



(11) **EP 3 354 431 A1**

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
01.08.2018 Bulletin 2018/31

(51) Int Cl.:
B27N 3/26 (2006.01)

(21) Application number: **16848081.2**

(86) International application number:
PCT/CN2016/099351

(22) Date of filing: **19.09.2016**

(87) International publication number:
WO 2017/050200 (30.03.2017 Gazette 2017/13)

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
MA MD

(72) Inventors:
• **LI, Shaokun**
Shanghai 201805 (CN)
• **ZHANG, Rongqi**
Shanghai 201805 (CN)
• **WANG, Chuan**
Shanghai 201805 (CN)
• **DENG, Lining**
Shanghai 201805 (CN)
• **LUO, Liping**
Shanghai 201805 (CN)

(30) Priority: **22.09.2015 CN 201510609132**
22.09.2015 CN 201520739175 U

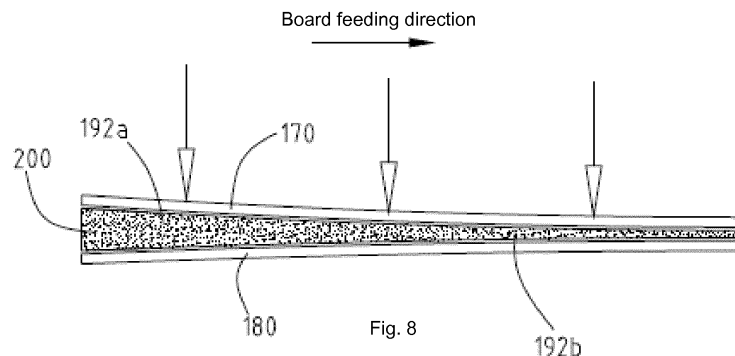
(71) Applicant: **Shanghai Wood-based Panel Machinery Co., Ltd.**
Shanghai 201805 (CN)

(74) Representative: **Ganz, Philipp Ralph et al**
Dieffenbacher GmbH
Maschinen- und Anlagenbau
Heilbronner Straße 20
75031 Eppingen (DE)

(54) **METHOD FOR PRESSING FIBERBOARD AND CONTINUOUS PRESS FOR PRESSING FIBERBOARD BY ADOPTING METHOD**

(57) The invention discloses a method for pressing fiberboard. A to-be-pressed fiber mat is sent into a feeding area formed between a top steel belt and a bottom steel belt along with circulation of the top and bottom steel belts and then into a pressing passage formed between a top feed heating plate and a bottom feed heating plate to be pressed into the fiberboard. The pressing passage is divided into a normal pressing curing zone and a pressing but not curing zone, and the to-be-pressed fiber mat enters the pressing but not curing zone first and

then enters the normal pressing curing zone. When the to-be-pressed fiber mat is pressed but not cured, the thickness of the to-be-pressed fiber mat is compressed, but the adhesive is not cured. The invention further discloses a continuous press adopting the above method. The thickness of precuring layers on the top and bottom surfaces of the obtained fiberboard is greatly reduced, raw materials are saved, the sanding quantity and power consumption of the sanding machine are reduced, and sanding dust is also reduced.



EP 3 354 431 A1

Description

BACKGROUND OF THE INVENTION

Technical Field

[0001] The invention relates to the technical field of processing artificial boards, board blanks and other boards through continuous presses, in particular to a method for pressing fiberboard and a continuous press adopting the method for pressing fiberboard.

Description of Related Art

[0002] As is shown in FIG. 1 and FIG. 2, a continuous press 100 is provided with a press top 110, a press bottom 120, a top steel belt 130, a bottom steel belt 140, a top roller bar chain blanket 150 and a bottom roller bar chain blanket 160, wherein the top steel belt 130 continuously operates in the press top 110, and the bottom steel belt 140 continuously operates in the press bottom 120. A top feed heating plate 170 and a bottom feed heating plate 180 are arranged in the press top 110 and the press bottom 120 separately, and a feeding area 191 is formed before the top feed heating plate 170 and the bottom feed heating plate 180 by the top steel belt 130 and the bottom steel belt 140. A pressing passage 192 is formed between the top feed heating plate 170 and the bottom feed heating plate 180. The feed end of the pressing passage 192 is connected with the feeding area 191 in a natural transition mode.

[0003] When the continuous press operates, the top steel belt 130 wound around a top driven roller 131 and a top driving roller 132 and the bottom steel belt 140 wound around a bottom driven roller 141 and a bottom driving roller 142 are driven by the top driving roller 132 and the bottom driving roller 142 to circulate, and a to-be-pressed fiber mat 200 is sent into the feeding area 191 formed between the top steel belt 130 and the bottom steel belt 140 along with circulation of the top steel belt 130 and the bottom steel belt 140 and then into the pressing passage 192 formed between the top feed heating plate 170 and the bottom feed heating plate 180 to be pressed into fiberboards of different specification in a subsequent pressing passage 193.

[0004] To achieve rolling friction between the top steel belt 130 and the top feed heating plate 170 as well as between the bottom steel belt 140 and the bottom feed heating plate 180 to further reduce the operating resistance, in work, the top roller bar chain blanket 150 wound around a top chain blanket driving chain wheel 151 and a top chain blanket driven chain wheel 152 and the bottom roller bar chain blanket 160 wound around a bottom chain blanket driving chain wheel 161 and a bottom chain blanket driven chain wheel 162 are driven by the top chain blanket driving chain wheel 151 and the bottom chain blanket driving chain wheel 161 to circulate so as to enter the zone between the top feed heating plate 170 and the

bottom feed heating plate 180 and the zone between the top steel belt 130 and the bottom steel belt 140.

[0005] Generally speaking, a top heating device and a bottom heating device (not shown in the FIGs) are separately arranged in the top feed heating plate 170 and the bottom feed heating plate 180 and transfer heat into the to-be-pressed fiber mat 200 in the pressing passage 192 through the top and bottom feed heating plates 170, 180, the top and bottom roller bar chain blankets 150, 160 and the top and bottom steel belts 130, 140, so that the adhesive in the to-be-pressed fiber mat 200 is cured; at the moment, a pressurization device 111 on the press top 110 applies pressure to the top and bottom feed heating plates 170, 180, the pressure is then transmitted to the to-be-pressed fiber mat 200 in the pressing passage 192 through the top and bottom roller bar chain blankets 150, 160 and the top and bottom steel belts 130, 140, so that the fiber mat 200 is gradually compressed to a preset thickness, and a fiberboard is formed in the subsequent pressing passage 193 and finally is sent out.

[0006] The pressing passage 192 between the top feed heating plate 170 and the bottom feed heating plate 180 can be adjusted so that fiberboards with different thicknesses, such as fiberboards with the thickness of 12mm, 16mm and 25mm, can be produced through one continuous press 100.

[0007] The top and bottom feed heating plates 170, 180 of the existing continuous press 100 each have only one temperature zone, and when the to-be-pressed fiber mat 200 enters the pressing passage 192 to be cured and pressed from the feeding area 191, precuring layers can be formed on the top and bottom surfaces of the fiberboard under the high-temperature and high-pressure effect.

Generally speaking, the top and bottom surfaces of the obtained fiberboard need to be sanded so as to remove the precuring layers on the top and bottom surfaces of the fiberboard, and thus the hardness, along the whole cross section, of the finally obtained fiberboard is basically consistent (as is shown in FIG. 3). For example, as for a formed fiberboard with the final thickness of 12mm after the precuring layers are removed, the thickness of each of the precuring layers on the top and bottom surfaces reaches 0.45mm, and thus the thickness of the fiberboard produced by the continuous press 100 reaches 12.9mm. The precuring layers are so thick that high manufacturing cost is caused by severe raw material waste, that the sanding quantity is large, and consumption of abrasive belts used for grinding and power consumption of the sanding machine are greatly increased, and that a large quantity of sand is generated by sanding, the processing workload is large, and safety problems are caused.

[0008] The thickness of the precuring layers formed on the top and bottom surfaces of the obtained fiberboard not only depends on the fiber state and the performance of the adhesive in the fiber, but also depends on the feeding speed of the to-be-pressed fiber mat 200 and the

pressing temperature and the pressing pressure applied to the to-be-pressed fiber mat 200 by the top and bottom feed heating plates 170, 180 in the pressing process. Under a certain feeding speed and pressing temperature condition, the lower the pressure applied to the to-be-pressed fiber mat 200 by the top and bottom feed heating plates 170, 180, the thicker the precuring layers on top and bottom surfaces of the obtained fiberboard; otherwise, the higher the pressure applied to the to-be-pressed fiber mat 200 by the top and bottom feed heating plates 170, 180, the thinner the precuring layers on the top and bottom surfaces of the obtained fiberboard. Technicians in the industry generally reduce the thickness of the precuring layers on the top and bottom surfaces of the obtained fiberboard by increasing the pressing pressure; however, through this method, dust spots can be formed on the obtained fiberboard.

[0009] A large quantity of gas is released by the to-be-pressed fiber mat 200 in the curing and pressing process, part of the released gas is exhausted from the two sides of the pressing passage 192, and the other part of the released gas can only be exhausted towards the feeding area 191 (as is shown in FIG. 4 and FIG. 5) due to the fact that the fiber mat 200 at the rear end of the pressing passage 192 has already been cured and compacted gradually. The gas exhausted towards the feeding area 191 can form vortex flow at the contact positions between the top and bottom steel belts 130, 140 and the to-be-pressed fiber mat 200, the vertex flow acts on the top and bottom surfaces of the to-be-pressed fiber mat 200, so that a large quantity of dust pellets 10 are generated particularly on the bottom surface of the to-be-pressed fiber mat 200 (as is shown in FIG. 6), these dust pellets 10 are then carried into the pressing passage 192, the adhesive in the dust pellets 10 is generally cured in advanced under the influence of high-temperature air flow and thus cannot be fused into the to-be-pressed fiber mat 200, and consequentially, dust spots are formed on the surfaces of the obtained fiberboard.

[0010] Currently, to solve the problem of dust spots on the obtained fiberboard, the position close to the inlet of the pressing passage 192, namely the position I in FIG. 7, of the top feed heating plate 170 is generally lifted by a certain height, so that an S-shaped curved surface is formed between the top feed heating plate 170 and the fiber mat 200 in the feeding direction, an exhaust gap 194 is formed at the position I between the top feed heating plate 170 and the bottom feed heating plate 180, a large quantity of gas generated in the curing and pressing process of the to-be-pressed fiber mat 200 is exhausted from the two sides via the exhaust gap 194, in this way, the flow rate of gas exhausted towards the feeding area 191 is effectively decreased, vertex flow cannot be generated at the contact position between the top and bottom steel belts 130, 140 and the to-be-pressed fiber mat 200 by the gas exhausted towards the feeding area 191, and accordingly, the quantity of generated dust pellets is effectively reduced or no dust pellet is generated. Further-

more, though the method, the feeding speed and the yield can be increased. However, by adoption of the method, the thickness of the precuring layers on the surfaces of the obtained fiberboard can be increased.

[0011] The above problem has troubled the industry for a long time and urgently needs to be solved by the technicians in the industry.

BRIEF SUMMARY OF THE INVENTION

[0012] To overcome the defects of existing continuous presses for pressing fiberboards, the invention provides a method for pressing fiberboard through a continuous press. The thickness of the precuring layers of a fiberboard obtained through the method is greatly reduced, raw materials are saved, the sanding quantity and sanding dust are reduced, the quantity of generated dust pellets is reduced, and dust spots on the surfaces of the obtained fiberboard are avoided.

[0013] The invention further provides a continuous press adopting the above method for pressing fiberboard.

[0014] As for the method for pressing fiberboard of the invention, a top steel belt wound around a top driving roller and a top driven roller and a bottom steel belt wound around a bottom driving roller and a bottom driven roller are driven by the top driving roller and the bottom driving roller to circulate, and a to-be-pressed fiber mat is sent into a feeding area formed between the top steel belt and the bottom steel belt along with circulation of the top steel belt and the bottom steel belt and then into a pressing passage formed between a top feed heating plate and a bottom feed heating plate to be pressed into a fiberboard. The method is characterized in that the pressing passage is divided into a normal pressing curing zone and a pressing but not curing zone, the to-be-pressed fiber mat enters the pressing but not curing zone first and then enters the normal pressing curing zone, and when the to-be-pressed fiber mat passes through the pressing but not curing zone, the thickness of the to-be-pressed fiber mat is compressed, but the adhesive in the to-be-pressed fiber mat is not cured.

[0015] In one preferred embodiment of the invention, the set temperature of the pressing but not curing zone and the time for the to-be-pressed fiber mat to pass through the pressing but not curing zone cannot meet the temperature and time requirements for normal curing of the adhesive in the to-be-pressed fiber mat.

[0016] In one preferred embodiment of the invention, the set temperature of the pressing but not curing zone is lower than the temperature required for normal curing of the adhesive in the fiber mat when the fiber mat passes through the pressing but not curing zone.

[0017] In one preferred embodiment of the invention, the pressing but not cooling zone is cooled, so that the temperature of the pressing but not curing zone is made lower than the temperature required for normal curing of the adhesive in the fiber mat when the fiber mat passes through the pressing but not curing zone.

[0018] In one preferred embodiment of the invention, the top steel belt and the, bottom steel belt are not heated when passing through the pressing but not curing zone, so that the temperature of the pressing but not curing zone is made lower than the temperature required for normal curing of the adhesive in the fiber mat when the fiber mat passes through the pressing but not curing zone.

[0019] In one preferred embodiment of the invention, the pressure of the pressing but not curing zone is equal to or lower than the pressure of the normal pressing curing zone.

[0020] In one preferred embodiment of the invention, the position, close to the inlet of the pressing passage, of the top feed heating plate is lifted by a certain distance, so that an exhaust gap is formed at a position close to the inlet of the pressing passage and between the top feed heating plate and the bottom feed heating plate in the pressing process.

[0021] As for the continuous press adopting the above method for pressing fiberboard, the continuous press is provided with a press top, a press bottom, a top steel belt, a bottom steel belt, a top roller bar chain blanket and bottom roller bar chain blanket, wherein the top steel belt continuously operates in the press top, and the bottom steel belt continuously operates in the press bottom. A top feed heating plate is arranged in the press top, and a bottom feed heating plate is arranged in the press bottom. A feeding area is formed before the top feed heating plate and the bottom feed heating plate by the top steel belt and the bottom steel belt, and a pressing passage is formed between the top feed pressing plate and the bottom feed pressing plate and connected with the feeding area. The continuous press is characterized in that the pressing passage is divided into a normal pressing curing zone and a pressing but not curing zone, the to-be-pressed fiber mat enters the pressing but not curing zone first and then enters the normal pressing curing zone, and when the to-be-pressed fiber mat passes through the pressing but not curing zone, the thickness of the to-be-pressed fiber mat is compressed, but the adhesive in the to-be-pressed fiber mat is not cured.

[0022] In one preferred embodiment of the invention, the set temperature of the pressing but not curing zone and the time for the to-be-pressed fiber mat to pass through the pressing but not curing zone cannot meet the temperature and time requirements for normal curing of the adhesive in the to-be-pressed fiber mat.

[0023] In one preferred embodiment of the invention, the set temperature of the pressing but not curing zone is lower than the temperature required for normal curing of the adhesive in the fiber mat when the fiber mat passes through the pressing but not curing zone.

[0024] In one preferred embodiment of the invention, the zone between the top feed heating plate and the bottom feed heating plate is divided into a first temperature control zone and a second temperature control zone, wherein the first temperature control zone between the

top feed heating plate and the bottom feed heating plate corresponds to the pressing but not curing zone, and the second temperature control zone between the top feed heating plate and the bottom feed heating plate corresponds to the normal pressing curing zone.

[0025] In one preferred embodiment of the invention, the first temperature zone and the second temperature zone between the top feed heating plate and the bottom feed heating plate are controlled independently.

[0026] In one preferred embodiment of the invention, the top steel belt and the bottom steel belt are not heated when passing through the pressing but not curing zone, so that the temperature of the pressing but not curing zone is made lower than the temperature required for normal curing of the adhesive in the fiber mat when the fiber mat passes through the pressing but not curing zone.

[0027] In one preferred embodiment of the invention, the pressure of the pressing but not curing zone is equal to or lower than the pressure of the normal pressing curing zone.

[0028] In one preferred embodiment of the invention, the position, close to the inlet of the pressing passage, of the top feed heating plate is lifted by a certain distance, so that an exhaust gap is formed at a position close to the inlet of the pressing passage and between the top feed heating plate and the bottom feed heating plate in the pressing process.

[0029] As the to-be-pressed fiber mat enters the pressing but not curing zone first before entering the normal pressing curing zone through the feeding area, air in the fiber mat can be exhausted towards the two sides and the feeding area from the pressing but not curing zone, meanwhile, part of gas generated when the fiber mat is pressed and cured in the normal pressing curing zone is exhausted from the two sides of the normal pressing curing zone, and the other part of gas can be exhausted towards the pressing but not curing zone; and as the adhesive is not cured in the pressing but not curing zone, gas can be exhausted smoothly, finally, the thickness of the precuring layers on the top and bottom surfaces of the obtained fiberboard can be reduced at least by 30%-40% compared with the prior art and even is only 30% of that in the prior art, and therefore, raw materials are greatly saved, the sanding quantity, power consumption of the sanding machine and abrasive belt consumption are reduced, and sanding dust is also reduced.

[0030] In addition, as the adhesive is not completely cured when the to-be-pressed fiber mat passes through the pressing but not curing zone, gas released by the fiber mat in the normal pressing curing zone can be exhausted towards the feeding area via the pressing but not curing zone, this part of gas cannot form vortex flow at the contact positions between the top and bottom steel belts and the to-be-pressed fiber mat, and even if vortex flow is generated and dust pellets are generated on the top and bottom surfaces of the to-be-pressed fiber mat with the adhesive not cured, these dust pellets are carried

into the pressing but not curing zone and then can be fused into to the surfaces of the to-be-pressed fiber mat as the adhesive in the to-be-pressed fiber mat is not cured in the pressing but not curing zone, and thus dust spots on the surfaces of the fiberboard are avoided.

[0031] Secondly, as the position, close to the inlet of the pressing passage, of the top feed heating plate is lifted by a certain height, an exhaust gap is formed at a position close to the inlet of the passing passage and between the top feed heating plate and the bottom feed heating plate in the pressing process, in this way, gas generated by the to-be-pressed fiber mat in the pressing but not curing zone and a large quantity of gas generated in the normal pressing curing zone and exhausted towards the pressing but not curing zone can be exhausted from the two sides of the fiber mat via the exhaust gap, the flow rate of gas exhausted towards the feeding area is effectively decreased, vortex flow is avoided, and therefore, the feeding speed can be properly increased to further increase the yield.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0032] To explain the technical scheme of the embodiments of the invention or the prior art more clearly, a brief description of the drawings required for describing the embodiments of the invention or the prior art is given as follows, obviously, the drawings in the following description are only for part of the embodiments of the invention, and for those ordinarily skilled in the field, other drawings can also be obtained without creative work according to these drawings.

- FIG. 1 is a structural diagram of an existing continuous press.
- FIG. 2 is an enlarged view of the position I in FIG. 1.
- FIG. 3 is a density distribution diagram of the cross section of a fiberboard produced through the existing continuous press.
- FIG. 4 is a diagram of the existing continuous press when used for pressing fiber mat.
- FIG. 5 is a diagram of air released when the existing continuous press is used for pressing fiber mat.
- FIG. 6 is an enlarged view of the position B in FIG. 2.
- FIG. 7 is an enlarged view of the position A in FIG. 2.
- FIG. 8 is a diagram of a continuous press of the invention when used for pressing fiber mat.
- FIG. 9 is a distribution diagram of temperature zones in a pressing passage of the continuous press of the invention.
- FIG. 10 is a diagram of air released when the continuous press of the invention is used for pressing fiber mat.
- FIG. 11 is a density distribution diagram of the cross section of a fiberboard produced through the continuous press of the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0033] For a clear understanding of the technical means, creative characteristics, purposes and effects of the invention, a further illustration of the invention is given with the accompanying drawings as follows.

[0034] As is shown in FIG. 1 and FIG. 2, a continuous press of the invention is basically the same as the existing continuous press and is also provided with a press top 110, a press bottom 120, a top steel belt 130, a bottom steel belt 140, a top roller bar chain blanket 150 and a bottom roller bar chain blanket 160, wherein the top steel belt 130 continuously operates in the press top 110, and the bottom steel belt 140 continuously operates in the press bottom 120. A top feed heating plate 170 and a bottom feed heating plate 180 are arranged in the press top 110 and the press bottom 120 separately. A feeding area 191 is formed before the top feed heating plate 170 and the bottom feed heating plate 180 by the top steel belt 130 and the bottom steel belt 140. A pressing passage 192 is formed between the top feed heating plate 170 and the bottom feed heating plate 180.

The continuous press of the invention is different from the existing continuous press in that as is shown in FIG. 8, the pressing passage formed between the top feed heating plate 170 and the bottom feed heating plate 180 is divided into a normal pressing curing zone 192b and a pressing but not curing zone 192a and the normal pressing curing zone 192b is connected with the feeding area 191 through the pressing but not curing zone 192a, namely, a to-be-pressed fiber mat enters the pressing but not curing zone 192a first and then enters the normal pressing curing zone 192b. The set temperature of the pressing but not curing zone 192a and the time for the to-be-pressed fiber mat 200 to pass through the pressing but not curing zone 192a cannot meet the temperature and time requirements for normal curing of the adhesive in the to-be-pressed fiber mat 200, and therefore, when the to-be-pressed fiber mat 200 passes through the pressing but not curing zone 192a, the thickness of the to-be-pressed fiber mat 200 is compressed, but the adhesive in the to-be-pressed fiber mat 200 is not cured. Specifically, the temperature of the pressing but not curing zone 192a should be lower than the temperature required for normal curing of the adhesive in the to-be-pressed fiber mat 200 when the to-be-pressed fiber mat 200 passes through the pressing but not curing zone 192a.

[0035] To make the temperature of the pressing but not curing zone 192a lower than the temperature required for normal curing of the adhesive in the to-be-pressed fiber mat 200 when the to-be-pressed fiber mat 200 passes through the pressing but not curing zone 192a, the pressing but not curing zone 192a can be cooled. Specifically, the zone between the top feed heating plate 170 and the bottom feed heating plate 180 is divided into a first temperature control zone 310 and a second temperature control zone 320, and the first temperature control

zone 310 and the second temperature control zone 320 are controlled independently. As is shown in FIG. 9, the first temperature control zone 310 between the top feed heating plate 170 and the bottom feed heating plate 180 corresponds to the pressing but not curing zone 192a, and the second temperature control zone 320 between the top feed heating plate 170 and the bottom feed heating plate 180 corresponds to the normal pressing curing zone 192b.

[0036] In addition, the temperature of the pressing but not curing zone 192a can also be made lower than the temperature required for normal curing of the adhesive in the to-be-pressed fiber mat 200 when the to-be-pressed fiber mat 200 passes through the pressing but not curing zone 192a through the following method: the top steel belt 130 and the bottom steel belt 140 are not heated anymore when passing through the pressing but not curing zone 192a. Specifically, the top steel belt 130 and the bottom steel belt 140 circulate to enter the pressing passage 192 again from the inlet end of the pressing passage 192 after coming out of the pressing passage 192 from the outlet end of the pressing passage 192, and have already been cooled without being heated by heating devices in the process, the temperature of the top and bottom steel belts 130 and the bottom steel belt 140 is greatly decreased, and thus through proper adjustment, it can be ensured that the temperature generated when the top steel belt 130 and the bottom steel belt 140 enter the pressing passage 192 again is lower than the temperature required for normal curing of the adhesive in the to-be-pressed fiber mat 200 when the to-be-pressed fiber mat 200 passes through the pressing but not curing zone 192a.

[0037] The operating process of the continuous press for pressing the fiber mat of the invention is as follows: the top steel belt 130 wound around the top driving roller and the top driven roller and the bottom steel belt 140 wound around the bottom driving roller and the bottom driven roller are driven by the top driving roller and the bottom driving roller to circulate, and the to-be-pressed fiber mat 200 is sent into the feeding area 191 formed between the top feed heating plate 170 and the bottom feed heating plate 180 along with circulation of the top bottom steel belt 130 and the bottom steel belt 140 and then sequentially passes through the pressing but not curing zone 192a, namely the first temperature control zone 310 and the normal pressing curing zone 192b, namely the second temperature control zone 320, wherein the pressure of the fiber mat 200 passing through the pressing but not curing zone 192a is equal to or lower than the pressure of the fiber mat 200 passing through the normal curing pressing zone 192b.

[0038] As the fiber mat 200 enters the pressing but not curing zone 192a first before entering the normal pressing curing zone 192b through the feeding area 191, air in the fiber mat 200 can be exhausted towards the two sides and the feeding area from the pressing but not curing zone 192a, meanwhile, part of gas generated when

the fiber mat is pressed and cured in the normal pressing curing zone 192b is exhausted from the two sides of the normal pressing curing zone 192b, and the other part of gas can be exhausted towards the pressing but not curing zone 192a; and as is shown in FIG. 10, as the adhesive is not cured in the pressing but not curing zone 192a, gas can be exhausted smoothly, finally, the thickness of the precuring layers on the top and bottom surfaces of the obtained fiberboard can be reduced at least by 30%-40% compared with the prior art and even is only 30% of that in the prior art as is shown in FIG. 11, and therefore, raw materials are greatly saved, the sanding quantity, power consumption of the sanding machine and abrasive belt consumption are reduced, and sanding dust is also reduced.

[0039] In addition, as the adhesive is not completely cured when the fiber mat 200 passes through the pressing but not curing zone 192a, gas released by the fiber mat 200 in the normal pressing curing zone 192b can be exhausted towards the feeding area 191 via the pressing but not curing zone 192a, this part of gas cannot form vortex flow at the contact positions between the top and bottom steel belts 130, 140 and the to-be-pressed fiber mat 200, and even if vortex flow is generated and dust pellets 10 are generated on the top and bottom surfaces of the to-be-pressed fiber mat 200 with the adhesive not cured (as is shown in FIG. 6), these dust pellets 10 are carried into the pressing but not curing zone 192a and then can be fused into to the surfaces of the to-be-pressed fiber mat 200 as the adhesive in the to-be-pressed fiber mat 200 is not cured in the pressing but not curing zone 192a, and thus dust spots on the surfaces of the fiberboard are avoided.

[0040] In addition, the position close to the inlet of the pressing passage 192, namely the position I in FIG. 7, of a pressurization device 111 on the press top 110 can be lifted by a certain distance, so that an S-shaped curved surface is formed between the top feed heating plate 170 and the fiber mat 200 in the feeding direction, and accordingly, an exhaust gap 194 (as is shown in FIG. 7) is formed at the position I and between the top feed heating plate 170 and the bottom feed heating plate 180 in the pressing process. In this way, gas generated by the to-be-pressed fiber mat 200 in the pressing but not curing zone 192a and a large quantity of gas generated in the normal pressing curing zone 192b and exhausted towards the pressing but not curing zone 192a can be exhausted from the two sides of the fiber mat via the exhaust gap 194, the flow rate of gas exhausted towards the feeding area is effectively decreased, vortex flow is avoided, and therefore, the feeding speed can be properly increased to further increase the yield.

[0041] The basic principle, main characteristics and advantages of the invention are illustrated and described above. Those skilled in the field should understand that the invention is not limited to the above embodiment, the above embodiment and description are only used for illustrating the principle of the invention, various variations

and improvements can also be made without deviating from the spirit and scope of the invention, and all these variations and improvements are within the protection scope of the invention. The protection scope of the invention depends on the accompanying claims and equivalents of the claims.

Claims

1. A method for pressing fiberboard, comprising the steps that a top steel belt wound around a top driving roller and a top driven roller and a bottom steel belt wound around a bottom driving roller and a bottom driven roller are driven by the top driving roller and the bottom driving roller to circulate, and a to-be-pressed fiber mat is sent into a feeding area formed between the top steel belt and the bottom steel belt along with circulation of the top steel belt and the bottom steel belt and then into a pressing passage formed between a top feed heating plate and a bottom feed heating plate to be pressed into a fiberboard; **characterized in that** the pressing passage is divided into a normal pressing curing zone and a pressing but not curing zone, the to-be-pressed fiber mat enters the pressing but not curing zone first and then enters the normal pressing curing zone, and when the to-be-pressed fiber mat passes through the pressing but not curing zone, the thickness of the to-be-pressed fiber mat is compressed, but the adhesive in the to-be-pressed fiber mat is not cured.
2. The method for pressing fiberboard according to Claim 1, **characterized in that** the set temperature of the pressing but not curing zone and the time for the to-be-pressed fiber mat to pass through the pressing but not curing zone cannot meet the temperature and time requirements for normal curing of the adhesive in the to-be-pressed fiber mat.
3. The method for pressing fiberboard according to Claim 2, **characterized in that** the set temperature of the pressing but not curing zone is lower than the temperature required for normal curing of the adhesive in the fiber mat when the fiber mat passes through the pressing but not curing zone.
4. The method for pressing fiberboard according to Claim 3, **characterized in that** the pressing but not cooling zone is cooled, so that the temperature of the pressing but not curing zone is made lower than the temperature required for normal curing of the adhesive in the fiber mat when the fiber mat passes through the pressing but not curing zone.
5. The method for pressing fiberboard according to Claim 3, **characterized in that** the top steel belt and the bottom steel belt are not heated when passing

through the pressing but not curing zone, so that the temperature of the pressing but not curing zone is made lower than the temperature required for normal curing of the adhesive in the fiber mat when the fiber mat passes through the pressing but not curing zone.

6. The method for pressing fiberboard according to any of Claims 1-5, **characterized in that**, the pressure of the pressing but not curing zone is equal to or lower than the pressure of the normal pressing curing zone.
7. The method for pressing fiberboard according to Claim 6, **characterized in that** the position, close to the inlet of the pressing passage, of the top feed heating plate is lifted by a certain distance, so that an exhaust gap is formed at a position close to the inlet of the pressing passage and between the top feed heating plate and the bottom feed heating plate in the pressing process.
8. A continuous press adopting the method for pressing fiberboard mentioned in Claim 1, provided with a press top, a press bottom, a top steel belt, a bottom steel belt, a top roller bar chain blanket and bottom roller bar chain blanket, wherein the top steel belt continuously operates in the press top, the bottom steel belt continuously operates in the press bottom, a top feed heating plate is arranged in the press top, a bottom feed heating plate is arranged in the press bottom, a feeding area is formed before the top feed heating plate and the bottom feed heating plate by the top steel belt and the bottom steel belt, and a pressing passage is formed between the top feed pressing plate and the bottom feed pressing plate and connected with the feeding area; **characterized in that** the pressing passage is divided into a normal pressing curing zone and a pressing but not curing zone, the to-be-pressed fiber mat enters the pressing but not curing zone first and then enters the normal pressing curing zone, and when the to-be-pressed fiber mat passes through the pressing but not curing zone, the thickness of the to-be-pressed fiber mat is compressed, but the adhesive in the to-be-pressed fiber mat is not cured.
9. The continuous press according to Claim 8, **characterized in that** the set temperature of the pressing but not curing zone and the time for the to-be-pressed fiber mat to pass through the pressing but not curing zone cannot meet the temperature and time requirements for normal curing of the adhesive in the to-be-pressed fiber mat.
10. The continuous press according to Claim 9, **characterized in that** the set temperature of the pressing but not curing zone is lower than the temperature required for normal curing of the adhesive in the fiber

mat when the fiber mat passes through the pressing but not curing zone.

- 11. The continuous press according to Claim 10, **characterized in that** the zone between the top feed heating plate and the bottom feed heating plate is divided into a first temperature control zone and a second temperature control zone, wherein the first temperature control zone between the top feed heating plate and the bottom feed heating plate corresponds to the pressing but not curing zone, and the second temperature control zone between the top feed heating plate and the bottom feed heating plate corresponds to the normal pressing curing zone.

5
10
15
- 12. The continuous press according to Claim 11, **characterized in that** the first temperature zone and the second temperature zone between the top feed heating plate and the bottom feed heating plate are controlled independently.

20
- 13. The continuous press according to Claim 10, **characterized in that** the top steel belt and the bottom steel belt are not heated when passing through the pressing but not curing zone, so that the temperature of the pressing but not curing zone is made lower than the temperature required for normal curing of the adhesive in the fiber mat when the fiber mat passes through the pressing but not curing zone.

25
30
- 14. The continuous press according to any of Claims 8-13, **characterized in that** the pressure of the pressing but not curing zone is equal to or lower than the pressure of the normal pressing curing zone.

35
- 15. The continuous press according to Claim 14, **characterized in that** the position, close to the inlet of the pressing passage, of the top feed heating plate is lifted by a certain distance, so that an exhaust gap is formed at a position close to the inlet of the pressing passage and between the top feed heating plate and the bottom feed heating plate in the pressing process.

40
45
50
55

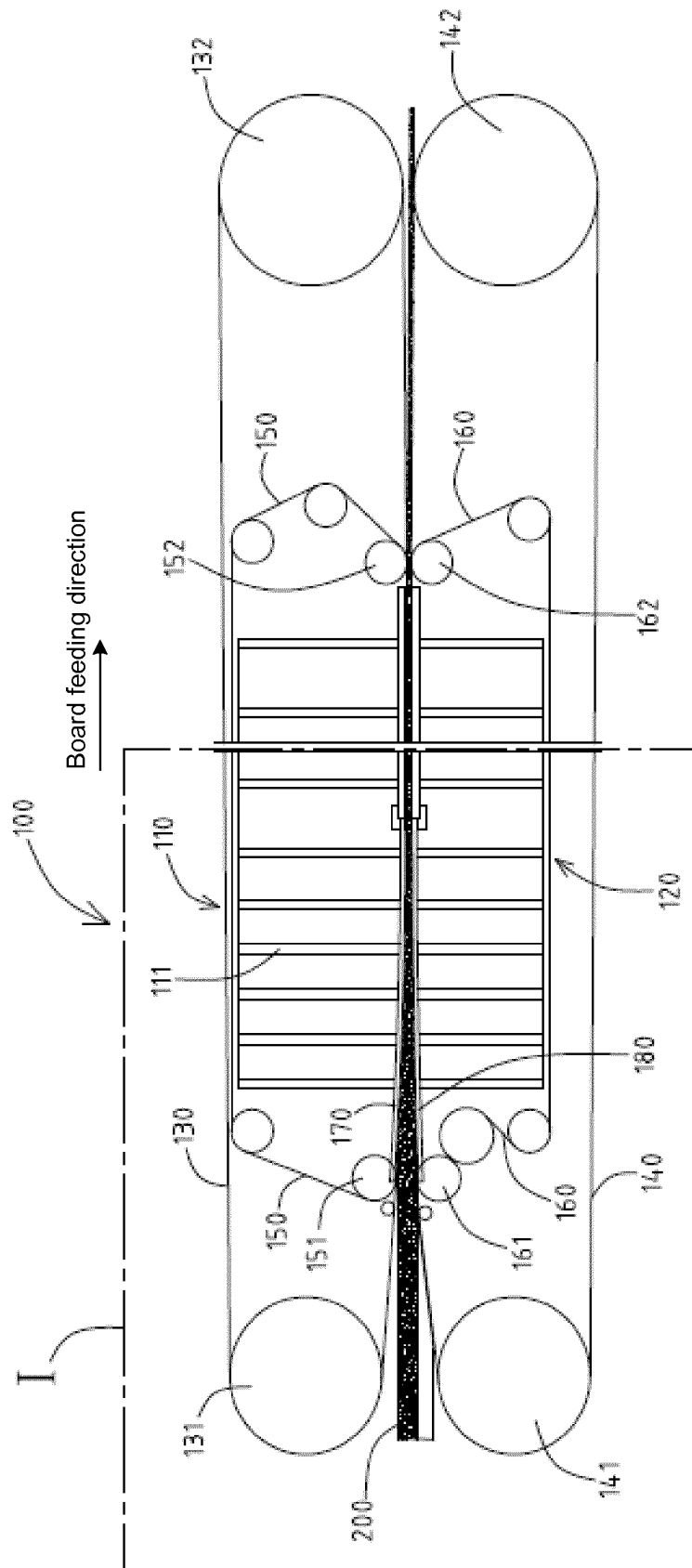


Fig. 1

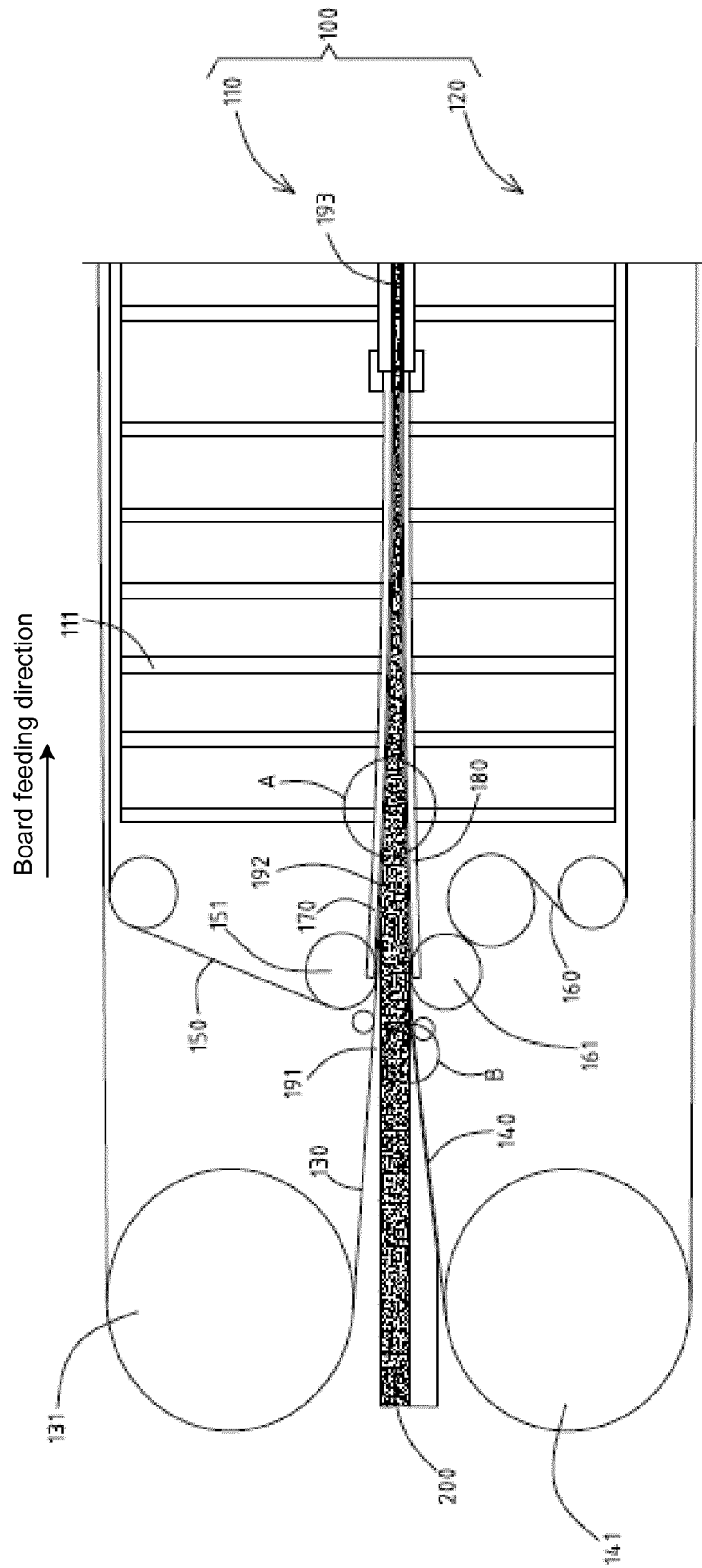


Fig. 2

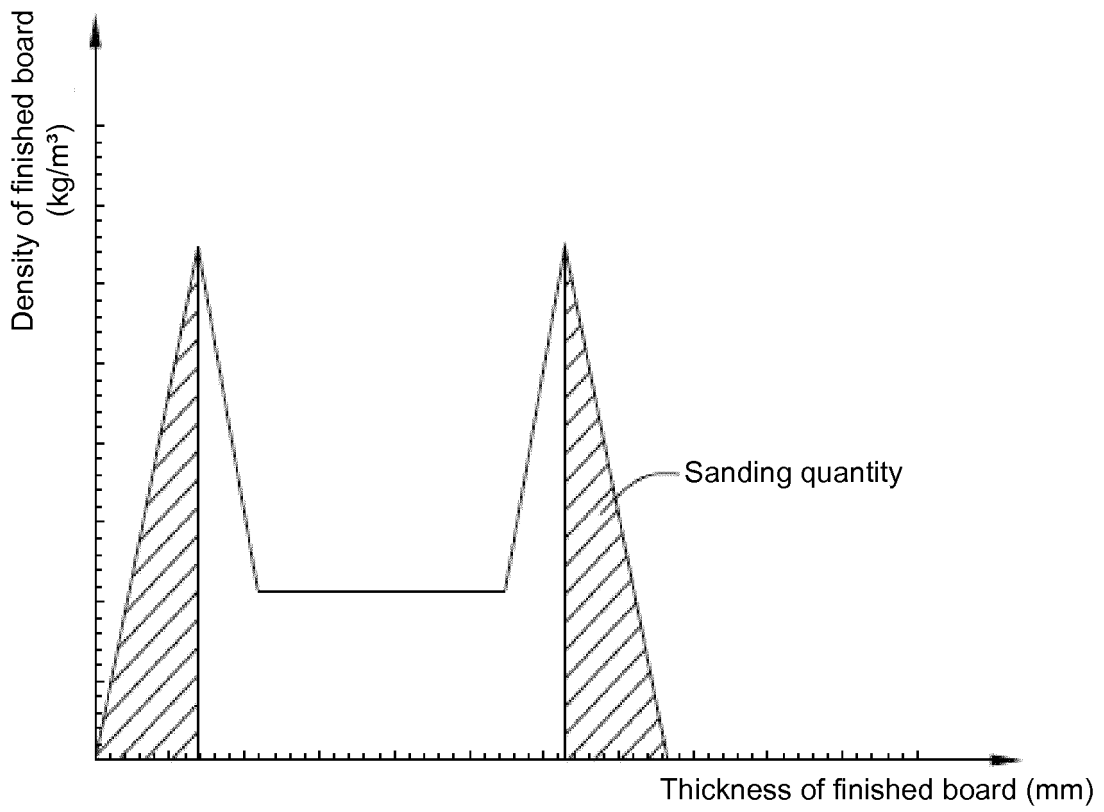


Fig. 3

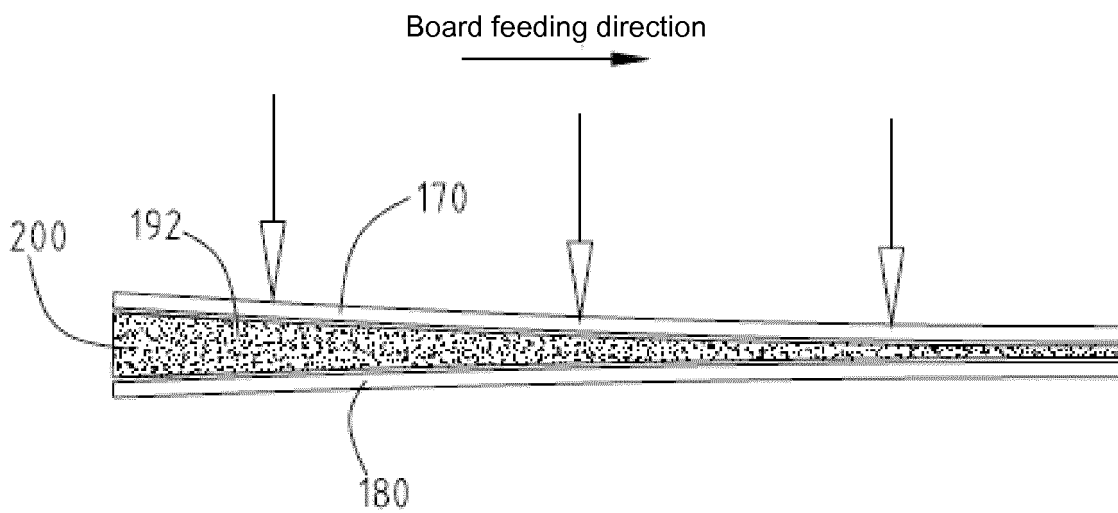


Fig. 4

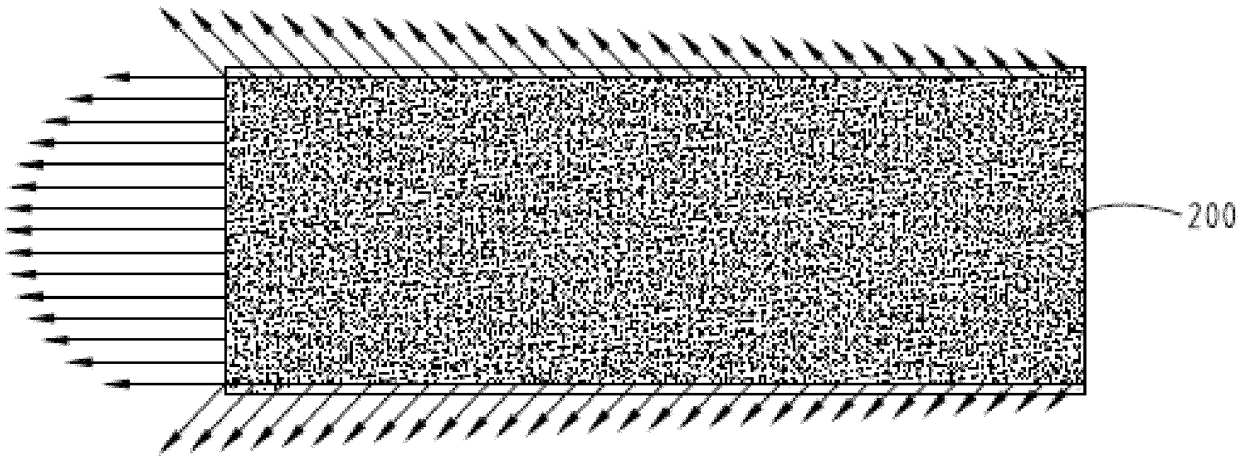


Fig. 5

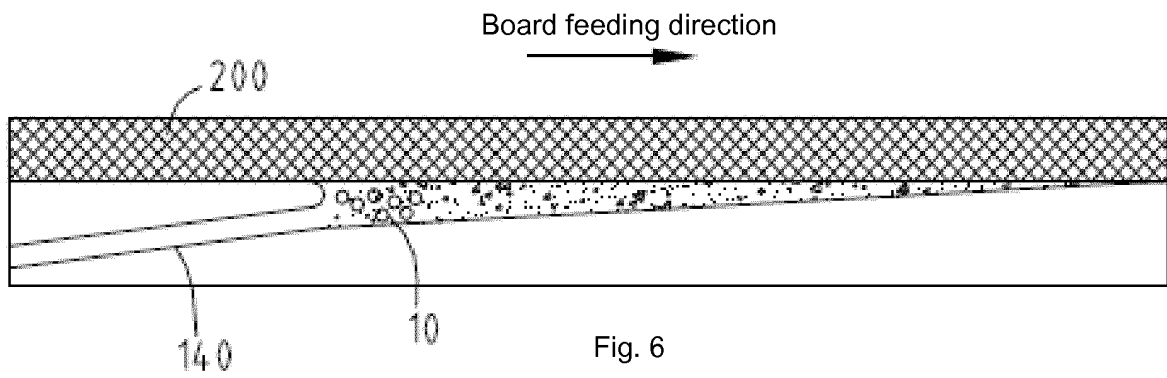


Fig. 6

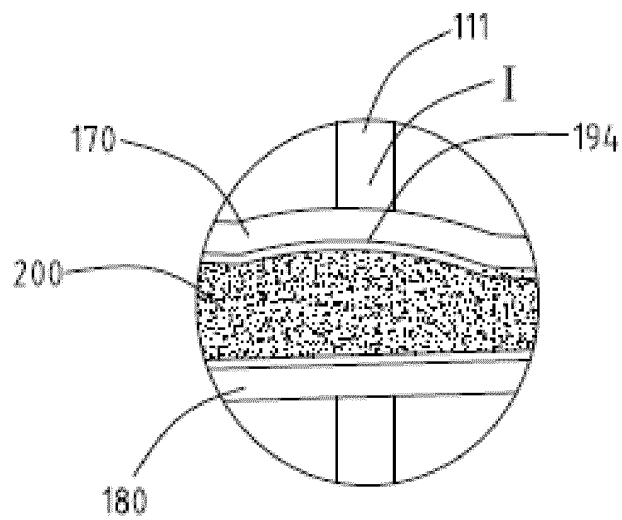


Fig. 7

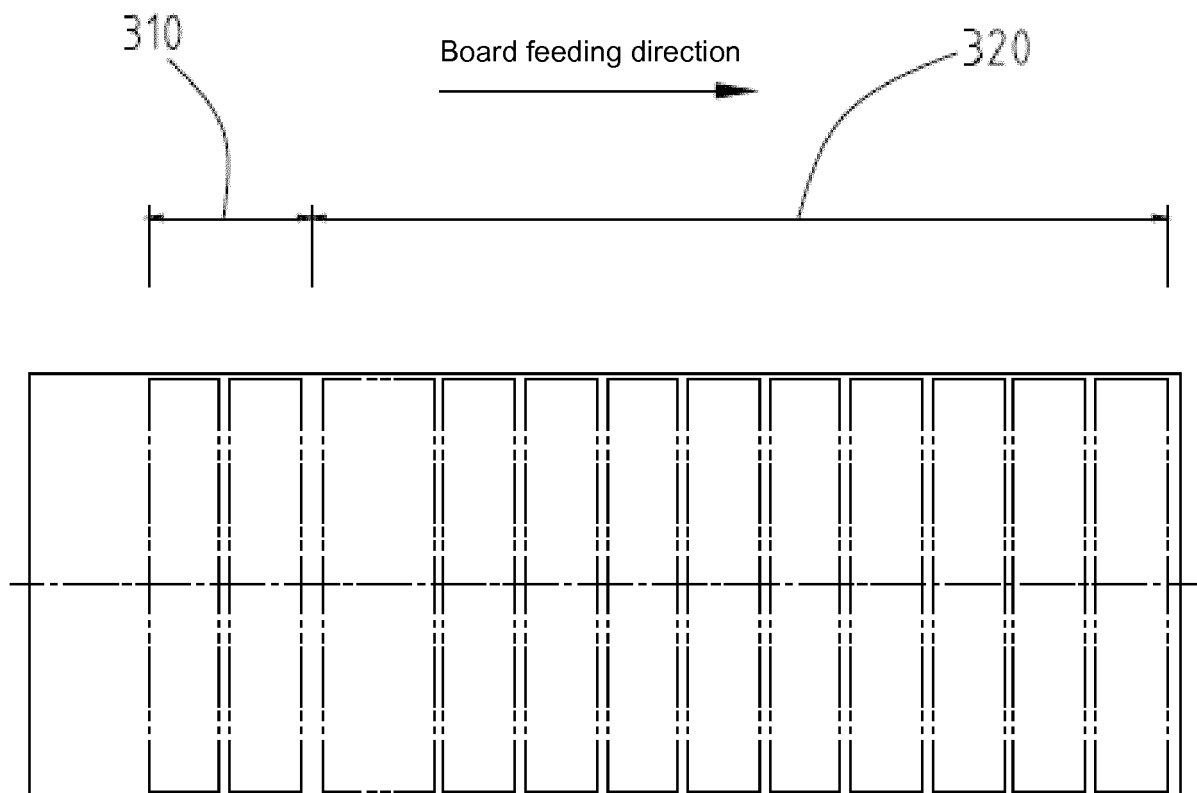
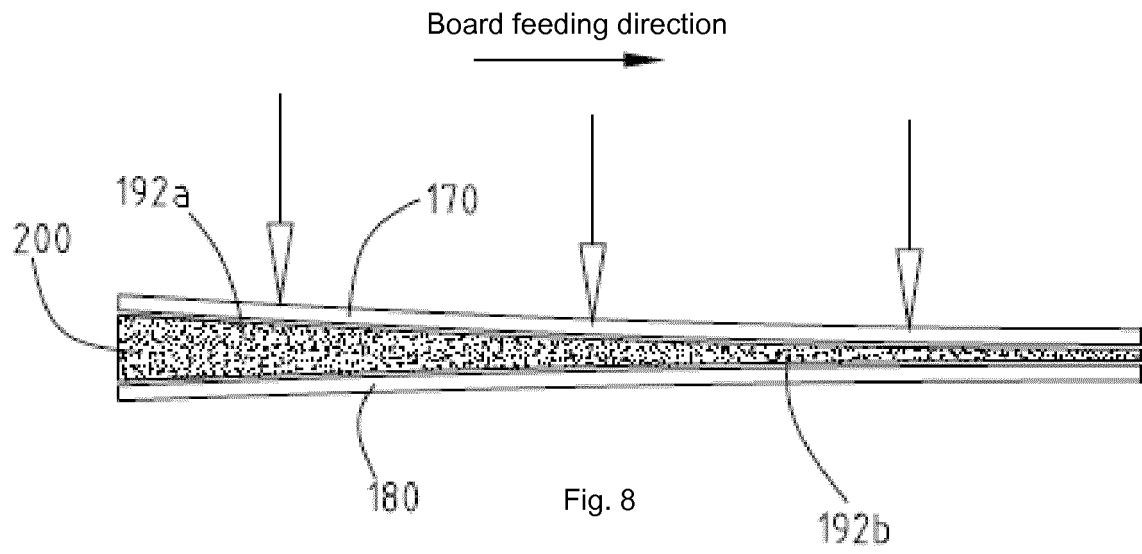


Fig. 9

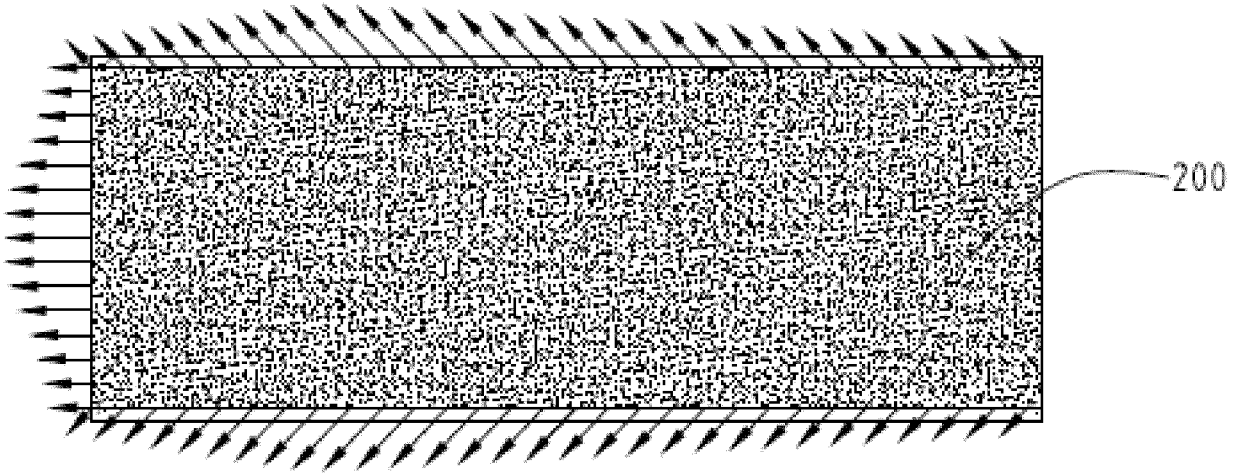


Fig. 10

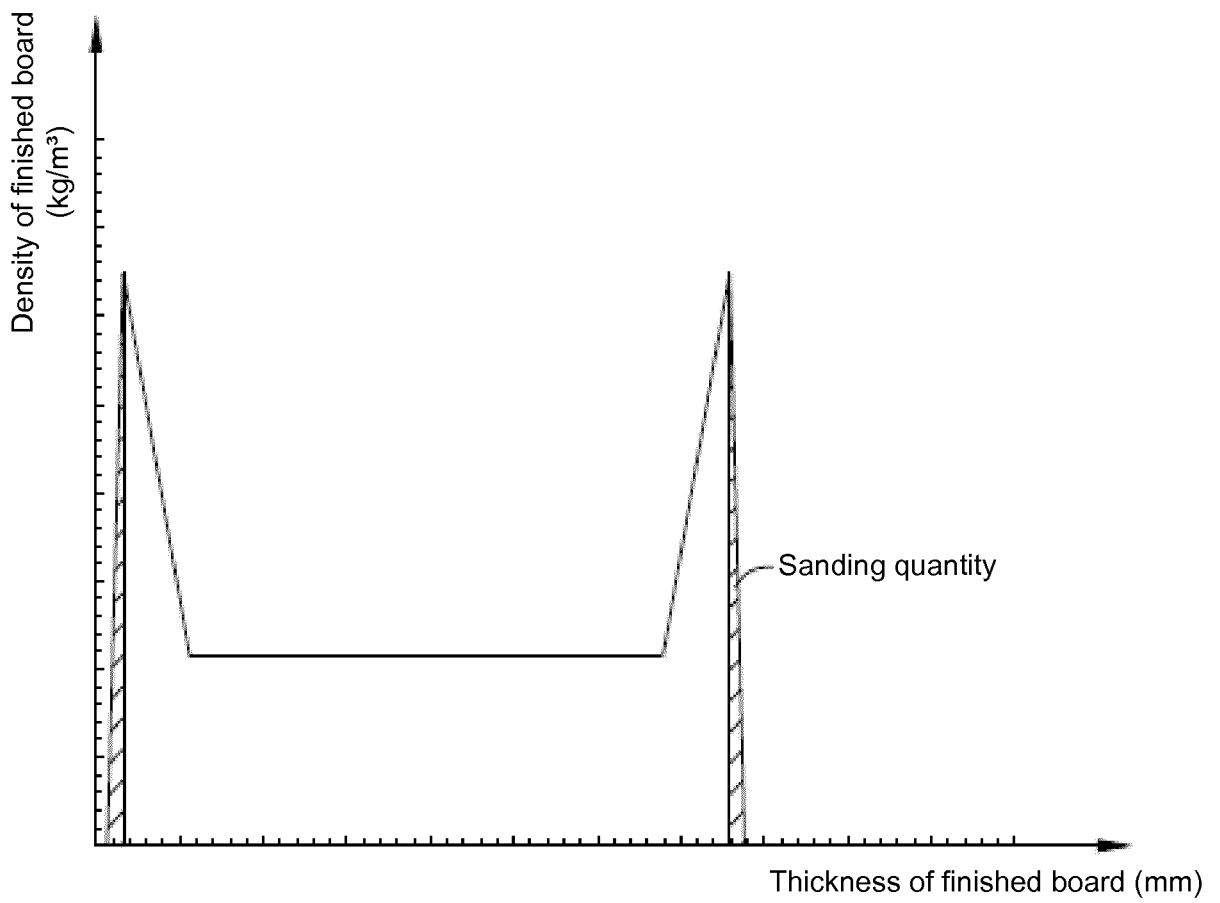


Fig. 11

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2016/099351

A. CLASSIFICATION OF SUBJECT MATTER

B27N 3/26 (2006.01) i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B27N, B30B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNTXT, CNKI, VEN; track, dual-band, prepress, laminate, incomplete solidification, incomplete hardening, premature hardening, premature solidification, fiberboard, cement, adhesive, plate?, panel?, wood, premature, solid+, harden+, press+, compact+, twin, double, band, belt, pre

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 105171891 A (SHANGHAI WOOD-BASED PANEL MACHINERY CO., LTD.), 23 December 2015 (23.12.2015), see claims 1-15	1-15
PX	CN 205521839 U (SHANGHAI WOOD-BASED PANEL MACHINERY CO., LTD.), 31 August 2016 (31.08.2016), see description, paragraphs [0038]-[0045], and figures 1-11	1-15
X	CN 1107094 A (MASCHINENFABRIK J. DIEFFENBACHER GMBH & CO.), 23 August 1995 (23.08.1995), see description, page 3, line 14 to page 11, line 21, and figures 1-10	1-15
A	CN 1140122 A (MASCHINENFABRIK J. DIEFFENBACHER GMBH & CO.), 15 January 1997 (15.01.1997), see the whole document	1-15
A	CN 87107124 A (HELD, K.F.), 25 May 1988 (25.05.1988), see the whole document	1-15
A	CN 1048349 A (CSR LIMITED.), 09 January 1991 (09.01.1991), see the whole document	1-15

 Further documents are listed in the continuation of Box C.
 See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 29 November 2016 (29.11.2016)	Date of mailing of the international search report 26 December 2016 (26.12.2016)
--	---

Name and mailing address of the ISA/CN: State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088, China Facsimile No.: (86-10) 62019451	Authorized officer AN, Li'na Telephone No.: (86-10) 62085397
--	--

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2016/099351

5

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 19622494 A1 (SCHENCK PANEL PRODUCTION SYSTEM), 11 December 1997 (11.12.1997), see the whole document	1-15
A	WO 02076697 A1 (METSU PAPER INC. et al.), 03 October 2002 (03.10.2002), see the whole document	1-15
A	EP 1938935 A3 (DIEFFENBACHER GMBH MASCHINEN), 25 September 2013 (25.09.2013), see the whole document	1-15
A	DE 1271385 B (SIEMPELKAMP, E.), 27 June 1968 (27.06.1968), see the whole document	1-15

10

15

20

25

30

35

40

45

50

55

Form PCT/ISA/210 (continuation of second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT
 Information on patent family members

International application No.

PCT/CN2016/099351

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 105171891 A	23 December 2015	None	
CN 205521839 U	31 August 2016	None	
CN 1107094 A	23 August 1995	US 5454304 A	03 October 1995
		CA 2113582 A1	22 July 1994
		CN 1042608 C	24 March 1999
		US 5404810 A	11 April 1995
		DE 4301594 A1	11 August 1994
		DE 4301594 C2	31 October 2002
CN 1140122 A	15 January 1997	CA 2177089 A1	29 November 1996
		DE 19518879 A1	05 December 1996
		US 5775214 A	07 July 1998
CN 87107124 A	25 May 1988	US 4923656 A	08 May 1990
		EP 0267516 B1	20 January 1993
		US 4802837 A	07 February 1989
		US 4895508 A	23 January 1990
		RU 1833305 C	07 August 1993
		EP 0267516 A2	18 May 1988
		JP S63212503 A	05 September 1988
		CN 1009443 B	05 September 1990
		EP 0267516 A3	15 November 1989
CN 1048349 A	09 January 1991	EP 0383572 A2	22 August 1990
		AU 4978890 A	23 August 1990
		BR P19000670 A	15 January 1991
		NZ 232547 A	25 November 1992
		AR 245642 A1	28 February 1994
		JP H03114702 A	15 May 1991
		TR 27900 A	11 October 1995
		US 5433905 A	18 July 1995
		RU 2068339 C1	27 October 1996
		NO 900704 D0	14 February 1990
		ZA 9001076 B	28 November 1990
		NO 900704 A	15 August 1990
		EP 0383572 B1	23 November 1994
		DK 0383572 T3	08 May 1995
		DE 69014216 T2	11 May 1995
		PT 93148 A	15 October 1991
		ZA 9001076 A	28 November 1990
		FI 900747 A0	14 February 1990
		CA 2009909 A1	14 August 1990
		PT 93148 B	31 July 1996
		ES 2021493 A6	01 November 1991
		TW 200425 B	21 February 1993
		CN 1025303 C	06 July 1994
		AT 114267 T	15 December 1994
		BR 9000670 A	15 January 1991
		AU 626094 B2	23 July 1992
		DE 69014216 D1	05 January 1995
		EP 0383572 A3	22 January 1992
DE 19622494 A1	11 December 1997	None	

Form PCT/ISA/210 (patent family annex) (July 2009)

INTERNATIONAL SEARCH REPORT
 Information on patent family members

International application No. PCT/CN2016/099351

5
10
15
20
25
30
35
40
45
50
55

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
WO 02076697 A1	03 October 2002	DE 10114381 A1	10 October 2002
EP 1938935 A3	25 September 2013	DE 102006062627 A1	03 July 2008
		CN 101229651 A	30 July 2008
		CN 101229651 B	18 July 2012
		EP 1938935 A2	02 July 2008
DE 1271385 B	27 June 1968	None	