens 12 from the open position toward the closed position. Each platen 12 supports a traveling caul plate upon which the article such as fiberboard mat is
placed. The caul plates carry the board into the press, support the board during pressing and carries the pressed board from the press. The caul plates are provided at opposite ends with outwardly extending members which may be of the form shown in Figure 2 at \( \text{16} \).

What is claimed:

1. A caul plate positioner for a press having spaced apart horizontal platen providing vertically spaced apart openings for receiving caul plates carrying fiber mat to be pressed, handle-like members extending from the end edges of caul plates, fluid operatable pistons carried by the press and connected to positioner bars, said bars adapted to contact the handle-like members and move the traveling caul plates to a predetermined position within the press.

2. In a multiple platen press mechanism comprising means for moving a series of platens from an open position toward a closed position, substantially rectangular traveling caul plates for supporting material to be pressed, handle members projecting beyond the edges of the caul plates, a series of fluid operatable pistons hingedly connected to the press at one end and hingedly connected to an arm at the other end, said arm pivotally mounted on the press, a second arm connected to the first arm at the pivotal point and the other end of the said second arm connected to pusher bars, said pusher bars contacting the handle members in moving the caul plates to a predetermined position within the press.

3. A caul plate positioner for a press having spaced apart horizontal platens providing vertically spaced apart openings for receiving traveling caul plates; traveling caul plates for supporting fiber mats being transferred to the press, during pressing and transferring the press mat from the press, said traveling caul plates having handle-like members extending from its edges; fluid operatable pistons hingedly connected to the press; said pistons hingedly connected to an arm; said arm pivotally connected to the press; a second arm connected to the first arm at the pivotal point, the second arm connected to pusher bars, the said pivotal points and the connections of the second arm to the pusher bars being in substantially the same horizontal plane, said pusher bars adapted to contact the handle-like members to move the traveling caul plate to a predetermined position on the press.

4. In a multiple platen press mechanism comprising means for moving a series of platens from an open position toward a closed position, substantially rectangular traveling caul plates for supporting material to be pressed, handle members projecting beyond the edges of the caul plates, a series of fluid operatable pistons hingedly connected to the press at one end and hingedly connected to an arm at the other end, said arm pivotally mounted on the press, a second arm connected to the first arm at the pivotal point and the other end of the said second arm connected to pusher bars, said pusher bars contacting the handle members in moving the caul plates to a predetermined position within the press, and means for operating the pistons simultaneously.

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