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Greten

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[54] **DEVICE FOR THE MANUFACTURE OF FIBERBOARDS FROM BINDER-INTERSPERSED, CHIP-LIKE AND/OR FIBROUS PARTICLES**

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[30] **Foreign Application Priority Data**

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[52] **U.S. Cl.** **425/224,** 425/364, 425/383, 264/120

[51] **Int. Cl.** **B29j 5/04**

[58] **Field of Search** 425/224, 406, 407, 223, 425/364, 383; 264/122, 212, 120

[56] **References Cited**

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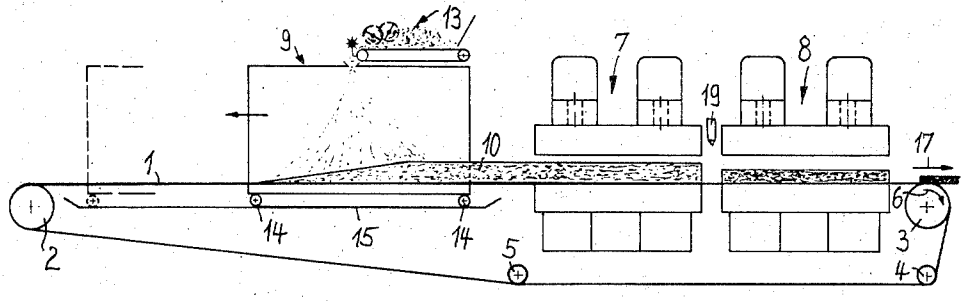
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[57] **ABSTRACT**

A device for the manufacture of fiberboards from binder-interspersed, chip-like and/or fibrous particles wherein a preparatory press is disposed along the conveyor carrying the chip fleece ahead of the hot press to perform a preliminary compression thereby permitting the operating stroke of the hot press to be reduced with the result that the operations performed by the elements can be carried out more quickly and without loss of quality.

7 Claims, 2 Drawing Figures



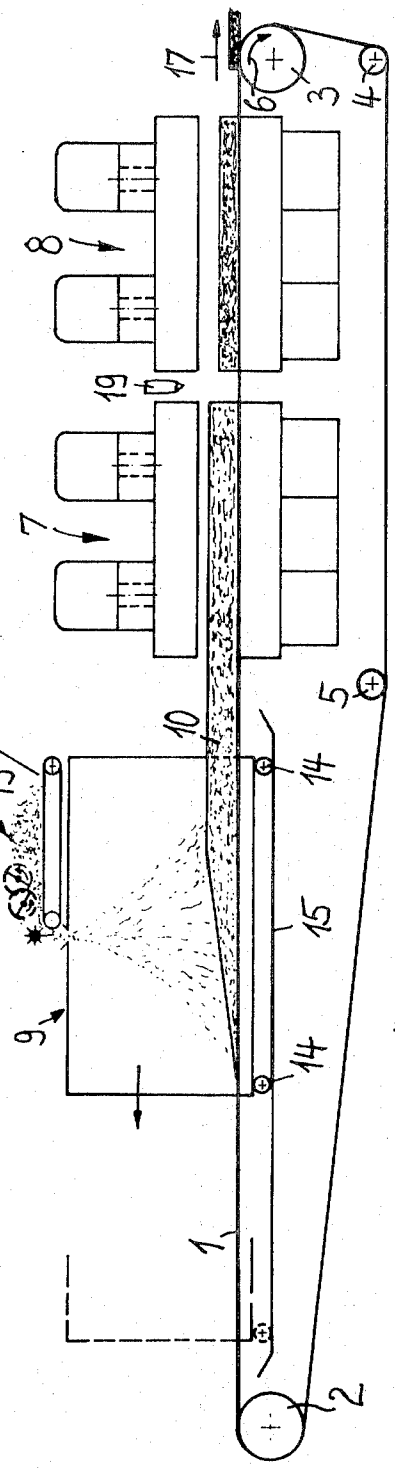


Fig. 1

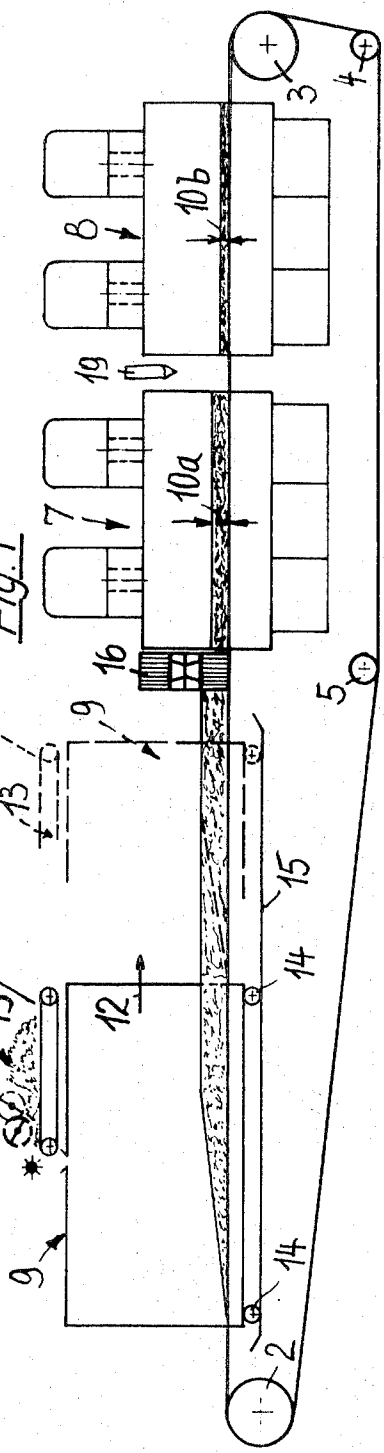


Fig. 2

DEVICE FOR THE MANUFACTURE OF FIBERBOARDS FROM BINDER-INTERSPERSED, CHIP-LIKE AND/OR FIBROUS PARTICLES

This invention relates to the improvement of a device for the manufacture of fiberboards from binder-interspersed, chip-like and/or fibrous particles.

Such devices normally include a web support moved intermittently through a hot press and a dispersing means disposed above the web support for dispensing the binder interspersed fibrous particles, which dispersing means is reciprocated in synchronism with the intermittent drive of the web support so as to provide for the formation of a chip fleece on a prescribed portion of the web support when the web support is at a standstill and the hot press is closed. There is also normally provided in such devices an apparatus for subdividing the thus-formed chip fleece into sections which are to be molded with the use of heat and pressure. Conventional devices of this type are disclosed, for example, in German Patent No. 972,018 and Swiss Patent No. 417,071. Such devices are distinguished by a simple structure; and their initial investment outlay and operating costs are relatively minor.

In the conventional arrangement glue-coated chip material travels through the plant to the hot press within a relatively short period of time. Normally, the binder contains reactive additives adapted to react within a specific period of time to effect the curing of the binder. By the appropriate composition of these additives (so-called curing agents), the curing period can be predetermined. Since the processing time of the glue-coated chip material up to the time the chip fleece reaches the hot press can be very accurately determined, a binder can be utilized which is exactly set for this time period. This makes it possible to make do with very brief pressing times, so that these devices can operate relatively economically. Although, with a corresponding composition of the binder, it would be possible to operate with shorter press times, difficulties are encountered due to the fact that, in particular, the fine particles on the surface of the still loose chip fleece are blown out of the press, because of the laterally escaping air, when the press is closed rapidly, whereby low-quality sheets and boards are produced. For this reason, the press must be closed relatively slowly, so that the efficiency of the apparatus is limited.

In order to eliminate this disadvantage, the present invention provides, upstream of the hot press, a preparatory or preliminary press for the preliminary compression of the fleece sections to be press-molded. While one fleece section is disposed in the preparatory press, another fleece section is provided in the hot press. By use of the preparatory press, a fleece section is reduced in thickness, so that the upper press ram of the hot press can be adjusted to a lower level than heretofore when in the open position. Thereby, the operating stroke of the ram is reduced, the closing time is shortened, and the cycle time of the press can be increased, i.e., the output of the system increases. Since the surfaces of the chip cakes to be molded with the application of pressure in the hot press are solidified and strengthened by the preliminary pressing step, no particles are blown off from the surface even when the hot press is closed quickly.

According to a further feature of the invention, the preparatory press is fashioned to be heatable. The chip cakes are already heated throughout in the preparatory press, so that the pressing step in the subsequently arranged hot finishing press can be additionally shortened. The preparatory press is heated to a temperature which does not yet result in the curing of the binder, suitably temperatures of up to about 100° C., depending on the binder employed; while, the hot finishing press operates at temperatures of about 180°–220° C.

In order to accelerate the complete heating of the chip cakes in the hot finishing press, a spray nozzle mechanism for spraying the surfaces of the prestrengthened chip cakes with water or the like is additionally disposed between the preparatory press and the finishing press. The sprayed-on liquid evaporates when the hot finishing press is closed and produces a so-called steam jet effect, providing a more rapid heating and curing of the chip cake.

Therefore, the efficiency of the conventional plant is considerably increased by the arrangement of the present invention.

The invention will be explained below with reference to the schematic drawing illustrating one embodiment thereof, to wit:

FIG. 1 shows a schematic side view of the plant, with the preparatory press as well as the main press both being open; and

FIG. 2 shows a side view of the system of FIG. 1 with the preparatory press closed and the main press closed as well.

The fleece support **1**, which is an endless steel belt, is guided about guide rolls **2, 3, 4** and **5.** The guide roll **3** can be driven intermittently by means of a drive, not shown, in the direction of arrow **6.** The upper belt side of the fleece support **1** is conducted first through a preparatory press **7** and then through a hot press **8.** By means of a dispersing device **9,** which can be replaced by any other conventional means of this type, a fleece **10** of chips is formed on the upper side of the fleece support **1.** The dispersing device **9** includes a metering device which dispenses the chip material and moves during this operation on rollers **14** and associated running rails **15** from its basic position in the proximity of the preparatory press **7** in the direction of the arrow **11.** After reaching the end position shown on the left-hand side in dashed lines, the dispersing device returns, as shown in FIG. **2,** moving in the direction of arrow **12,** into the starting position close to the preparatory press **7.** During the return of the dispersing device **9,** no material is fed from the metering device **13.** The drives for moving the scattering device and the metering device are not illustrated, but since this portion of the mechanism is entirely conventional, no further description is believed necessary.

While the dispersing device **9** forms the chip fleece section **10,** the presses **7** and **8** are closed. At the same time, an interspace free of chip material is produced between the fleece sections which are to be molded with the use of heat and pressure. This interspace is provided by means **16,** such as a brush, saw or the like, which is moved transversely across the width of the chip fleece.

In the preparatory press **7,** the thickness of the chip fleece section **10*a*** is markedly reduced as compared to the thickness of the chip fleece section **10.** At the same time, the chip fleece section **10*b*** in the hot press **8** is still further compressed to its final thickness and heated throughout. During the next press cycle, the fleece sup-

port 1 is then advanced by one press length and the finished pressed sheet is discharged in the direction of arrow 17 by means of any conventional conveying means.

The spray nozzle device 19 for spraying water or the like onto the pre-pressed chip fleece sections 10*b* is located between the preparatory press and the hot press and operates when this chip fleece section, during the advancement of the fleece support 1, is being moved underneath this device during its conveyance into the hot press.

As can be seen from the description, no additional time is required for the preparatory pressing step, and therefore a more satisfactory product is obtained at a desirably fast rate without any sacrifice in quality.

What is claimed is:

1. A device for the manufacture of fiberboards from binder-interspersed, chip-like and/or fibrous particles comprising fleece conveying means including a fleece support web for moving a chip fleece intermittently along a path, dispersing means disposed at one end of said path for forming a continuous chip fleece on said support web, a hot press disposed along said path for compressing said chip fleece, a preparatory press disposed between said dispersing means and said hot press for effecting a preliminary compression of said chip fleece, said preparatory press including means for heating said chip fleece on said fleece support web, and spray nozzle means disposed between said preparatory press and said hot press for applying water to said partially compressed chip fleece as it enters said hot press.

2. A device for the manufacture of fiberboards as defined in claim 1, further including means for subdividing the chip fleece into spaced sections prior to its introduction into said preparatory press.

3. A device for the manufacture of fiberboards as defined in claim 1, wherein said heating means heats said chip fleece to about 100° C.

4. A device for the manufacture of fiberboards from binder-interspersed, chip-like and/or fibrous particles comprising conveying means including an endless fleece support web and roller means engaging said web for supporting and drawing said web intermittently along a path, dispersing means disposed at one end of said path for forming a continuous chip fleece on said support web, a hot press disposed along said path for compressing said chip fleece, a heated preparatory press disposed between said dispersing means and said hot press for effecting a preliminary compression of said chip fleece, and means for subdividing the chip fleece into spaced sections prior to its introduction into said preparatory press.

5. A device for the manufacture of fiberboards as defined in claim 4, further including spray nozzle means disposed between said preparatory press and said hot press for applying water to said partially compressed chip fleece as it enters said hot press.

6. A device as defined in claim 4, wherein said dispersing means is provided in the form of a reciprocating dispenser travelling along a portion of said path.

7. A device as defined in claim 6, wherein said support web is provided in the form of a steel belt serving as a conveying and pressing sheet.

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