

(19)



(11)

EP 4 052 844 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
07.09.2022 Bulletin 2022/36

(21) Application number: **22160302.0**

(22) Date of filing: **04.03.2022**

(51) International Patent Classification (IPC):
B24B 9/00 (2006.01) **B24B 9/10** (2006.01)
B24B 41/06 (2012.01) **B24B 41/00** (2006.01)
B65G 11/00 (2006.01) **B65G 1/08** (2006.01)

(52) Cooperative Patent Classification (CPC):
B24B 9/002; B24B 9/102; B24B 41/005;
B24B 41/06

(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:
KH MA MD TN

(30) Priority: **05.03.2021 IT 202100005162**

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(54) **DEVICE FOR MACHINING PARALLELOGRAMS ON STRAIGHT-LINE GRINDING MACHINES, PARTICULARLY FOR GLASS SHEETS**

(57) A device for machining parallelograms on straight-line grinding machines, particularly for glass sheets, which comprises at least one guiding bar configured to be coupled to a straight-line grinding machine, the guiding bar being provided with at least one carriage

for locking in place a parallelogram being machined on the straight-line grinding machine, the carriage being provided with a clamp which allows the locking of the parallelogram to the guiding bar.

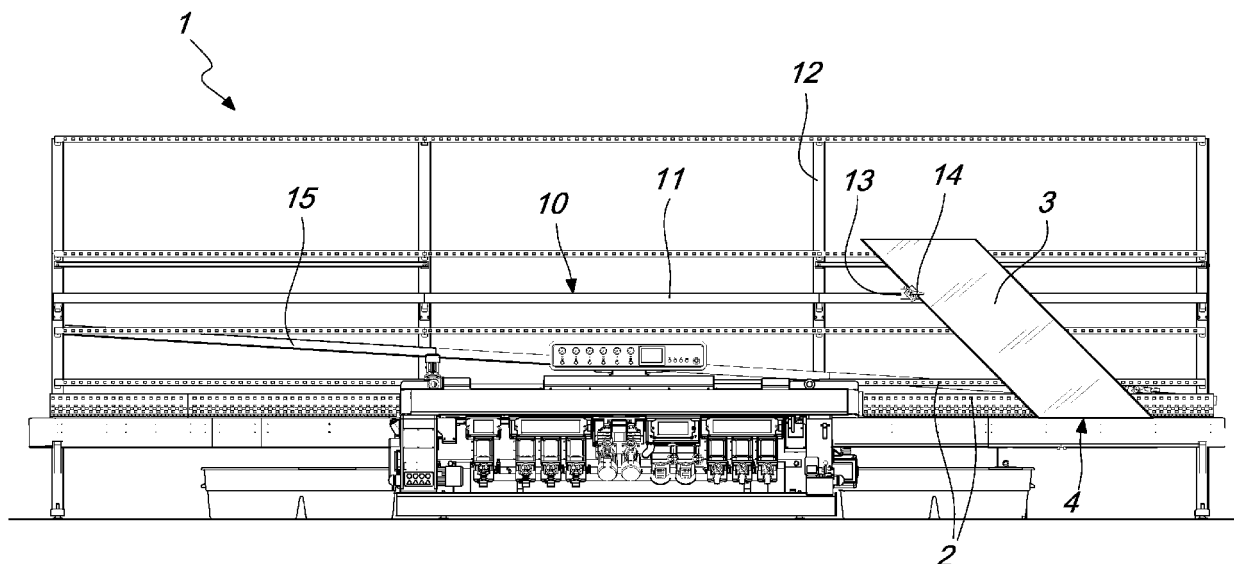


Fig. 1

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Description

[0001] The present invention relates to a device for machining parallelograms on straight-line grinding machines, particularly for glass sheets.

[0002] As is known, straight-line grinding machines are adapted to machine flat glass sheets on one side of the sheet at a time.

[0003] The sheet is placed on a motorized entry conveyor which is its reference plane for the machining.

[0004] The entry conveyor is adapted to load the sheets, after which the sheet is taken into the transporter of the machining center for machining, and finally it comes out on an exit conveyor for the unloading operation.

[0005] Given that the sheet is placed on the lower side, a problem arises with machining sheets with a polygonal shape in which the center of gravity lies beyond the point where the sheet is supported, therefore not allowing its movement without the sheet falling off.

[0006] In particular, this occurs when the sheet is a parallelepiped in which the center of gravity falls outside the contact base of the sheet.

[0007] For machining such shapes, there are devices on the market today that make it possible to carry out machining which consist of a second, higher motorized transporter to be placed at a preset height, where a sheet with a center of gravity that falls outside the lower resting surface can rest and will be accompanied during all of its translation, while always keeping it in the correct position.

[0008] This solution, although satisfactory from the point of view of results, firstly is expensive given that a second conveyor needs to be provided, and secondly is technically complicated, in that the straight-line grinding machine now has two separate conveyors.

[0009] The aim of the present invention is to provide a device for machining parallelograms on straight-line grinding machines, particularly for glass sheets, wherein the parallelogram to be machined does not require the use of a second motorized transporter as the conventional solutions do.

[0010] Within this aim, an object of the present invention is to provide a device for machining parallelograms on straight-line grinding machines, wherein the parallelogram shape to be subjected to machining is moved in a simplified manner along the straight-line grinding machine.

[0011] Another object of the present invention is to provide a device for machining parallelograms on straight-line grinding machines, wherein the straight-line grinding machine is technically simplified with respect to conventional straight-line grinding machines.

[0012] Another object of the present invention is to provide a device for machining parallelograms on straight-line grinding machines that is highly reliable, easily and practically implemented and at low cost.

[0013] This aim and these and other objects which will become better apparent hereinafter are achieved by a

device for machining parallelograms on straight-line grinding machines, particularly for glass sheets, which comprises at least one guiding bar configured to be coupled to a straight-line grinding machine, said guiding bar being provided with at least one carriage for locking in place a parallelogram being machined on said straight-line grinding machine, said carriage being provided with a clamp which allows the locking of said parallelogram to said guiding bar.

[0014] Further characteristics and advantages of the invention will become better apparent from the detailed description of a preferred, but not exclusive, embodiment of the device according to the invention, illustrated by way of non-limiting example in the accompanying drawings wherein:

Figure 1 is a front elevation view of the straight-line grinding machine with a device according to the present invention;

Figure 2 is a detail of Figure 1.

[0015] With reference to the figures, the reference numeral 1 generally designates a straight-line grinding machine to which the device according to the present invention is applied.

[0016] The straight-line grinding machine comprises a motorized transporter 2, which is adapted to transport a parallelogram 3, for example a glass sheet 3, in which the center of gravity falls outside the contact base 4 of the sheet.

[0017] In this case, movement of the sheet along the working surface of the straight-line grinding machine is aided by a device 10 according to the present invention, which comprises at least one guiding bar 11 adapted to be arranged at a suitable height at the supporting frame 12 of the straight-line grinding machine 1, and on which can be engaged at least one sliding carriage 13 which is provided with an engagement clamp 14 which locks the sheet 3 to the carriage 13 in the desired position.

[0018] Conveniently, the carriages are provided with idle sliding rollers.

[0019] The weight of the sheet 3 with its center of gravity outside the resting surface 4 therefore rests on the sliding carriage 13. However, because the carriage 13 is integral with the sheet 3, it is not possible for it to change position with respect to the lower transport surface, thereby enabling its machining and translation along the straight-line grinding machine 1.

[0020] The carriage 13, which is provided with idle sliding rollers, accompanies the sheet 3 from the loading step, to machining, up until the unloading step of the operator, that releases the carriage 13 from the sheet 3 and places it on an inclined track 15, which allows the return by gravity of the carriage 13 to the entry position on the sheet 3.

[0021] The solution proposed above has a great advantage in terms of application costs and of operator safety, in that the sheet is firmly fixed to the guiding bar

11 using the carriage 13, and is moved in total safety for the operator.

[0022] The present invention therefore also relates to a straight-line grinding machine provided with a device 10 for machining parallelograms according to the foregoing description.

[0023] The straight-line grinding machine 1 also comprises, as mentioned, an inclined track 15 which makes it possible to return the carriages 13 to the initial position once the sheet 3 has been machined and has been unloaded by the operator from the straight-line grinding machine 1.

[0024] In practice it has been found that the device according to the present invention fully achieves the set aim and objects, in that it makes it possible, with ease and in safety, to machine a parallelogram-shaped glass sheet with a center of gravity that falls outside of the resting base of the sheet, and without needing to resort to the use of a second motorized transporter, as happens in the known art.

[0025] The device, thus conceived, is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0026] Moreover, all the details may be substituted by other, technically equivalent elements.

[0027] In practice, the materials used, as well as the contingent shapes and dimensions, may be any according to the requirements and to the state of the art.

[0028] The disclosures in Italian Patent Application No. 102021000005162 from which this application claims priority are incorporated herein by reference.

[0029] Where the technical features mentioned in any claim are followed by reference numerals and/or signs, those reference numerals and/or signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference numerals and/or signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference numerals and/or signs.

Claims

1. A device (10) for machining parallelograms on straight-line grinding machines (1), particularly for glass sheets, which comprises at least one guiding bar (11) configured to be coupled to a straight-line grinding machine (1), said guiding bar (11) being provided with at least one carriage (13) for locking in place a parallelogram (3) being machined on said straight-line grinding machine, said carriage (13) being provided with a clamp (14) which allows the locking of said parallelogram (3) to said guiding bar (11).
2. The device according to claim 1, **characterized in that** said at least one carriage (13) is provided with idle sliding rollers.

3. The device according to claim 1, **characterized in that** said at least one guiding bar (11) is adapted to be arranged at a chosen height on a supporting frame (12) of said straight-line grinding machine (1).
4. The device according to one or more of the preceding claims, **characterized in that** said at least one carriage (13) is configured to slide along said at least one guiding bar (11).
5. A straight-line grinding machine, particularly for glass sheets, **characterized in that** it comprises a device (10) according to one or more of the preceding claims.
6. The straight-line grinding machine according to claim 5, **characterized in that** it comprises a second guiding bar (15), which is adapted to be arranged so that it is inclined and is adapted to allow the return of said at least one carriage (13), by gravity, to the initial position for loading said parallelogram (3) being machined.

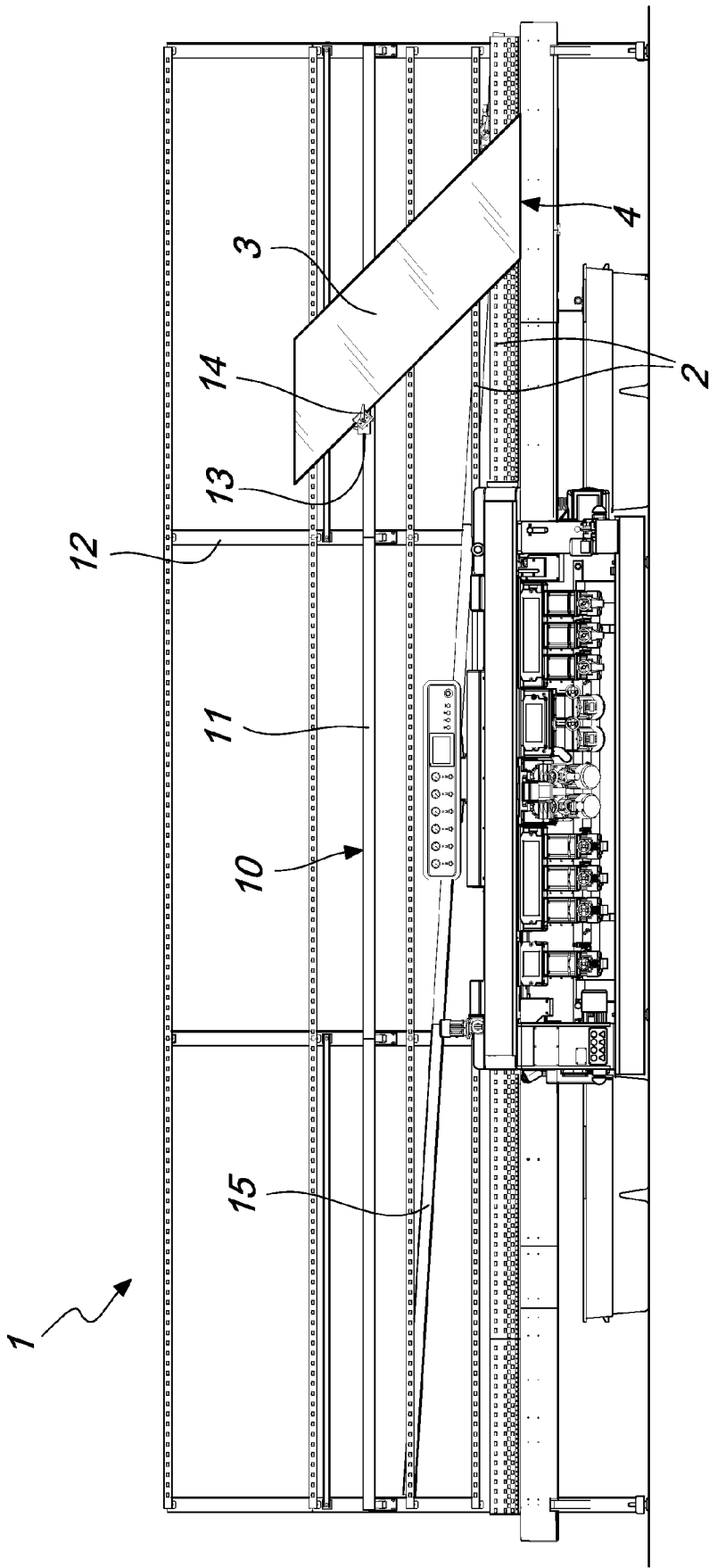
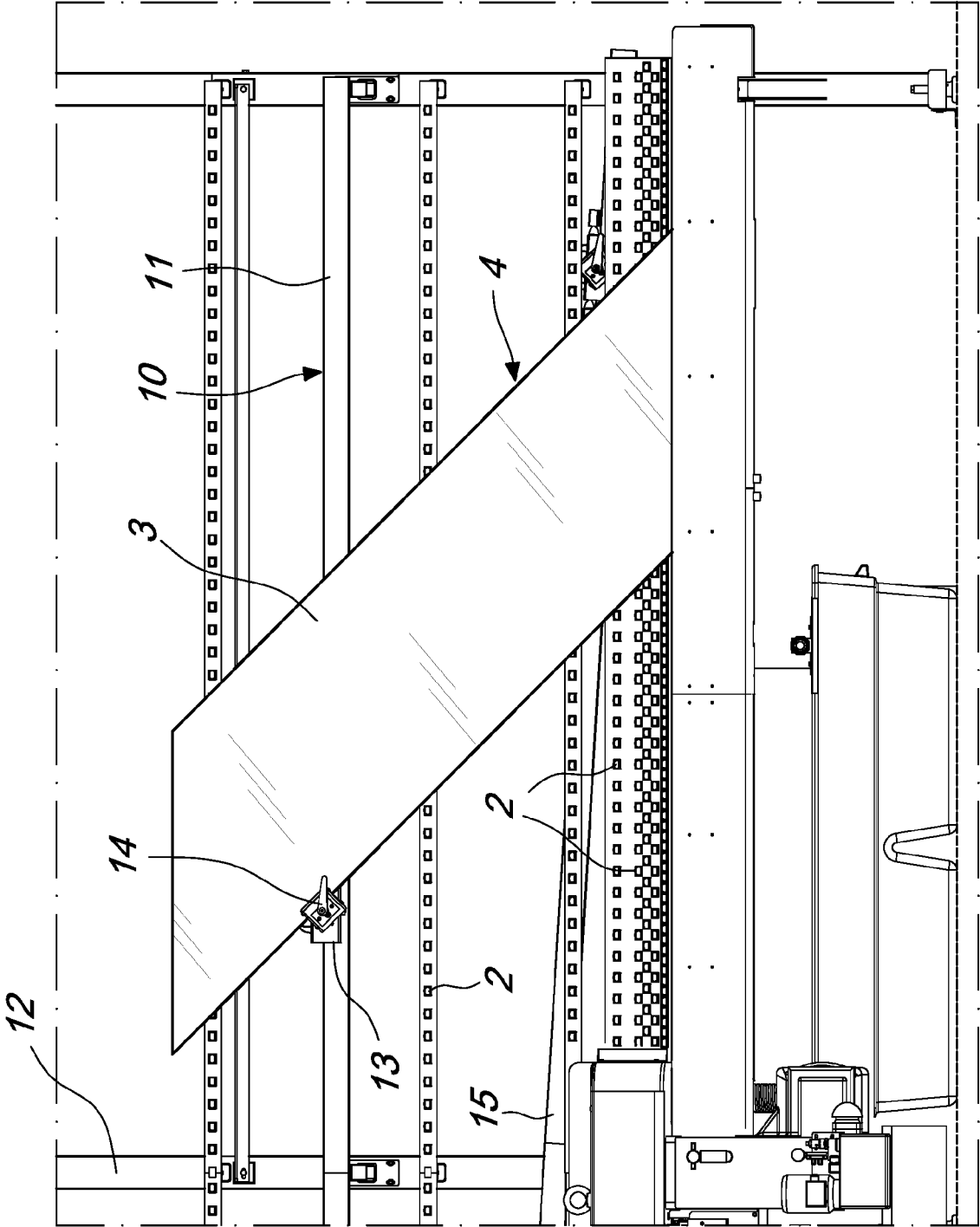


Fig. 1

Fig. 2





EUROPEAN SEARCH REPORT

Application Number

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EPO FORM 1503 03.82 (P04C01)

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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 6 July 2022	Examiner Endres, Mirja
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

**ANNEX TO THE EUROPEAN SEARCH REPORT
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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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