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(54) CUTTER UNIT FOR CUTTING PLASTERBOARD PIECES FROM A CONTINUOUS SUPPLY OF PLASTERBOARD WHILE SUPPORTING THE PLASTERBOARD, AND PLASTERBOARD MANUFACTURING DEVICE WITH SUCH CUTTER UNIT

(57) In a plasterboard manufacturing device (100), plasterboard (1) is moved continuously over a cutter unit (10) including a knife blade (11), and the cutter unit (10) is driven to perform a spinning motion about a longitudinal axis (A_L) thereof, so that the knife blade (11) intersects with the moving plasterboard (1) at regular intervals. The cutter unit (10) is designed to be capable not only to make cuts in the plasterboard (1), but also to support the plasterboard (1) between successive cutting actions. To this end, the cutter unit (10) is provided with a plasterboard supporting surface (17) arranged and configured to support the plasterboard (1), particularly to do so during at least a part of a revolution of the spinning motion outside of the time of intersection of the knife blade (11) with the plasterboard (1). Both a cutter unit and a plasterboard manufacturing device are claimed.

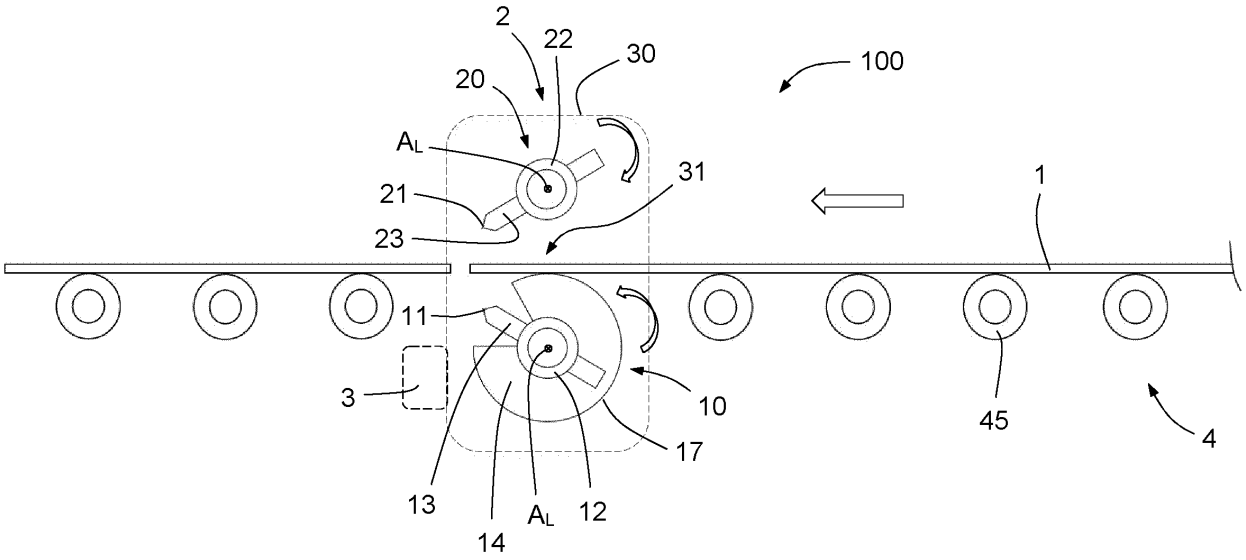

Fig. 1

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Description

[0001] The invention relates to a cutter unit configured to be used in a process of making cuts through plasterboard as plasterboard passes over the cutter unit, and to be put to a spinning motion about a longitudinal axis thereof in the process, which cutter unit comprises a knife blade arranged and configured to intersect with the plasterboard and to thereby cut the plasterboard one time per revolution of the spinning motion, which knife blade extends substantially parallel to the longitudinal axis, at a radial distance from the longitudinal axis. Further, the invention relates to a plasterboard manufacturing device, which plasterboard manufacturing device comprises a cutter device which is configured to cut pieces of plasterboard from a continuous supply of plasterboard and which comprises the cutter unit as mentioned here before.

[0002] The invention is applicable to the field of manufacturing pieces of plasterboard, especially the field of cutting pieces of plasterboard from a continuous supply of plasterboard.

[0003] Plasterboards are plates particularly useful for albeit not restrict to the building industry, comprising a core made of gypsum with various additives in minor amounts, sandwiched between bottom and top facers, generally made of paper and / or glass mat.

[0004] A slurry of calcined calcium sulphate hemihydrate (or stucco) mainly β hemihydrate in water with the desired additives, such as accelerators, fibrous reinforcements, and the like, is continuously dispensed onto a bottom facer moving on a conveyor. The thickness of the layer of slurry on the bottom facer is controlled and a top facer is laid on top of a free surface of the slurry, such as to form a sandwich structure with a core formed by the slurry sandwiched between bottom and top facers. The calcined stucco in the core is allowed to undergo a hydration reaction to form a setting plasterboard with calcium sulphate hemihydrate (CaS04.1/2H20) being progressively replaced by calcium sulphate dihydrate (CaSC>4.2H20) as the hydration reaction proceeds.

Once the core has set to a reasonably hard structure, the continuous setting plasterboard is cut to a desired length, prior to being moved into a drier to complete the hydration reaction and remove any excess water present in the core.

[0005] DE2711446A1 discloses a cutter device for cutting continuously traveling plasterboard. The cutter device comprises two cutter units which are spun in opposite directions during operation of the cutter device. Each cutter unit is equipped with a knife blade extending in a direction which is traverse to a traveling direction of the plasterboard, wherein a width of the knife blade corresponds to the width of the traveling plasterboard. The cutter units are held in stacked and opposite positioning in the cutter device, and the plasterboard is guided between the cutter units during operation of the cutter device, such that the knife blades of the cutter units are enabled to intersect with the plasterboard and to thereby cut the plasterboard one time per revolution of the opposite spinning motion of the cutter units. During the time that the knife blades are outside of the area where the plasterboard is present, a length of the plasterboard is made to travel between the cutter units until the knife blades reach into the plasterboard again and make another cut through the plasterboard. Hence, in the process of a continuous supply of plasterboard and continuous spinning motion of the cutter units, the plasterboard is cut to pieces.

[0006] In the practice of manufacturing pieces of plasterboard, it appears that the plasterboard has a tendency to get stuck in the cutter device and to thereby cause jamming of the cutter device. Every time such jamming of the cutter device actually takes place, the continuous supply of plasterboard needs to be stopped and valuable manufacturing time is lost. This problem is especially prominent in case the plasterboard is relatively soft. Therefore, in the present state of the art, a choice is made not to process relatively soft plasterboard, which implies that in a plasterboard manufacturing device, measures need to be taken to ensure that it takes a certain amount of time for the plasterboard to move from a mixer outputting freshly made plasterboard to the cutter device.

[0007] It is an objective of the invention to alleviate the practical problems related to the present state of the art. In particular, it is an objective of the invention to provide a way of reducing the risk that the cutter device gets jammed and to thereby provide a practical possibility to process relatively soft plasterboard and to decrease the amount of time needed for displacement of the plasterboard between the mixer and the cutter device.

[0008] In view of the foregoing, the invention provides a cutter unit configured to be used in a process of making cuts through plasterboard as plasterboard passes over the cutter unit, and to be put to a spinning motion about a longitudinal axis thereof in the process, which cutter unit comprises a knife blade arranged and configured to be put to a functional cutting position for intersecting with the plasterboard and thereby cutting the plasterboard one time per revolution of the spinning motion, which knife blade extends substantially parallel to the longitudinal axis, at a radial distance from the longitudinal axis, and which cutter unit further comprises a plasterboard supporting surface arranged and configured to support the plasterboard during at least a part of a revolution of the spinning motion outside of the time that the knife blade is at the functional cutting position.

[0009] It is an insight of the invention that jamming of a cutter device in a plasterboard manufacturing device takes place as a result of bending and sagging of the plasterboard at the position of the cutter device. When the plasterboard is relatively soft, the stiffness of the plasterboard is relatively low, and this effect of local deformation of the plasterboard is more prominent than when the plasterboard is relatively hard. The fact is that conven-

tionally, a plasterboard manufacturing device comprises rollers for the purpose of transporting the plasterboard through the plasterboard manufacturing device. As seen in a direction of movement of the plasterboard through the plasterboard manufacturing device, the rollers are arranged at a mutual distance which is sufficiently small for realizing appropriate support of the plasterboard. According to the insight of the invention, bending and sagging of the plasterboard can take place at the position of the cutter device as a consequence of the fact that due to the space which is needed for the spinning cutter units and their knife blades, the mutual distance of a roller directly upstream of the cutter device and a roller directly downstream of the cutter device is larger than the normal mutual distance, and in fact so large that deformation of the plasterboard is far more likely to occur at a position between those rollers, i.e. at the position of the cutter device, than at other positions in the plasterboard manufacturing device. Adding one or more rollers at the position of the cutter device is not possible for the same reason that space is needed for the spinning cutter units and their knife blades.

[0010] A special feature of the invention is that the cutter unit is provided with a plasterboard supporting surface arranged and configured to support the plasterboard during at least a part of a revolution of the spinning motion outside of the time that the knife blade is at the functional cutting position. On the basis of this feature, a possibility to support the plasterboard at the position of the cutter unit is obtained, namely by making clever use of the cutter unit as such. Advantageously, a dimension of the plasterboard supporting surface in a direction about the longitudinal axis is chosen such that the plasterboard supporting functionality of the cutter unit thus obtained is realized over a major part of a revolution of the spinning motion. In any case, the plasterboard supporting functionality of the cutter unit can be realized without hindering the plasterboard cutting functionality of the cutter unit. In this respect, it is noted that it is practical if, in a radial direction relative to the longitudinal axis, the knife blade is at least partially above plasterboard supporting level defined by the plasterboard supporting surface.

[0011] The invention can be realized without a need for complex measures, wherein it is possible to upgrade an existing cutter unit with one or more add-ons for creating the plasterboard supporting surface on the cutter unit. By enabling the cutter unit to support plasterboard as the cutter unit is spun about the longitudinal axis, outside of the time that the plasterboard is cut, bending and sagging of the plasterboard at the position of a cutter device equipped with the cutter unit is prevented so that jamming of the cutter device is far less likely to occur than in conventional situations, or may even no longer occur at all.

[0012] In the context of the invention, the plasterboard supporting surface can be realized on the cutter unit in any suitable way. According to one feasible option, the plasterboard supporting surface is substantially circularly bent about the longitudinal axis. The plasterboard supporting surface can be provided as one continuous surface, or can be provided with one or more interruptions and/or can be composed of at least two discrete subsurfaces.

[0013] One way of realizing the plasterboard supporting functionality of the cutter unit without hindering the plasterboard cutting functionality of the cutter unit is shaping and dimensioning the plasterboard supporting surface such that, in the direction about the longitudinal axis, the plasterboard supporting surface is at a distance from the knife blade, at both long sides of the knife blade. In the case that the plasterboard supporting surface is substantially circularly bent about the longitudinal axis, it is possible that the plasterboard supporting surface extends continuously along an angle of at least 240° and less than 360° about the longitudinal axis. On the basis of the angle of at least 240°, it is achieved that the plasterboard supporting functionality of the cutter unit is realized over at least 2/3 of a revolution of the spinning motion of the cutter unit. Another example of this angle is an angle of at least 280°, so that the plasterboard supporting functionality of the cutter unit is even further enhanced.

[0014] One way of actually realizing the case that the plasterboard supporting surface is substantially circularly bent about the longitudinal axis and that, in the direction about the longitudinal axis, the plasterboard supporting surface is at a distance from the knife blade, at both long sides of the knife blade, involves further shaping and dimensioning the plasterboard supporting surface such that the plasterboard supporting surface extends continuously about the longitudinal axis apart from a single interruption. In this respect, an embodiment of the cutter unit is possible in which, as seen in the direction about the longitudinal axis, said single interruption is present in the plasterboard supporting surface, and in which the knife blade is positioned in said interruption. For example, it is possible that the cutter unit comprises a core element and a knife body extending outwardly from the core element and supporting the knife blade. In such a case, one or more elements having a surface for defining the plasterboard supporting surface may also be arranged on the core element. In a practical embodiment, the cutter unit comprises a core element and at least two ring segments supported on the core element and surrounding part of the core element in the direction about the longitudinal axis, wherein the plasterboard supporting surface comprises curved exterior surfaces of the respective ring segments. In this embodiment, the plasterboard supporting surface is not only interrupted in the direction about the longitudinal axis, but also in the direction in which the longitudinal axis extends, in case the ring segments are arranged at a mutual distance in the direction in which the longitudinal axis extends. Generally speaking, in the context of the invention, embodiments of the cutter unit are feasible in which, in the direction in which the longitudinal axis extends, at least one interruption is present in the plasterboard supporting surface.

[0015] The invention covers the use of any suitable type of knife blade in the cutter unit. In this respect, a toothed knife blade is a practical example.

[0016] The invention further relates to a plasterboard manufacturing device comprising a cutter device configured to cut pieces of plasterboard from a continuous supply of plasterboard, comprising a combination of the above-described cutter unit which is functional to support the plasterboard and another cutter unit comprising a knife blade, and a frame configured to hold the cutter units in stacked and opposite positioning in the cutter device, with the first cutter unit at a lower position than the second cutter unit, and further comprising a drive mechanism configured to spin the cutter units of the cutter device in opposite directions, and also a plasterboard transport system configured to guide the plasterboard towards a cutting area between the cutter units of the cutter device and away from the cutter device.

[0017] In order to realize an optimal cutting functionality of the cutter device, it is a practical possibility that the drive mechanism comprises a mechanism configured to synchronize the opposite spinning motion of the cutter units of the cutter device and to thereby synchronize the way in which the knife blades of the cutter units move so that the knife blades of the cutter units reach the cutting area at the same time in a revolution of the spinning motion.

[0018] The drive mechanism can be composed by only one or two drivers.

[0019] It is a practical possibility that the plasterboard transport system comprises a plurality of rollers arranged to support the plasterboard, as is known from conventional situations.

[0020] The present invention will be further explained on the basis of the following description, wherein reference will be made to the figures, in which equal reference signs indicate equal or similar components, and in which:

figure 1 diagrammatically shows components of a plasterboard manufacturing device and plasterboard to be transported through the plasterboard manufacturing device and cut at the position of a cutter device, wherein the cutter device comprises a cutter unit according to an embodiment of the invention as a bottom cutter unit;

figure 2 diagrammatically shows a side view of the bottom cutter unit, and also shows a portion of plasterboard and a portion of a top cutter unit, for a situation in which knife blades of the cutter units intersect with the plasterboard and thereby perform a cutting action on the plasterboard;

figure 3 illustrates how the plasterboard is supported by a plasterboard supporting surface of the bottom cutter unit in a situation between two cutting actions of the bottom cutter unit on the plasterboard;

figure 4 diagrammatically shows an enlarged view of a portion of the bottom cutter unit;

figure 5 diagrammatically shows a top view of the bottom cutter unit, for a situation in which the knife blade of the cutter unit is up;

figure 6 diagrammatically shows a top view of the bottom cutter unit, for a situation in which the knife blade of the cutter unit is down.

[0021] The figures are illustrative of the invention rather than limiting the invention. Figure 1 diagrammatically shows components of a plasterboard manufacturing device 100 and plasterboard 1 to be transported through the plasterboard manufacturing device 100 and cut at the position of a cutter device 2, wherein the cutter device 2 comprises a cutter unit 10 according to an embodiment of the invention as a bottom cutter unit. In the present description, indications such as "bottom", "up" and "down" are to be understood so as to be related to a normal operational orientation of the plasterboard manufacturing device 100 and the components included in the plasterboard manufacturing device 100, which is the orientation as shown in figure 1.

[0022] The cutter device 2 further comprises a top cutter unit 20. The bottom cutter unit 10 comprises a knife blade 11 for cutting the plasterboard 1 from a bottom side of the plasterboard 1, and the top cutter unit 20 comprises a knife blade 21 for cutting the plasterboard 1 from a top side thereof. The cutter units 10, 20 are held in a frame 30, in stacked and opposite positioning, in such a way that the cutter units 10, 20 can be spun about their respective longitudinal axes A_L, in opposite directions. In figure 1, the directions of the spinning motion of the respective cutter units 10, 20 are indicated by means of curved arrows. For the purpose of driving the cutter units 10, 20 to perform their opposite spinning motion, the plasterboard manufacturing device 100 comprises a drive mechanism 3.

[0023] During operation of the plasterboard manufacturing device 100, the cutter device 2 functions to receive a continuous supply of plasterboard 1 at one side, to make a cut through the moving plasterboard 1 along an entire width of the plasterboard 1 at regular intervals, and to thereby eventually output pieces of plasterboard 1. In figure 1, a direction of movement of the plasterboard 1 is indicated by means of a straight arrow. For the purpose of transporting the plasterboard 1, the plasterboard manufacturing device 100 comprises a plasterboard transport system 4. In the present example, the plasterboard transport system 4 comprises rollers 45 arranged to support the plasterboard 1 so that the plasterboard 1 is kept substantially horizontal throughout the plasterboard manufacturing device 100. When it comes to the cutter device 2, the plasterboard transport system 4 is functional to guide the plasterboard 1 towards a cutting area 31 between the cutter units 10, 20 of the cutter device 2 and away from the cutter device 2. Practical examples of the width of the plasterboard 1 are 600 mm, 900 mm and 1,200 mm. The cutter device 2 can be designed such that plasterboard 1 of different width can be processed by the device 3, wherein a dimension of the knife blades 11, 21

of the respective cutter units 10, 20 in a direction in which the longitudinal axis A_L extends is adapted to the largest width.

[0024] The design of the top cutter unit 20 is a conventional design according to which the top cutter unit 20 comprises a core element 22 and a knife body 23 extending outwardly from the core element 22 and supporting the knife blade 21. Likewise, the bottom cutter unit 10 comprises a core element 12 and a knife body 13 extending outwardly from the core element 12 and supporting the knife blade 11. In comparison to the top cutter unit 20, the bottom cutter unit 10 comprises additional elements, namely three ring segments 14, 15, 16 supported on the core element 12 and surrounding part of the core element 12 in a direction about the longitudinal axis A_L. The ring segments 14, 15, 16 are of similar design and are arranged on the core element 12 in a similar way, in a row with similar mutual spacing in the direction in which the longitudinal axis A_L extends, as can be seen in figures 5 and 6. The ring segments 14, 15, 16 may be made of a suitable plastic material, for example, while the knife blade 11, the core element 12 and the knife body 13 may be made of steel. The ring segments are preferably made of polypropylene or polyethylene.

[0025] Generally speaking, a difference between the conventional design of the top cutter unit 20 and the design of the bottom cutter unit 10 is that the bottom cutter unit 10 comprises a plasterboard supporting surface 17 which is functional to support the plasterboard 1 during at least a part of a revolution of the spinning motion outside of the time of intersection of the knife blade 11 with the plasterboard 1. In the example in which the bottom cutter unit 10 is equipped with the three ring segments 14, 15, 16, the plasterboard supporting surface 17 comprises curved exterior surfaces of the respective ring segments 14, 15, 16. An advantageous consequence of the capability of the bottom cutter unit 10 to support the plasterboard 1 resides in counteracting bending and sagging of the plasterboard 1 at the position of the cutter unit 3 and thereby preventing jamming of the cutter unit 3. In the present example, each of the ring segments 14, 15, 16 are dimensioned to extend along an angle of about 300° about the longitudinal axis A_L. This means that as the bottom cutter unit 10 spins about the longitudinal axis A_L, the plasterboard 1 is supported during 5/6 of the revolution of the spinning motion.

[0026] Figure 2 illustrates a situation in which the bottom cutter unit 10 is in a position in which the knife blade 11 is up and in which the top butter unit 20 is in a position in which the knife blade 21 is down. Hence, this is a situation in which both knife blades 11, 21 are in a functional cutting position for intersecting with the plasterboard 1 and thereby cutting the plasterboard 1. Starting from this situation, as the cutter units 10, 20 perform their opposite spinning motion, the knife blades 11, 21 are moved away from the cutting area 31 and the bottom side of the plasterboard 1 is contacted by the plasterboard supporting surface 17 of the bottom cutter unit 10 at a certain point. Figure 3 illustrates a situation in which the moving plasterboard 1 rests on the plasterboard supporting surface 17 of the bottom cutter unit 10 and is thereby supported at the position of the cutter device 2. During operation of the cutter device 2, a cycle in which the plasterboard 1 is alternately cut and supported is continually repeated.

[0027] In the present example, as seen in the direction about the longitudinal axis A_L, the knife body 13 and the knife blade 11 supported on the knife body 13 extend in an interruption of about 60° as present in the respective ring segments 14, 15, 16 and the associated plasterboard supporting surface 17. It may be practical and advantageous to have a central positioning of the knife body 13 and the knife blade 11 in said interruption, as can be seen in the figures. With reference to figure 4, it is noted that in order to have both the plasterboard supporting functionality and the plasterboard cutting functionality in the bottom cutter unit 10, it is practical if, in a radial direction relative to the longitudinal axis A_L, the knife blade 11 is at least partially above a plasterboard supporting level P defined by the plasterboard supporting surface 17. Further, in figure 4, both a radial distance d_r between the longitudinal axis A_L and the knife blade 11 and a distance dt about the longitudinal axis A_L between the plasterboard supporting surface 17 and the knife blade 11, at both long sides of the knife blade 11, are indicated. The plasterboard supporting level P defined by the plasterboard supporting surface 17 is also indicated in figure 2.

[0028] It will be clear to a person skilled in the art that the scope of the present invention is not limited to the examples discussed in the foregoing, but that several amendments and modifications thereof are possible without deviating from the scope of the invention as defined in the attached claims.

[0029] Notable aspects of the invention are summarized as follows. In a process of manufacturing pieces of plasterboard 1, plasterboard 1 is moved continuously over a cutter unit 10 including a knife blade 11, and the cutter unit 10 is driven to perform a spinning motion about a longitudinal axis A_L thereof so that the knife blade 11 is made to intersect with the moving plasterboard 1 at regular intervals. The cutter unit 10 is designed so as to not only be capable of making cuts in the plasterboard 1, but to also be capable of supporting the plasterboard 1 between successive cutting actions. To this end, the cutter unit 10 is provided with a plasterboard supporting surface 17 arranged and configured to support the plasterboard 1, particularly to do so during at least a part of a revolution of the spinning motion outside of the time of intersection of the knife blade 11 with the plasterboard 1.

1	Plasterboard
2	Cutter device
3	Drive mechanism
4	Plasterboard transport system
10	Bottom cutter unit

11	Bottom knife blade
12	Bottom core element
13	Bottom knife body
14	Ring segment 1
15	Ring segment 2
16	Ring segment 3
17	Plasterboard supporting surface
20	Top cutter unit
21	Top knife blade
22	Top core element
23	Top knife body
30	Frame
31	Cutting area
45	Rollers
100	Manufacturing device
A_L	Longitudinal axis
P	Plasterboard supporting level
d_r	Radial distance
d_t	Distance from the knife blade to the plasterboard supporting surface in a direction about the longitudinal axis (A_L)

Claims

1. A cutter unit (10) configured to be used in a process of making cuts through plasterboard (1) as the plasterboard (1) passes over the cutter unit (10), and to be put to a spinning motion about a longitudinal axis (A_L) thereof in the process, comprising:

- a knife blade (11) arranged and configured to be put to a functional cutting position for intersecting with the plasterboard (1) and thereby cutting the plasterboard (1) one time per revolution of the spinning motion, which knife blade (11) extends substantially parallel to the longitudinal axis (A_L), at a radial distance (d_r) from the longitudinal axis (A_L), and
- a plasterboard supporting surface (17) arranged and configured to support the plasterboard (1) during at least a part of a revolution of the spinning motion outside of the time that the knife blade (11) is at the functional cutting position.

2. The cutter unit (10) according to claim 1, wherein, in a radial direction relative to the longitudinal axis (A_L), the knife blade (11) is at least partially above a plasterboard supporting level (P) defined by the plasterboard supporting surface (17).

3. The cutter unit (10) according to claim 1 or 2, wherein the plasterboard supporting surface (17) is substantially circularly bent about the longitudinal axis (A_L).

4. The cutter unit (10) according to any of claims 1-3, wherein, in a direction about the longitudinal axis (A_L), the plasterboard supporting surface (17) is at a distance (dt) from the knife blade (11), at both long sides of the knife blade (11).

5. The cutter unit (10) according to claim 4 insofar as dependent on claim 3, wherein the plasterboard supporting surface (17) extends continuously along an angle of at least 240° and less than 360° about the longitudinal axis (A_L).

6. The cutter unit (10) according to claim 4 insofar as dependent on claim 3, wherein the plasterboard supporting surface (17) extends continuously along an angle of at least 280° and less than 360° about the longitudinal axis (A_L).

7. The cutter unit (10) according to any of claim 4 insofar as dependent on claim 3, claim 5 and claim 6, wherein the plasterboard supporting surface (17) extends continuously about the longitudinal axis (A_L) apart from a single interruption.

8. The cutter unit (10) according to claim 7, wherein the knife blade (11) is positioned in the interruption in the plasterboard supporting surface (17).

9. The cutter unit (10) according to claim 8, comprising a core element (12) and a knife body (13) extending outwardly from the core element (12) and supporting the knife blade (11).

10. The cutter unit (10) according to any of claims 1-9, wherein, in a direction in which the longitudinal axis (A_L) extends, at least one interruption is present in the plasterboard supporting surface (17).

11. The cutter unit (10) according to any of claims 1-10, comprising a core element (12) and at least two ring segments (14, 15, 16) supported on the core element (12) and surrounding part of the core element (12) in a direction about the longitudinal axis (A_L), wherein the plasterboard supporting surface (17) comprises curved exterior surfaces of the respective ring segments (14, 15, 16).

12. The cutter unit (10) according to any of claims 1-11, wherein the knife blade (11) is a toothed knife blade.

13. A plasterboard manufacturing device (100), comprising:

a cutter device (2) configured to cut pieces of plasterboard (1) from a continuous supply of plasterboard (1), comprising a combination of the cutter unit (10) according to any of claims 1-12 and another cutter unit (20) comprising a knife blade (21), and a frame (30) configured to hold the cutter units (10, 20) in stacked and opposite positioning in the cutter device (2), with

the cutter unit (10) according to any of claims 1-12 at a lower position than the other cutter unit (20),

a drive mechanism (3) configured to spin the cutter units (10, 20) of the cutter device (2) in opposite directions, and

a plasterboard transport system (4) configured to guide the plasterboard towards a cutting area (31) between the cutter units (10, 20) of the cutter device (2) and away from the cutter device (2).

14. The plasterboard manufacturing device (100) according to claim 13, wherein the drive mechanism (3) comprises a mechanism configured to synchronize the opposite spinning motion of the cutter units (10, 20) of the cutter device (2) and to thereby synchronize the way in which the knife blades (11, 21) of the cutter units (10, 20) move so that the knife blades (11, 21) of the cutter units (10, 20) reach the cutting area (31) at the same time in a revolution of the spinning motion.

15. The plasterboard manufacturing device (100) according to claim 13 or 14, wherein the plasterboard transport system (4) comprises a plurality of rollers (45) arranged to support the plasterboard (1).

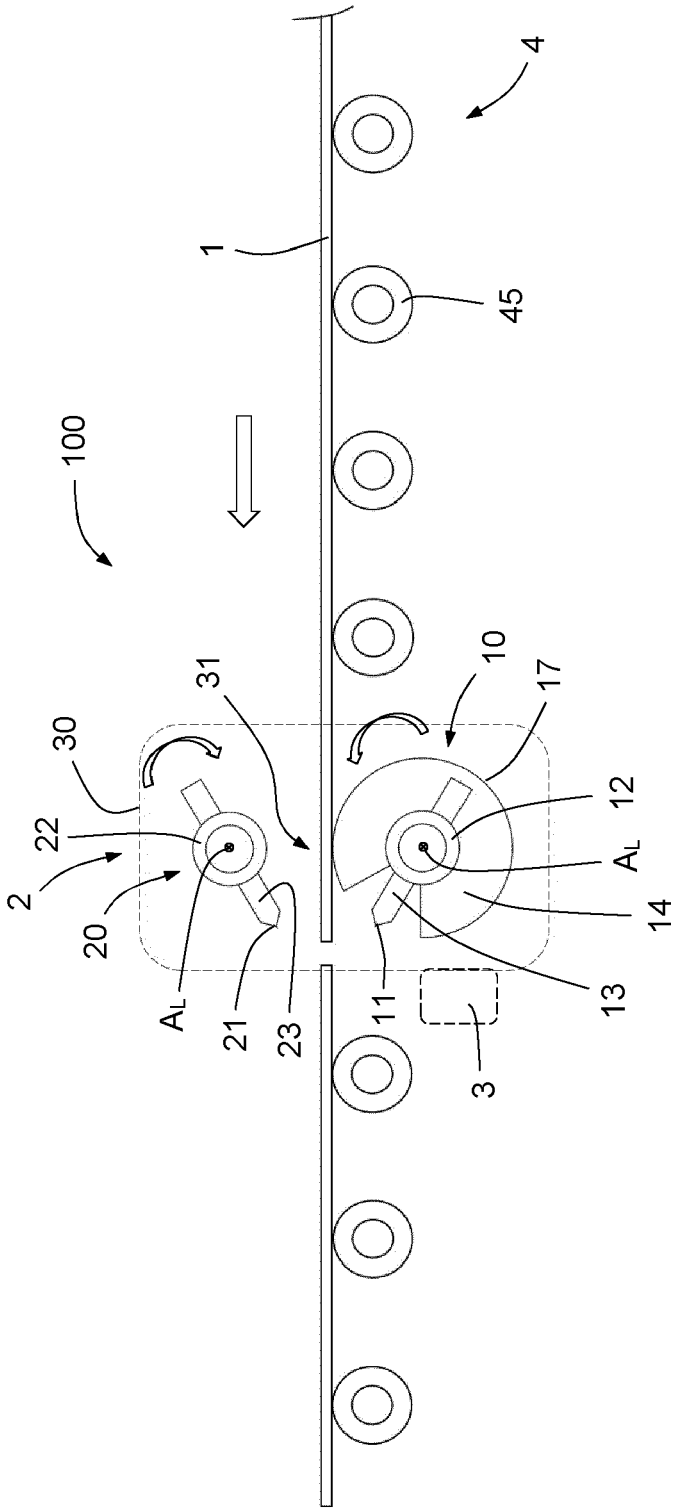

Fig. 1

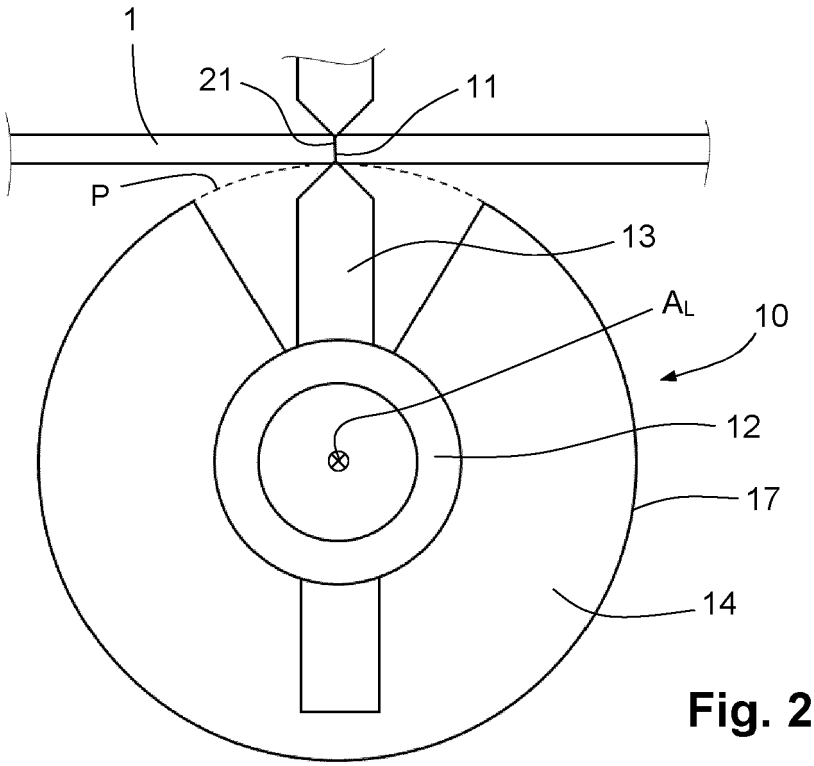

Fig. 2

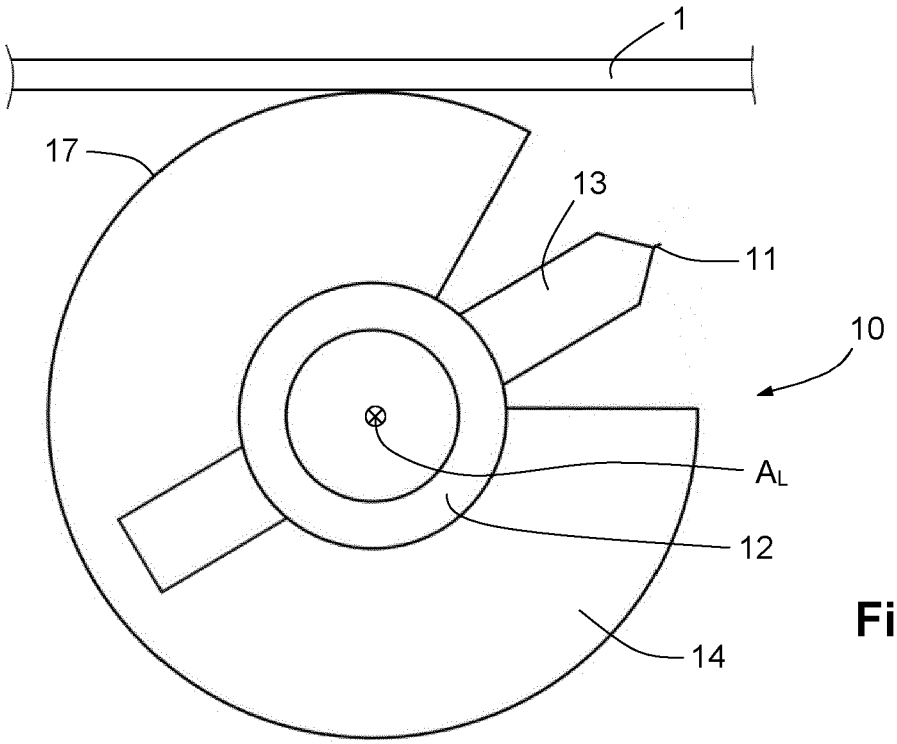

Fig. 3

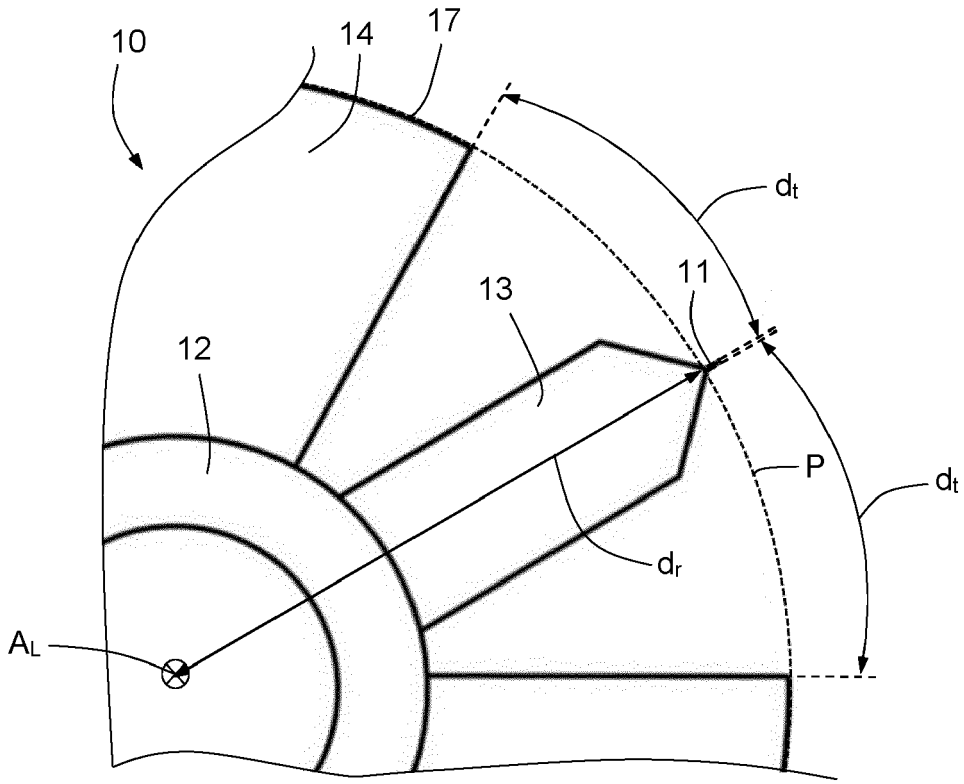

Fig. 4

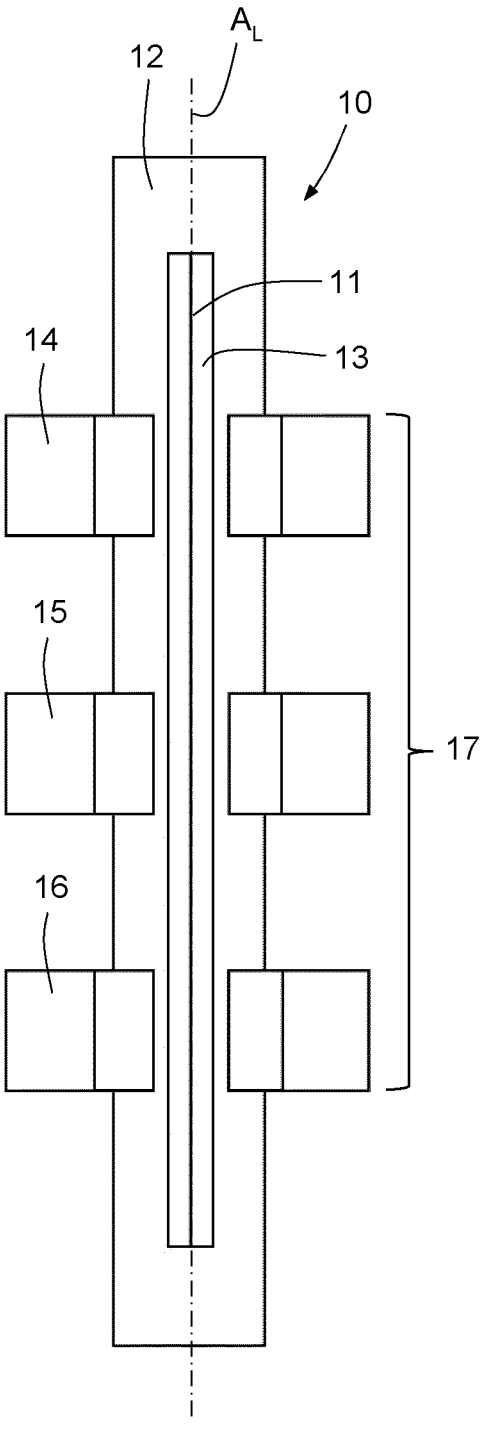

Fig. 5

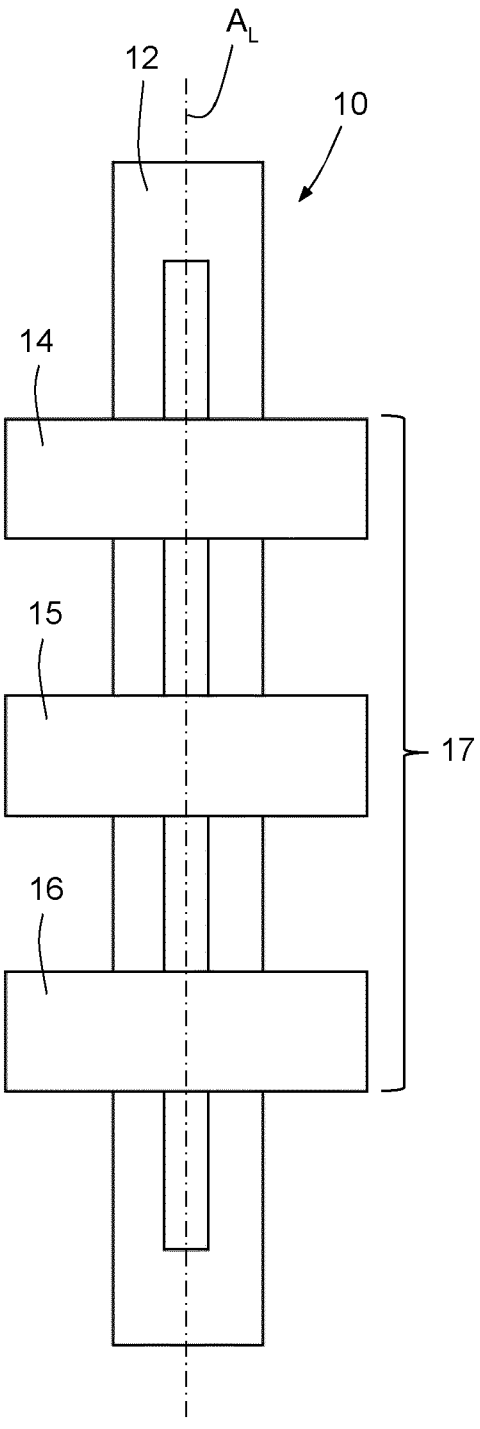

Fig. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 23 20 8753

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	CN 112 405 801 B (WENZHOU SUBAN FURNITURE CO LTD) 7 January 2022 (2022-01-07) * the whole document *	1-9, 13-15	INV. B28B11/16 B28B19/00 B26D1/40 B26D1/36 B26D7/06
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TECHNICAL FIELDS SEARCHED (IPC)

B28B
B26D
B28D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	22 April 2024	Papakostas, Ioannis

CATEGORY OF CITED DOCUMENTS

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CN 203845555 U	24-09-2014	NONE	
CN 105128155 B	30-11-2016	NONE	
WO 2024070013 A1	04-04-2024	NONE	

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