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(54) **Apparatus for distributing loose material, particularly wooden material for manufacturing panels or the like**

(57) An apparatus (1) for distributing loose material, particularly wooden material for manufacturing panels or the like, comprising an assembly (2) for feeding a loose material (M) and a station (3) for selecting and dosing the loose material which is arranged downstream of the feeder assembly (2); the feeder assembly (2) comprises means (5) for moving at least one layer of loose material (M) within a channel (6) for sliding toward a region for gravity distribution of the loose material onto the selection and dosage station (3), and the selection and dosage station comprises at least one advancement line (10) which is provided with a plurality of paddles (11) for collecting the distributed loose material, and comprises at least one first portion (10a) which is suitable to accommodate the loose material and at least one second portion (10b) which is substantially inclined and arranged downstream of the first portion (10a).

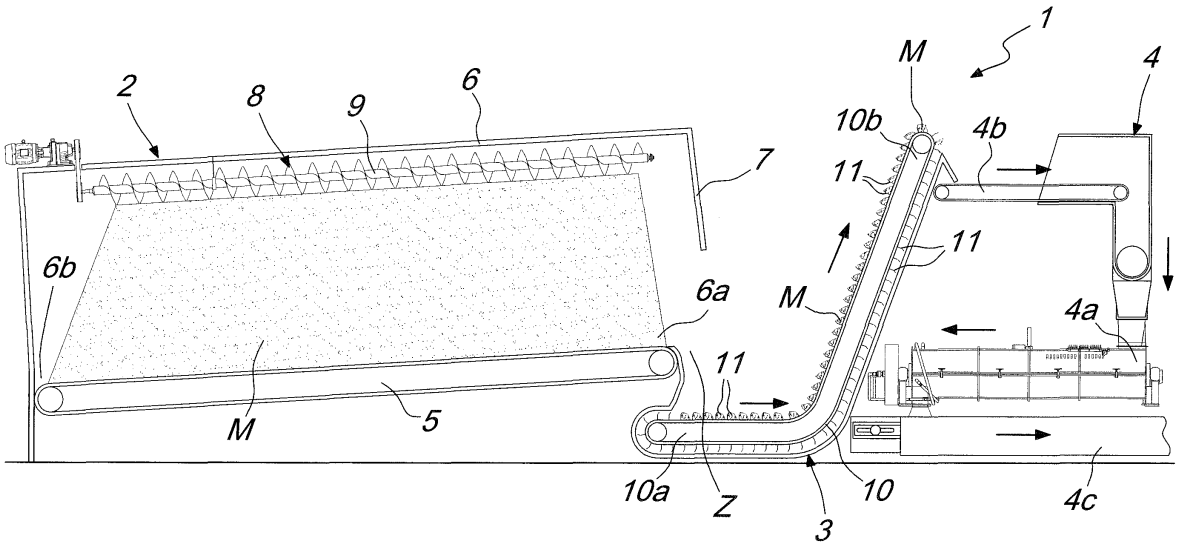

Fig. 1

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Description

[0001] The present invention relates to an apparatus for distributing loose material, particularly wooden material for manufacturing panels or the like.

[0002] With particular reference to the fields of building and furniture, it is known to use wood-based manufactured articles, such as panels or the like, obtained by breaking up wood into elements such as laminas, sheets, particles, fibers or others and by subsequently reconstituting it by pressing and/or bonding.

[0003] In particular, it is known to use substantially rectangular and thin wood particles, commonly known as strands, to produce manufactured articles, such as insulating panels for cladding which are conventionally known as OSB (Oriented Strand Board), or components for constructions in general, such as for example ties or the like, which are conventionally known as OSL (Oriented Strand Lumber).

[0004] These manufactured articles generally comprise a plurality of layers in which the strands are arranged substantially transversely to each other so as to ensure better stability and flexural strength.

[0005] Apparatuses are known which are suitable to extract, collect and distribute the strands to produce such manufactured articles and commonly comprised a pick-up station, which is provided with rotating combs which are suitable to move the strands from a feed area toward a dosage assembly which is associated upstream of a bonding station and/or a pressing station.

[0006] These known apparatuses are not free from drawbacks, including the fact that the pick-up station thus defined breaks the strands during handling.

[0007] Further, the pick-up station does not allow correct and uniform distribution of the strands toward the successive processing steps.

[0008] The aim of the present invention is to eliminate the drawbacks noted above of the background art, by providing an apparatus which allows to distribute loose material, particularly wooden material to provide panels or the like, and is at the same time capable of limiting the possibilities of accidental breakages of the elements that constitute the loose material, such as strands or the like.

[0009] Within this aim, an object of the present invention is to ensure a correct and uniform distribution of the loose material toward the subsequent processing steps.

[0010] Another object of the invention is to provide an apparatus having a structure which is simple, relatively easy to provide in practice, safe in use, effective in operation, and has a relatively low cost.

[0011] This aim and these and other objects that will become better apparent hereinafter are achieved by the present apparatus for distributing loose material, particularly wooden material for manufacturing panels or the like, which comprises an assembly for feeding a loose material and a station for selecting and dosing said loose material which is arranged downstream of said feeder assembly, characterized in that said feeder assembly comprises means for moving at least one layer of said loose material within a channel for sliding toward a region for gravity distribution of said loose material onto said selection and dosage station, in that said selection and dosage station comprises at least one advancement line which is provided with a plurality of paddles for collecting said distributed loose material and in that it comprises at least one first portion which is suitable to accommodate said loose material and at least one second portion which is substantially inclined and arranged downstream of said first portion.

[0012] Further characteristics and advantages of the present invention will become better apparent from the following detailed description of a preferred but not exclusive embodiment of an apparatus for distributing loose material, particularly wooden material for manufacturing panels or the like, illustrated by way of non-limiting example in the accompanying drawing, wherein:

the sole Figure is a schematic side view of the apparatus according to the invention.

[0013] With reference to the figure, the reference numeral 1 generally designates an apparatus for distributing loose material, particularly wooden material for manufacturing panels or the like, which are used in general in the field of furniture or building.

[0014] The apparatus 1 comprises an assembly 2 for feeding a loose wood-based material M, such as laminas, sheets, particles, fibers, strands or the like, which is arranged upstream of a station 3 for selecting and dosing the loose material M.

[0015] The selection and dosage station 3 can be associated upstream of a unit 4 for bonding the loose material M, which comprises a resin bonding machine 4a, of the type commonly used, and a subsequent station for pressing the material thus processed, which is not shown in said figure since it is of a known type.

[0016] The feeder assembly 2 is of the type of a storage bunker or the like and comprises means 5 for moving at least one layer of loose material M within a sliding channel 6 and toward a distribution region, designated in the figure by the reference letter Z, by gravity or assisted descent of the loose material M onto the selection and dosage station 3.

[0017] Conveniently, the movement means 5 are constituted by a motorized conveyor belt with one or more belts, which is formed within and at the bottom of the channel 6. As an alternative, the movement means 5 can be constituted by a bed of screw feeders or by a system of slats. In any case, the use of additional and different movement means is not excluded.

[0018] With particular but not exclusive reference to the apparatus 1 shown in the figure, the channel 6 is substantially rectilinear, has a substantially horizontal arrangement and comprises a first end 6a which cantilevers out above the selection and dosage station 3, at which the distribution region Z is formed.

[0019] Advantageously, a second end 6b of the channel 6 is arranged opposite the first end 6a, and two side

walls extend from the bottom of the channel 6 and along it from the first end 6a to the second end 6b and are suitable to avoid lateral escape from the channel 6 of the loose material M during movement towards the distribution region Z.

[0020] The channel 6 is closed in an upper region and comprises an abutment wall 7, which is arranged at the first end 6a, protrudes from the upper wall of the channel 6 and is substantially horizontal and suitable to delimit the distribution region Z together with the edge of the movement means 5 which lies proximate to the first end 6a.

[0021] Conveniently, the distribution assembly 2 comprises means 8 for trimming the upper surface of the layer of loose material M, which are arranged proximate to the upper wall of the channel 6; the trimming means 8 comprise a screw feeder 9 which runs along the channel 6.

[0022] The apparatus 1 comprises input means, not shown in the figure for the sake of greater simplicity in illustration, which can comprise a pneumatic duct for dispensing the loose material or, as an alternative, a loading hopper or the like, which are associated with the channel 6 for dispensing the loose material M at the screw feeder 9. However, different types of such input means are not excluded.

[0023] The selection and distribution station 3 comprises at least one advancement line 10, such as for example a motorized conveyor belt, which is provided with paddles 11 for collecting the loose material M.

[0024] The advancement line 10 comprises at least one first portion 10a, which is suitable to accommodate the loose material M which is arranged substantially below the distribution region Z, and at least one second substantially inclined portion 10b, which is associated downstream of the horizontal portion 10a and is suitable to move the loose material M with a uniform distribution of said material on the paddles 11.

[0025] In particular, the first portion 10a is substantially horizontal and the second portion 10b is inclined so as to form an angle, with respect to the first portion 10a, which is substantially greater than $\pi/4$. The loose material M, once it has been deposited at the first portion 10a and once the second portion 10b has been reached, is moved upward and is distributed uniformly on the paddles 11; the excess loose material M, not collected by the paddles 11, falls back toward the first portion 10a.

[0026] However, different arrangements and inclinations of the first and second portions 10a and 10b are not excluded.

[0027] Further, the first and second portions 10a and 10b can be constituted by mutually distinct belt conveyors provided with respective paddles 11.

[0028] Conveniently, the paddles 11 have preset dimensions according to the dimensions of the elements that constitute the loose material 11 to be selected, and are distributed with a constant spacing along the advancement line 10.

[0029] As an alternative, the paddles 11 can have mutually different shapes and can be distributed with variable spacing along the advancement line 10.

[0030] The advancement line 10 is associated upstream of the bonding unit 4, which is provided with a conveyor line 4b in input to the resin bonding machine 4a and with a removal line 4c in output from the resin bonding machine.

[0031] The operation of the present invention is as follows.

[0032] The loose material M is introduced in the channel 6 by way of the input means and conveyed by means of the screw feeder 9 proximate to the second end 6b; the movement means 5 allow the advancement of said material toward the distribution region Z.

[0033] The loose material M is grouped within the channel 6 until it exits discontinuously and by gravity at the distribution region Z and is then deposited at the first portion 10a of the advancement line 10.

[0034] The advancement of the loose material M on the movement means 5 occurs continuously, and the movement speed is determined beforehand so as to ensure the deposition of a suitable amount of loose material M at the advancement line 10.

[0035] The screw feeder 9 allows to maintain a compact and uniform layer of loose material M within the channel 6, trimming continuously from the upper surface of said layer predefined quantities of material from the first end 6a toward the second end 6b.

[0036] Once it has been deposited at the first portion 10a, the loose material M is moved toward the second portion 10b, where it is distributed uniformly on the paddles 11. The excess loose material M, which is not collected by the paddles 11, falls back toward the first portion 10a.

[0037] The loose material M is thus moved toward the bonding unit 4 and then toward subsequent pressing steps for producing manufactured articles such as panels or the like.

[0038] In practice it has been found that the described invention achieves the proposed aim and objects, and in particular the fact is stressed that the distribution of the loose material by falling from the distribution region allows to reduce substantially the friction to which the elements that constitute the loose material (flakes, strands or others) are commonly subjected, ensuring their integrity.

[0039] The presence of the advancement line and the use of the collection paddles further allow correct and uniform distribution of the loose material toward the subsequent processing steps, consequently improving the quality of the manufactured article.

[0040] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0041] All the details may further be replaced with other technically equivalent elements.

[0042] In practice, the materials used, as well as the contingent shapes and dimensions, may be any accord-

ing to requirements without thereby abandoning the scope of the protection of the appended claims.

[0043] The disclosures in Italian Patent Application No. MO2006A000017 from which this application claims priority are incorporated herein by reference.

[0044] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. An apparatus for distributing loose material, particularly wooden material for manufacturing panels or the like, comprising an assembly for feeding a loose material and a station for selecting and dosing said loose material which is arranged downstream of said feeder assembly, **characterized in that** said feeder assembly comprises means for moving at least one layer of said loose material within a channel for sliding toward a region for gravity distribution of said loose material onto said selection and dosage station, **in that** said selection and dosage station comprises at least one advancement line which is provided with a plurality of paddles for collecting said distributed loose material, and **in that** it comprises at least one first portion which is suitable to accommodate said loose material and at least one second portion which is substantially inclined and arranged downstream of said first portion.

2. The apparatus according to claim 1, **characterized in that** said distribution region is formed at an end of said channel which cantilevers out above said selection and dosage station.

3. The apparatus according to one or more of the preceding claims, **characterized in that** said distribution region is arranged substantially above said first portion.

4. The apparatus according to one or more of the preceding claims, **characterized in that** said collection paddles have preset dimensions according to the dimensions of said loose material to be selected.

5. The apparatus according to one or more of the preceding claims, **characterized in that** said collection paddles are distributed with a constant spacing along said advancement line.

6. The apparatus according to one or more of the preceding claims, **characterized in that** said collection paddles are distributed with variable spacing along said advancement line.

7. The apparatus according to one or more of the preceding claims, **characterized in that** said advancement line is of the type of a motorized conveyor belt.

8. The apparatus according to one or more of the preceding claims, **characterized in that** said advancement line is of the type of a bed of screw feeders.

9. The apparatus according to one or more of the preceding claims, **characterized in that** said movement means are of the type of a motorized conveyor belt which is arranged at the bottom of said channel.

10. The apparatus according to one or more of the preceding claims, **characterized in that** said feeder assembly comprises means for trimming the upper surface of said layer.

11. The apparatus according to one or more of the preceding claims, **characterized in that** said trimming means comprise at least one screw feeder which runs along said channel.

12. The apparatus according to one or more of the preceding claims, **characterized in that** said feeder assembly comprises means for introducing said loose material into said channel.

13. The apparatus according to one or more of the preceding claims, **characterized in that** said introduction means comprise at least one pneumatic duct for dispensing said loose material which is associated with said channel.

14. The apparatus according to one or more of the preceding claims, **characterized in that** said channel is closed in an upper region.

15. The apparatus according to one or more of the preceding claims, **characterized in that** said channel comprises an abutment wall which is arranged at said first end and protrudes from the upper wall of said channel.

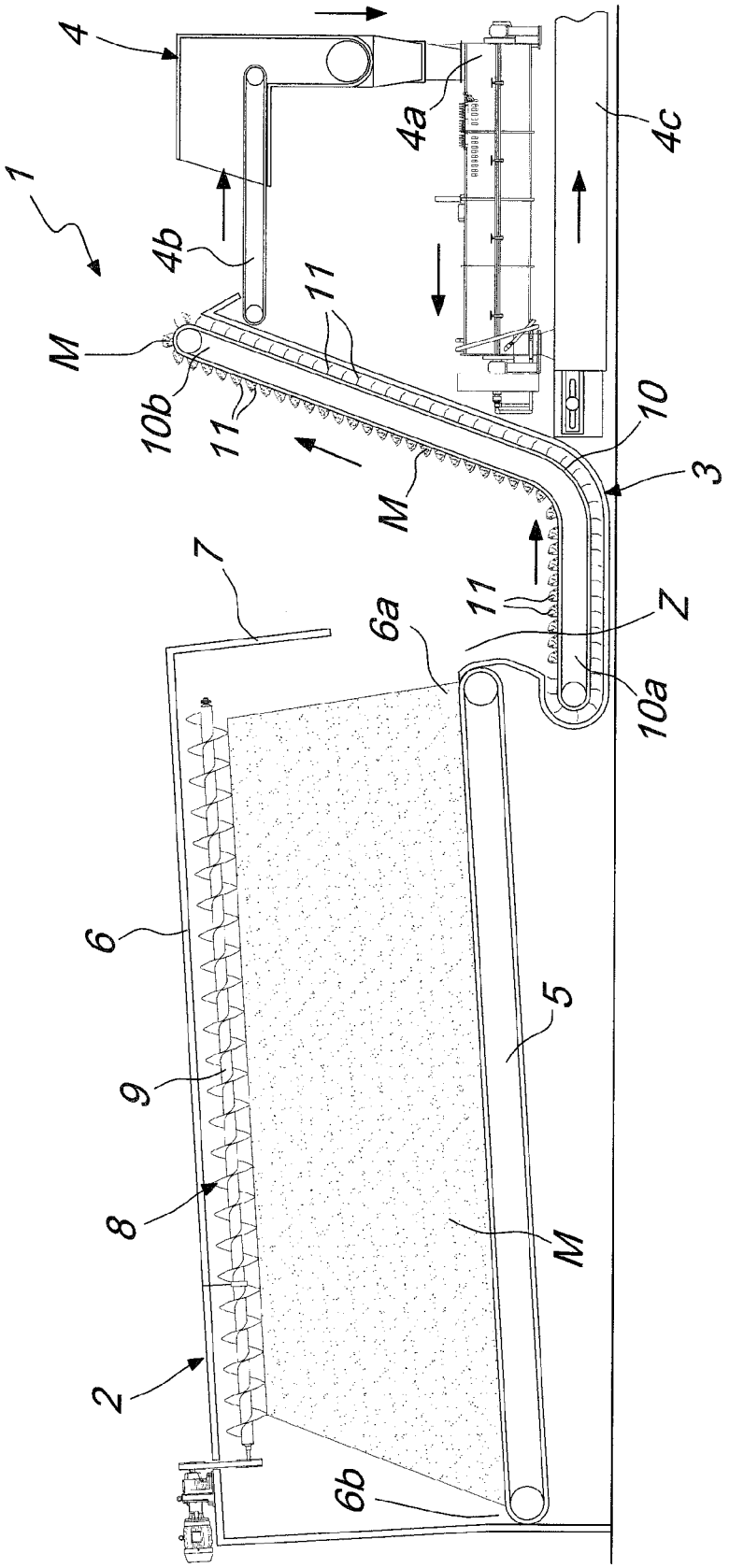

Fig. 1

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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