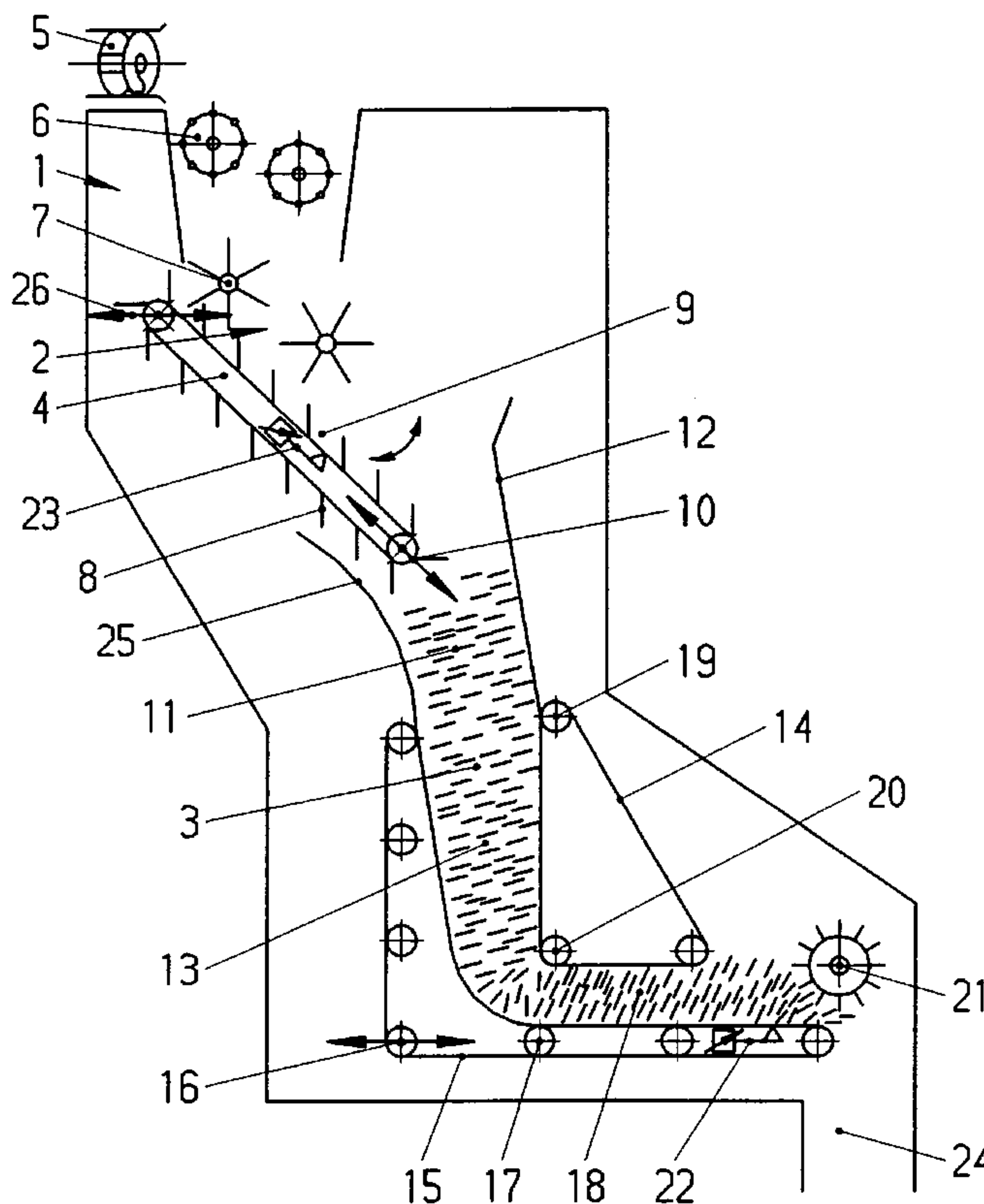




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(57) Abrégé/Abstract:

The invention relates to a dosing hopper for producing boards consisting of derived timber products. Said hopper comprises a feeding device (2) which continuously distributes the supplied material flow of glued wood particles over the width of the hopper (1). The dosing hopper is characterised in that it is provided for flat, elongated wood chips (strands) for producing oriented structural chip boards (OSB, LSL). To this end, the feeding device (2) is embodied in such a way that it contains a weighing device (23) by which means the wood chips (strands) are dosed according to weight and can be distributed over the entire width of the hopper in an oriented manner.

ABSTRACT:

The invention relates to a dosing hopper for producing wood material panels with a feed device (2), which distributes the supplied material flow of glued wood particles continuously over
5 the width of the hopper (1). The dosing hopper is characterized in that it is provided for elongated flat wood strands (strands) for producing oriented structural chip boards or panels (OSB, LSL). In this regard, the feed device (2) is embodied so that it includes a weighing device (23), with the aid of which the
10 wood strands (strands) are distributable over the entire hopper width in a weight-dosed and oriented manner.

Dosing Hopper

The invention relates to a dosing hopper for producing wood material panels according to the preamble of the Patent Claim 1.

In the production of chip board panels, fiber board panels, OSB
5 panels (oriented strand or structural board), LSL panels (lami-
nated strand lumber) and other wood material panels, dosing
hoppers are arranged ahead or upstream of the actual spreading
elements. These dosing hoppers make it possible to even out a
time variation of the volume of the chip, fiber or strand mate-
10 rial flow. Simultaneously, they are to make possible a continu-
ous supply of material to the spreading heads. For this purpose,
especially a uniform distribution of the chips, fibers and
strands (strands) over the entire width of the spreading heads
is carried out already in the dosing hopper, and thereby a con-
15 tinuous material flow is delivered to the spreading heads.

In actual practice, both vertical as well as horizontal dosing
hoppers are known. The vertical dosing hoppers have mostly been
arranged vertically above the entire spreading width of the
spreading heads, and have been filled up to a prescribed filling
20 height with glued wood chips in a continuous or discontinuous
manner. Such vertical dosing hoppers are very simply embodied,

whereby the chips are moved from the top toward the bottom only by their gravity without mechanical conveying elements. Discharge rolls are arranged on the hopper floor and convey the chips to the spreading elements. The vertical hoppers have lost
5 significance in recent years, because different densities are formed on the hopper floor depending on the fill height. This has the disadvantage, that differing discharge quantities to the spreading heads result depending on the material density on the hopper floor.

10 For this reason, in recent years, horizontal dosing hoppers have preferably been utilized before the spreading elements, with which a substantially constant discharge density results in the discharge of wood chips. Such a horizontal dosing hopper is known from the technical reference book by Deppe/Ernst "Taschen-
15 buch der Spanplattentechnik" (Pocketbook of Chip Panel Technology), 3rd Edition 1991, page 255. In this context, the horizontal dosing hopper is arranged above a spreading head and is supplied or loaded with wood chips from above. For this purpose, a horizontal oscillating conveyor is arranged over the supply
20 housing, and continuously distributes the chips over the entire spreading width. Furthermore, a reverse or return combing apparatus is additionally provided in the horizontal dosing hopper, and serves for a uniform filling height over the entire hopper width, in that the higher-lying wood chip piles are continuously
25 combed backward contrary to the discharge direction. A floor belt is additionally arranged at the hopper floor, and conveys the uniformly high chip layer in the hopper to a discharge open-

ing over the spreading head. Thereby, the chip layer is conveyed against rotating discharge rolls, which mill or till off the layer over the entire filling height and simultaneously convey it into a discharge opening to the spreading head, in order to
5 be spread onto a forming belt.

If long flat wood strands (strands) for producing oriented wood chip panels (OSB or LSL) are to be intermediately stored and distributed over the width in such a horizontal dosing hopper, then intermingled and tangled balled-up snarls will be formed in
10 the horizontal hopper, especially due to the continuous reverse or return combing of the elongated wood strands. Since, besides these tangled areas, layers in which the wood strands lie loosely on top of one another are also present in the hopper, a differing or varying layering pattern arises in the hopper. These differ-
15 ing or varying layering patterns or material areas, however, also comprise very different or varying discharge characteristics, which leads to a non-uniform spreading head loading, and can disadvantageously influence a uniform spreading onto the forming belt.

20 It is therefore the underlying object of the invention, to provide a dosing hopper for producing wood material panels, from which hopper a uniform discharge quantity, especially of longitudinally extending or elongated flat wood strands (strands) is conveyed into the spreading head, over the entire hopper width.

This object is achieved by the invention recited in the patent claim 1. Further developments and advantageous example embodiments are recited in the dependent claims.

5 The invention has the advantage, due to the weight-dosed material feed or introduction, that a uniform discharge quantity is always constantly made available for spreading over the entire hopper width, even with varying bulk densities, whereby a very uniform spreading is made possible, and an increase of the bending stiffness in the production of OSB panels can be achieved. Through
10 the uniformization of the spreading, the spreading fluctuation width is simultaneously reduced, so that already with a minimum of input of spreadable bulk material, the minimum requirements of prescribed quality characteristics can be maintained.

15 Through the weight-based crosswise distribution in the dosing hopper, a uniform material distribution over the entire hopper width is advantageously achievable already during the material supply or feeding, so that additional material turning or tilling devices such as back-striking or evening rakes and the like can be omitted. Thereby, a gentle material flow is simultaneously
20 achieved in the hopper, whereby especially elongated flat wood strands (strands) are protected against damage, which serves for the quality improvement in connection with OSB panels.

In a particular manner of embodiment of the invention it is additionally provided to orient the elongated flat wood strands
25 (strands) in crosswise or lengthwise direction before depositing

them in the hopper. This has the advantage, that in the entire dosing hopper, a uniform density distribution and an increase of the supply quantity in the same supply space can be achieved. Thereby, an intermeshing or entangling of the elongated flat wood strands is simultaneously avoided, so that advantageously, break-up elements can be omitted at the discharge opening of the hopper.

In a further particular embodiment of the invention, it is provided to deposit the pre-oriented wood strands in a vertical hopper and to continuously draw off the wood strands through a vertical conveyor shaft or chute. Through the pre-orienting, a bridge formation in the hopper is advantageously avoided and a uniform material discharge is achieved.

An additional particular embodiment of the invention provides that a constriction-free horizontal filling path section is arranged as a continuation on the vertical conveyor shaft. Thereby, a loosening-up of the material structure is advantageously achieved on the horizontal conveying path section, so that a uniform weight-dosed discharge is made possible.

The invention is described in further detail in connection with an example embodiment, which is shown in the drawing. It is shown by:

Fig. 1: a vertical dosing hopper with pre-oriented weight-dosed material feed, and

Fig. 2: a horizontal dosing hopper with pre-oriented weight-dosed material feed.

In Fig. 1 of the drawing, a vertical hopper 1 for producing OSB or LSL panels is schematically illustrated, which essentially consists of a feed device 2 and a weight-detecting or acquiring oscillating conveyor 4 for the weight-dosed and oriented feeding of elongated wood strands (strands) into a vertical filling space or chamber 3 arranged thereunder.

In the production of OSB or LSL panels, glued elongated flat wood chips or strands (strands) with a length of 80 to 200 mm, a width of 10 to 40 mm, and a thickness of 0.4 to 1 mm are processed to form wood material panels. These wood strands are supplied via a helical screw conveyor 5 from a gluing mixer to the dosing hopper 1. The wood strands thereby come continuously out of the trough of the helical screw conveyor 5 in an unordered manner, and are to be spread onto a forming belt to form an oriented fleece, without damage to the extent possible. Namely, due to the damage of the elongated wood strands, the bending strength would be impaired or the thereby arising increased proportion of fines would have to be additionally separated. For this reason, the invention suggests a dosing hopper 1 with a weight-dosed feed, so that, to the extent possible, the elongated wood strands do not need to be additionally tilled or rolled over once again in the dosing hopper 1, and therefore are easily separable and uniformly dischargeable. Therefore, the elongated wood strands are deposited out of the trough of a helical screw conveyor 5

above the dosing hopper 1, first onto two or more break-up rolls 6, which are to separate or break-up any possible occurring clumps or entanglements. For this purpose, preferably coarse-meshed cage rolls or spike rolls with few elastic spikes are provided, through which the loose wood strands can fall through nearly without any braking and free of damage.

At least two orienting rolls 7 are provided below the break-up rolls 6. The elongated wood strands glide into the slits of the orienting rolls 7 perpendicularly to the conveying direction. In this context, the orienting rolls 7 consist of a continuous through-going drive shaft, around which crosswise plates are provided and arranged in a star-like manner. Thereby, the spacing distances between the crosswise plates represent tapering slits, which are only so wide that the strands can glide thereinto only in a crosswise orientation. The orienting rolls 7 could, however, also be arranged in the conveying direction, so that the elongated wood strands would be oriented lengthwise. For the lengthwise orientation, however, disk rolls are also utilizable, through the slits of which the elongated wood strands would be directed in the lengthwise direction.

An oscillating conveyor belt 4 is arranged as an oscillating conveyor below the orienting rolls 7. The pre-oriented wood strands are deposited from the orienting rolls 7 onto the oscillating conveyor belt 4. Thereby, the conveyor belt is provided with crosswise webs 8 or crosswise plates, which form conveyor pockets 9 between the individual webs 8. Thereby, the spacing

distances of the crosswise webs 8 or crosswise plates are dimensioned so that the wood strands can only be laid into the conveyor pockets 9 in their crosswise orientation, so that the crosswise orientation is maintained on the oscillating conveyor belt 4. With a lengthwise orientation, the conveyor belt could, however, also be provided with lengthwise webs, which take up the wood strands only in the lengthwise direction.

On its feed or take-up area, the oscillating conveyor belt 4 is supported in a manner so as to be swingable or oscillatable crosswise and horizontally, and the oscillating conveyor belt 4 is tilted downward at an angle relative to the horizontal in the conveying direction. Thereby, the output or discharge end of the oscillating conveyor belt 4 is arranged to extend or plunge into the vertical filling space 3. The oscillating conveyor belt 4 is connected with a known oscillating or swinging drive, which is not shown, and which continuously swings or oscillates the relatively narrow conveyor belt 4 of maximally 1 m width back and forth over the entire hopper width. Thereby the elongated wood strands are deposited or laid down layer-wise over the entire hopper width. In this context, the hopper width corresponds approximately to the spreading width, which generally amounts to 2 to 4 m. A parallel conveyor could, however, also be provided as an oscillating conveyor, which is pushed back and forth over the hopper width, continuously and parallel to the forming belt direction.

For the continuous crosswise distribution of the wood strands in the vertical filling space 3, a belt weighing scale 23 is provided in the oscillating conveyor belt 4, and the conveying rate of the conveyed wood strands is determined by the belt weighing scale 23. Thereby, the crosswise oriented wood strands are layable or depositable in a weight-dosed manner over the entire width of the dosing hopper 1 or the vertical filling space 3. In this context it is provided to lay down or deposit always the same weight quantity of wood strands over the entire hopper width, so that the vertical filling space 3 is uniformly filled. Therefore, a constant conveying rate is prescribed, in connection with which, by a deviation from the rated or nominal weight, the belt speed is readjustable or regulatable in a following manner, whereby the swinging or oscillating speed remains constant. A prescribed conveying rate could, however, also be regulated by the swinging or oscillating speed. Since the oscillating conveyor belt 4 is sloped or inclined downwardly in the conveying direction, the downward inclination or slope of the conveyor belt 4 is detected by an inclination sensor or taken into account in a computerized manner with a constant inclination angle, in connection with the weight-dosed discharge. For this purpose, an evaluating device, not shown, is provided, by means of which both the belt loading as well as the belt speed is detected or acquired. In the event of a deviation from the prescribed conveying rate or from the rated or nominal weight, the belt speed of the conveyor belt 4 or the oscillating speed is correspondingly readjusted or regulated in a following manner.

While laying down or depositing the crosswise or lengthwise oriented wood strands in the vertical filling space 3, in order that the orientation is not lost, the spacing between the discharge location of the conveyor belt 4 from the depositing location in the vertical filling space 3 should not exceed a certain height spacing distance. For this reason it is provided that the oscillating conveyor belt 4 is adjustable in the conveying direction 10 so that it can reach or plunge more or less deeply into the vertical filling space 3. This can be carried out in a simple manner with a stroke or lift cylinder or a spindle drive. For this purpose, additional fill level sensors (not shown) are provided, which maintain a constant spacing distance from the wood strand surface in the vertical filling space 3 by means of a program controlled evaluating device.

15 In its filling area, the vertical filling space 3 consists of an upper filling shaft or chute 11, which consists of approximately parallel arranged rigid sidewalls 12, 25, which extend crosswise over the entire hopper width. These are secured at the end face on the hopper outer wall and form a rigidly surrounded or enclosed filling space 11. A vertical conveying shaft or chute 13 is arranged below this upper filling shaft 11. The conveying shaft 13 essentially consists of two vertically arranged discharge conveyor belts 14, 15, which undergo a horizontal deflection 16, 20 in their lower area or region. These belts 14, 15 extend over the entire hopper width, and, together with the end face side outer walls of the dosing hopper 1, form an enclosed conveying shaft 13, which continuously conveys the hopper con-

tents to a discharge opening 24. Regarding the two discharge belts 14, 15, these are respectively an endless belt, that is arranged between three deflection rolls 16, 19, 20, which are arranged approximately like the end points of a right-angled triangle. Thereby, the two conveyor belts 14, 15 respectively adjoin the bottom point of the side walls 12, 25 of the upper filling shaft 11, and thereby form its extension. Thereby, the two discharge belts 14, 15 are arranged so that they are provided with differing roll spacings. Thereby, the roll spacings are provided so that both a vertical conveying shaft 13 as well as a horizontal conveying shaft 18 are formed between the two conveyor belts 14, 15. In these deflected shafts 13, 18, the oriented wood strands are conveyed to a discharge opening 24.

In that context, the vertical conveying shaft 13 is embodied as a converging or squeezing or pinching path section, in that the shaft can be tapered downwardly on at least one inner side surface. This is achieved in that the lower discharge belt 15 lies only loosely on its support rolls 17, and the shaft width is adjustable with a horizontally adjustable tension roll 16. Due to the narrowing of the shaft width, the layers of the oriented wood strands are laterally squeezed in or pinched, so that these are carried along in the conveying direction by the motion of the discharge belts 14, 15. Thereby, it is simultaneously achieved that the individual layers in the lower region of the vertical conveying shaft 13 are not significantly compacted or compressed due to the filling height, so that an easily separatable bulk fill is maintained in the vertical shaft 13.

In the start-up operation, the vertical conveying shaft 13 is closeable in the deflection area with the aid of the tension roll 16, so far that both discharge belts 14, 15 lie lightly against or in contact on one another with their inner walls. This prevents the occurrence that the wood strands to be newly filled-in can slide through to the discharge opening 24. Simultaneously, the vertical shaft 13 is reduced in size so far that the discharge height is only so large that an oriented laying-down or depositing remains assured in the vertical conveying shaft 13. While filling in the wood strands, the fill height is detected by the fill level sensors, and is provided to the evaluating device. This controls the following guidance or motion of the oscillating conveyor belt 4 in the conveying direction 10, so that the spacing distance to the fill level plane remains the same so long until a prescribed filling height is achieved. As soon as the converging, squeezing or pinching path section 13 is filled to the intended height, the belt tension can be loosened by the adjustable tension roll 16, so much that a continuous discharge is made possible. For this purpose, the lower shaft width can be enlarged so far that it corresponds to the shaft width of the upper filling shaft 11. In that context, the material conveying rate that is to be filled-in is increased so much until an intended total filling height is reached in the vertical filling space 3. Then, through a prescribed discharge quantity, a certain feed conveying rate is determined, which distributes the wood strands over the entire hopper width in a weight-wise uniform manner and simultaneously keeps the filling height constant. The fill level sensors can be distributed on the end face

side of the hopper so that they also detect the fill level height perpendicularly to the hopper width. For this purpose, the oscillating conveyor belt 4 can also be arranged to be slidably displaceable horizontally and perpendicularly relative to the hopper width, so that a constant filling height is also achievable perpendicularly to the hopper width.

In the lower region of the converging, squeezing or pinching path section 13 or of the vertical conveying shaft 13, a deflection of the vertical discharge flow into a horizontal discharge flow takes place through the lower tension roll 16 of the lower discharge belt 15 and the upper tension roll 20 of the upper discharge belt 14. Thereby, a sliding-through of the vertical material flow out to the discharge opening during the discharge operation is advantageously prevented. Simultaneously, a loosening of the compaction or compression effect is also achieved, so that a gentle protective uniform discharge into the spreading head is made possible. The vertical filling space 3 could, however, also be formed by one or two parallel oppositely arranged conveyor belts, that are directed toward two horizontal conveyor belts, which then form the horizontal filling shaft. A bucket wheel sluice or chute could, however, also be provided below the vertical filling space 13, by means of which the oriented wood strands are discharged into the spreading head according to the manner of the orienting rolls.

The horizontal discharge flow in the horizontal conveying shaft 18 in this regard represents a squeeze-free or pinch-free filling

path section, which forms a horizontal supply reserve. This horizontal filling path section 18 predominantly serves for bringing about a uniform discharge behavior. This is predominantly achieved in that a loosening of a vertical layering is carried out by the deflection, so that a uniformly dischargeable material flow becomes adjusted or formed in the horizontal shaft 18.

The two discharge belts 14, 15 are regulatable in their belt speed. In this context, the belt speed of both discharge belts is regulated so that they ensure a constant-remaining discharge speed in the shafts 13, 18, so that the pre-orientation is not changed, and so that a material turning-over or tilling does not arise in the shafts 13, 18, to the extent possible. Preferably, a belt weighing scale 22 is still further provided at the belt end of the horizontal conveying shaft 18, by means of which belt weighing scale 22 the discharge quantity is regulatable via the discharge belt speed. Additionally, still further, a striking or strike-off roll 21 is provided at the belt end of the horizontal conveying shaft 18, which striking roll 21 combs off the oriented wood strands in a gentle protective manner into the discharge opening 24 to the spreading chamber. Thereby, the vertical hopper 1 ensures a gentle protective supplying or feeding and uniform weight-dosed discharge of the elongated wood strands, so that these can develop their maximum strength in the OSB panels that are to be spread-out, and are not impaired by the arising proportion of fines. The feed device 2 arranged in the vertical hopper 1 could, however, also be provided in a separate

device component above the hopper housing, if this is possible and advantageously achievable for structural reasons.

A horizontal hopper 30 with a weight-dosed feed device 31 is schematically illustrated in Fig. 2 of the drawing. The horizontal hopper 30 essentially consists of a horizontal filling path section 32, which is formed from a floor belt 33, and of the feed device. A helical screw conveyor 5 is arranged above the feed device 31, and brings up or supplies the glued elongated wood strands (strands) from a gluing mixer. This helical screw conveyor 5 corresponds to the helical screw conveyor according to Fig. 1 of the drawing, whereby the same reference numbers have also been used for the similar components in Fig. 2 of the drawing. The feed device 31 essentially consists of the orienting rolls 7 and an oscillating conveyor 4. Thereby, the elongated wood strands, for producing OSB panels, are first deposited onto at least two break-up rolls 6 and the orienting rolls 7 arranged thereunder. The oscillating conveyor 4, which is formed of a conveyor belt provided with pockets 9, is arranged below the orienting rolls 7. The horizontal hopper 30 extends across the entire width of the spreading head, which can amount to up to 4 m. The oscillating conveyor 4, in comparison, has only a width of maximally 1 m, and is continuously oscillated or pivoted horizontally back and forth over the entire width of the dosing hopper 30, and thereby distributes the supplied wood strands uniformly over the width of the hopper 30. In this context, the oscillating speed is a multiple of the discharge speed, so that the oriented wood strands are laid down or deposited layer-wise

on top of one another. The oscillating conveyor 4 is arranged horizontally over the filling path section 32 and conveys the oriented wood chips to the filling section opposite to the discharge direction 34. The oscillating conveyor 4 can also be
5 sloped or inclined relative to the horizontal, so that the oriented wood strands can be laid down or deposited in an oriented manner in the bottom area or region of the filling path section 32 during the start-up operation. For that purpose, fill level sensors (not shown), which detect the fill height on the side
10 surfaces perpendicular to the hopper width, are provided. In a program or processor controlled evaluating device (not shown), the slope or inclination of the oscillating conveyor 4 can be readjusted or regulated in a following manner by means of the fill level sensors and a prescribed spacing distance to the fill
15 height. In this context, the oscillating conveyor 4 is only followingly readjusted or regulated so far until a prescribed fill level height is reached in the hopper 30. After reaching this prescribed nominal or rated fill level height, the floor belt 33 can be controlled so that the fill layer is conveyed to
20 the discharge opening 41. However, the oscillating conveyor 4 in this context can also be arranged so that it is supported to be adjustable in the conveying direction 34. Thereby, with the aid of fill level sensors arranged in the conveying direction, a constant filling height in the conveying direction 34 could
25 already be adjustably settable by the lengthwise adjusting of the conveyor, and possible refilling interruptions could be filled up.

A belt weighing scale 24, which detects the weight quantity of the conveyed wood strands, is provided near the discharge end in the oscillating conveyor belt 4. In this context, with a constant oscillating speed, the belt speed is regulated so that the wood strands are distributed with an always constant conveying rate over the width of the dosing hopper 30, so that, with a prescribable discharge quantity, a uniform filling quantity on the filling path section 32 is achieved over the entire floor belt width. For regulating the conveying rate in this context, a program or processor controlled evaluating device (not shown) is provided, as they are used in known dosing belt weighing scales.

The floor belt 33 essentially consists of an elongated horizontal part 35 and a shortened vertical part 36, that are formed by three deflection rolls 37, 38, 39 arranged like a triangle. The floor belt 33 is tensionable to a variable degree by the lower horizontally adjustable tension and deflection roll 38. Thereby, the belt can be shortened to such a degree in the start-up operation, so that the loosely contacting discharge belt 33 in the depositing region 40 of the wood strands is inclined or positioned to a slope angle so far so that the wood strands are depositable in a substantially oriented manner onto the discharge belt 33 in the depositing region 40. Thereby, an ordered depositing possibility arises in the horizontal hopper 30 already during the start-up operation, so that a uniform filling height with oriented wood chips builds up, which is then conveyed by

means of a prescribed discharge speed to the discharge opening 41.

A belt weighing scale 22 can also be provided at the discharge end in the floor belt 33, with the aid of which a provided discharge quantity is regulatable by the belt speed of the floor
5 belt. Thereby, through the weight-dosed feeding of the elongated wood strands, a uniform discharge into the spreading head is possible over the entire hopper width, without an additional volume oriented crosswise distribution in the dosing hopper 30 being necessary.

Patent Claims:

- 1 1. Dosing hopper for producing wood material panels with a
2 feed device (2), which distributes the supplied material
3 flow of glued wood particles continuously over the width of
4 the hopper (1), characterized in that the hopper (1) is
5 provided for long flat wood strands (strands) for producing
6 oriented structural chip panels (OSB), and the feed device
7 (2) includes a weighing device (23) with the aid of which
8 the wood strands (strands) are distributable over the
9 hopper width in a weight-dosed manner.
- 1 2. Dosing hopper according to claim 1, characterized in that
2 the feed device (2) includes an oscillating conveyor (4) or
3 a parallel conveyor, which is connected with a weighing
4 device (23), which determines the weight of the wood
5 strands deposited into the hopper.
- 1 3. Dosing hopper according to claim 1 or claim 2,
2 characterized in that the oscillating conveyor (4) or the
3 parallel conveyor is embodied as a dosing belt weighing
4 scale, which is arranged pivotably or slidably displaceable
5 horizontally and perpendicularly to the hopper width,
6 whereby the dosing belt weighing scale consists of a
7 conveyor belt with integrated weighing device (23).
- 1 4. Dosing hopper according to one of the preceding claims,
2 characterized in that the dosing belt weighing scale (4) is

embodied so that it determines the conveying rate during a continuous oscillating process or sliding displacement process and compares the conveying rate with a prescribed conveying rate (t/hour), and upon a deviation, regulates the belt speed or the sliding or oscillating displacement speed so that a constant weight-wise material quantity is always deposited over the entire hopper width.

5. Dosing hopper according to one of the preceding claims, characterized in that lengthwise or crosswise pockets are provided on the conveyor belt of the dosing belt weighing scale (4), which pockets receive the crosswise or lengthwise oriented wood strands.

6. Dosing hopper according to one of the preceding claims, characterized in that the feed device (2) includes orienting rolls (7) or disk rolls, which are arranged above the dosing belt weighing scale (4) and serve for the pre-orientation of the wood strands.

7. Dosing hopper according to one of the preceding claims, characterized in that the dosing belt weighing scale (4) is arranged horizontally or sloping tilted downwardly in the conveying direction, and is adjustable in its slope and/or in the conveying direction.

- 1 8. Dosing hopper according to one of the preceding claims,
2 characterized in that the feed device (2, 31) is arranged
3 in the hopper housing (1, 30) or above the hopper (1, 30).
- 1 9. Dosing hopper according to one of the preceding claims,
2 characterized in that the hopper (1, 30) is embodied as a
3 vertical hopper (1) or as a horizontal hopper (30) or as a
4 combination of a horizontal and vertical hopper.
- 1 10. Dosing hopper according to one of the preceding claims,
2 characterized in that the hopper is embodied as a vertical
3 hopper (1), which includes a vertical filling space (3),
4 that is arranged below the conveyor (4).
- 1 11. Dosing hopper according to one of the preceding claims,
2 characterized in that the vertical filling space (3)
3 consists of a vertical rigid filling shaft (11), a vertical
4 conveying shaft (13) or an upper rigid filling shaft (11)
5 and a lower conveying shaft (13).
- 1 12. Dosing hopper according to one of the preceding claims,
2 characterized in that a horizontal conveying shaft (18) or
3 a bucket wheel sluice is provided at the lower outlet of
4 the vertical filling space (13).
- 1 13. Dosing hopper according to one of the preceding claims,
2 characterized in that the vertical conveying shaft (13) is
3 formed by at least one or two conveyor belts (14, 15) that

4 are parallel and vertically opposite one another, or
5 conveyor belts (14, 15) that are arranged sloping
6 downwardly (squeezing or pinching path section), which
7 extend over the entire hopper width.

1 **14.** Dosing hopper according to one of the preceding claims,
2 characterized in that the horizontal conveying shaft (18)
3 or the horizontal conveying path section (18) is formed of
4 at least one or two conveyor belts (14, 15) arranged
5 horizontally parallel and opposite one another, and which
6 extend over the entire hopper width.

1 **15.** Dosing hopper according to one of the preceding claims,
2 characterized in that the vertical conveying shaft (13) and
3 the horizontal conveying shaft (18) is formed of at least
4 two conveyor belts (14, 15) that are arranged deflected,
5 whereby the deflection rolls (19, 20, 16) of each conveyor
6 belt (14, 15) are arranged like the end points of a
7 triangle.

1 **16.** Dosing hopper according to claim 15, characterized in that
2 the lower sharply deflecting conveyor belt (15) is provided
3 with at least one adjustable deflection roll (16), with the
4 aid of which the belt tension and the squeezing or pinching
5 effect in the vertical conveying shaft (13) is adjustable.

1 **17.** Dosing hopper according to one of the claims 1 to 9,
2 characterized in that the hopper is embodied as a

3 horizontal hopper (30), which includes a horizontal filling
4 path section (32), which is formed by the floor belt (33)
5 and is arranged below the doser (4).

1 **18.** Dosing hopper according to claim 17, characterized in that
2 the floor belt (33) consists of a horizontal part (35) and
3 a vertical part (36), which is formed by at least three
4 deflection rolls (37, 38, 39), which are arranged like the
5 corner points of a right-angled triangle.

1 **19.** Dosing hopper according to one of the claims 1 to 9,
2 characterized in that at least one of the deflection rolls
3 (37, 38, 39) is arranged adjustably, and with the aid of
4 which the belt tension is adjustable.

1 **20.** Dosing hopper according to one of the preceding claims,
2 characterized in that a discharge belt weighing scale (22)
3 is provided on the horizontal conveying shaft (18) or on
4 the floor belt (33), and with the aid of which the
5 discharge conveying rate and/or the feed conveying rate is
6 regulatable.

1 **21.** Dosing hopper according to one of the preceding claims,
2 characterized in that fill level sensors are provided on
3 the vertical filling space (3) or on the horizontal filling
4 path section (32), which fill level sensors detect the
5 respective fill level heights.

1 **22.** Dosing hopper according to claim 21, characterized in that
2 the fill level sensors are connected with an evaluating
3 device, which is embodied so that, with the aid of the fill
4 level signals, the conveyor can be readjusted or regulated
5 horizontally or inclined relative to the horizontal in a
6 manner following the respective fill level height.

1 **23.** Dosing hopper according to claim 21 and 22, characterized
2 in that the evaluating device is connected with the dosing
3 belt weighing scale (4) and embodied so that the feed
4 conveying rate is regulatable with the aid of the fill
5 level signals.

Fig.1

