

TRANSLATION

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P263048-PCT		FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/BR2022/050497	International filing date (day/month/year) 15.12.2022	Priority date (day/month/year) 16.12.2021	
International Patent Classification (IPC) or national classification and IPC IPC: A01D 57/22(2006.01)i; A01D 45/10(2006.01)i; A01D 85/00(2006.01)i; A01D 61/00(2006.01)i; CPC: A01D 57/22, A01D 45/10, A01D 2085/008, A01D 61/00			
Applicant MARCHESAN IMPLEMENTOS E MÁQUINAS AGRÍCOLAS TATU S/A			

1.	This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.		
2.	This REPORT consists of a total of 16 sheets, including this cover sheet.		
3.	This report is also accompanied by ANNEXES, comprising: a. ☒ a total of 22 sheets, as follows: ☒ sheets of the description, claims and/or drawings which have been amended and/or sheets containing rectifications authorized by this Authority, unless those sheets were superseded or cancelled, and any accompanying letters (see Rules 46.5, 66.8, 70.16, 91.2, and Section 607 of the Administrative Instructions). ☐ sheets containing rectifications, where the decision was made by this Authority not to take them into account because they were not authorized by or notified to this Authority at the time when this Authority began to draw up this report, and any accompanying letters (Rules 66.4bis, 70.2(e), 70.16 and 91.2). ☐ superseded sheets and any accompanying letters, where this Authority either considers that the superseding sheets contain an amendment that goes beyond the disclosure in the international application as filed, or the superseding sheets were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in item 4 of Box No. I and the Supplemental Box (see Rule 70.16(b)). b. ☐ a separate electronic file containing a sequence listing (sent to the International Bureau only).		
4.	This report contains indications relating to the following items: ☒ Box No. I Basis of the report ☒ Box No. II Priority ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability ☐ Box No. IV Lack of unity of invention ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement ☐ Box No. VI Certain documents cited ☒ Box No. VII Certain defects in the international application ☐ Box No. VIII Certain observations on the international application		

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/BR	Authorized officer
Facsimile No.	Telephone No.

Box No. I Basis of the report

1. With regard to the **language**, this report is based on:
- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rules 12.3(a) and 23.1(b))
- ☐ publication of the international application (Rule 12.4(a))
- ☐ international preliminary examination (Rule 55.2(a) and/or 55.3(a))
2. With regard to the **elements** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages **1-18** _____ as originally filed/furnished.
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☒ the claims:
- Nos. _____ as originally filed/furnished.
- Nos.* _____ as amended (together with any statement) under Article 19
- Nos.* **1-13** _____ received by this Authority on **05.01.2024**
- ☒ the drawings:
- pages **1-19** _____ as originally filed/furnished.
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☐ a sequence listing – see Supplemental Box Relating to Sequence Listing.
3. ☒ The amendments have resulted in the cancellation of:
- ☐ the description, pages _____
- ☒ the claims, Nos. **14-17** _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since either they are considered to go beyond the disclosure as filed, or they were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in the Supplemental Box (Rule 70.2(c) and (c-bis)):
- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
5. ☐ This report has been established:
- ☐ taking into account **the rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rules 66.1(d-bis) and 70.2(e)).
- ☐ without taking into account **the rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rules 66.1bis and 70.2(e)).
6. With regard to top-up searches (Rules 66.1ter and 70.2(f)):
- ☐ A top-up search was carried out by this Authority on _____
- ☐ Additional relevant documents have been discovered during the top-up search.
- ☒ No top-up search was carried out by this Authority because it would serve no useful purpose.
7. ☐ Supplementary international search report(s) from Authority(ies) _____
- ☐ has/have been received and taken into account in establishing this report (Rule 45bis.8(b) and (c)).
- * If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/BR2022/050497

Box No. II **Priority**

1. ☐ This report has been established as if no priority had been claimed due to the failure to furnish within the prescribed time limit the requested:
- ☐ copy of the earlier application whose priority has been claimed (Rule 66.7(a)).
- ☐ translation of the earlier application whose priority has been claimed (Rule 66.7(b)).
2. ☒ This report has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rule 64.1). Thus for the purposes of this report, the international filing date indicated above is considered to be the relevant date.
3. Additional observations, if necessary:

See Supplemental Box

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/BR2022/050497

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>1-13</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-13</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-13</u>	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

The present international patent application relates to a whole cane harvester, in particular to a harvester used to cut and align whole sugar-cane stalks to be used as seedlings for planting adjacent lines of sugar-cane crops. The present invention further relates to devices incorporated in the cutting and aligning equipment, to increase the flexibility, sensitivity and responsiveness of use.

Reference is made to the following document:

D1: BR 102020026440 A2 (MARCHESAN IMPLEMENTOS E MAQU AGRICOLAS TATU S/A [BR]) 05 July 2022 (2022-07-05)

Novelty

The subject matter defined in claims 1-13 is considered novel and complies with PCT Article 33(2) because the cited prior art documents do not disclose the invention.

Inventive step

In relation to claim 1, document D1 (BR 102020026440 A2)

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teaches a device (2) (D1: paragraph [0039]; figure 1A) for adjusting a lateral conveyor belt for a whole cane harvester, carrying a fastening support (no reference sign) (D1: structure located above the device (2); figures 1A, 2 and 3) designed to be attached to the pair of lateral conveyor belts (21) (D1: paragraph [0039]; figures 5, 6) of the harvester, the device (2) comprising a rail (211) associated with the fastening support (no reference sign) (D1: structure located above the device (2); paragraph [0039]; figures 1A, 2 and 3) and with a structural portion (no reference sign) (D1: structure that carries the fastening support (no reference sign); figures 1A, 2 and 3) of one of the lateral conveyor belts (21) (D1: paragraph [0039]; figures 5, 6).

Document D1 does not teach or obviously suggest, in relation to claim 1, tightening or loosening the rail (211) to move a lateral conveyor belt (2B) in relation to another lateral conveyor belt (2A). In other words, the use of rails that allow moving one lateral conveyor belt in relation to the other is not found in D1.

The subject matter of claim 1 therefore involves an inventive step and thus complies with PCT Article 33(3).

In relation to claim 2, document D1 (BR 102020026440 A2) teaches a lateral belt adjusting device (2) (D1: paragraph [0039]; figure 1A) for a whole cane harvester according to claim 1.

Document D1 does not teach or obviously suggest, in relation to claim 2, that the fastening support (20)

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comprises a base portion (21) provided with a base portion (210) in which at least one elongated hole (213) is located for receiving fastening components (20D), as well as a projection (212) for receiving the rail (211).

The subject matter of claim 2 therefore involves an inventive step and thus complies with PCT Article 33(3).

In relation to claim 3, document D1 (BR 102020026440 A2) teaches a lateral belt adjusting device (2) (D1: paragraph [0039]; figure 1A) for a whole cane harvester according to claim 1.

D1 does not teach or obviously suggest, in relation to claim 3, configuring the rail (211) for attachment to a projection (200B) on the structural portion (20B) of one of the lateral conveyor belts (2B).

The subject matter of claim 3 therefore involves an inventive step and thus complies with PCT Article 33(3).

In relation to claim 4, document D1 (BR 102020026440 A2) teaches a device (2) (D1: paragraph [0039]; figures 1, 3) for adjusting the inclination of rubber segments (21) (D1: paragraph [0040]; figures 5, 6) of lateral conveyor belts of whole cane harvesters, carrying a support (30) (D1: paragraph [0041]; figures 7, 8) provided with a central portion (no reference sign) (D1: paragraph [0041]; figures 7, 8) from which end portions (no reference sign) project (D1: paragraph [0041]; figures 7, 8), wherein the end portions (no reference sign) (D1: paragraph [0041]; figures 7, 8) are angled in relation to

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the central portion (no reference sign) (D1: paragraph [0041]; figures 7, 8), the first end portion (no reference sign) (D1: paragraph [0041]; figures 7, 8) comprising a plurality of holes (31) (D1: paragraph [0041]; figures 7, 8) designed for receiving a first fastening component (no reference sign) (D1: paragraph [0041]), and the second end portion (no reference sign) (D1: paragraph [0041]; figures 7, 8) comprising an elongated hole (32) (D1: paragraph [0041]; figures 7, 8) for receiving a second fastening component (no reference sign) (D1: paragraph [0041]).

Document D1 does not teach or obviously suggest, in relation to claim 4, a projection (34) extending parallel to the support (30) and configured for fastening to a structure of the lateral conveyor belt.

The subject matter of claim 4 therefore involves an inventive step and thus complies with PCT Article 33(3).

In relation to claim 5, document D1 (BR 102020026440 A2) teaches a device (2) (D1: paragraph [0039]; figures 1, 3) for regulating the inclination of rubber segments (21) (D1: paragraph [0040]; figures 5, 6) of lateral conveyor belts of a whole cane harvester according to claim 4.

D1 does not teach or obviously suggest, in relation to claim 5, a support structure (35) provided with an angled portion (350) forming a substantially S-shaped profile of the support structure (35).

The subject matter of claim 5 therefore involves an inventive step and thus complies with PCT Article 33(3).

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In relation to claim 6, document D1 (BR 102020026440 A2) teaches a device (4) (D1: paragraph [0043]; figures 5, 7, 8) for adjusting gears of conveyor belts of whole cane harvesters. Document D1 does not teach or obviously suggest, in relation to claim 6, a base (41) provided with at least one elongated hole (410) designed for receiving an upper support (42) and a lower support (43), the lower support being designed for linking to a gear (44), the base (41) comprising a projection (411) designed for receiving a rail (40B), the upper support (42) comprising an adjustment portion (421) designed for linking to the rail (40B). Document D1 does not disclose a lower support for linking to a gear, nor does it disclose that the lower support is linked to the upper support for adjusting the position of the gear. The description and drawings of D1 do not show in detail how the gear position is specifically adjusted. Document D1 does not disclose in detail the lower portion of the adjustment assembly and hence does not detail the mechanisms necessary for efficiently adjusting the horizontal position of the gear in relation to the rest of the assembly.

The subject matter of claim 6 therefore involves an inventive step and thus complies with PCT Article 33(3).

In relation to claim 7, document D1 (BR 102020026440 A2) teaches a device (4) (D1: paragraph [0043]; figures 5, 7, 8) for adjusting gears of conveyor belts of whole cane harvesters.

Document D1 does not teach or obviously suggest, in relation to claim 7, a structural portion (46) provided

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with elongated holes (461) designed for linking to a fastening portion (412) of the base (41), the fastening portion (412) being provided with holes (413) for fastening to the elongated holes (461) 25 of the horizontal portion (46).

The subject matter of claim 7 therefore involves an inventive step and thus complies with PCT Article 33(3).

In relation to claim 8, document D1 (BR 102020026440 A2) teaches a lifting device (5) (D1: paragraph [0045]; figures 10, 11, 12, 13) for whole cane harvesters.

Document D1 does not teach or obviously suggest, in relation to claim 8:

- a slide guide (51);
- a lifting structure (52) designed for selectively moving inside the slide guide (51);
- an actuator (53) associated with the lifting structure (52); and
- a support structure (54) fastened to the lifting guide (52) and linked to the actuator (53);

wherein the lifting structure (52) comprises lateral rolling portions (521), each comprising a case (521A) housing wheels (521B) arranged both in parallel and perpendicularly to the lifting guide (51).

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Document D1 does not disclose the arrangement of the lateral rolling portions, that is to say, it does not disclose how the lifting device is laterally rolled. In addition, a person skilled in the art seeking to achieve efficient lifting using the device of D1 would not be prompted to use wheels arranged perpendicularly to the lifting guide, since D1 does not disclose or show this configuration.

The subject matter of claim 8 therefore involves an inventive step and thus complies with PCT Article 33(3).

In relation to claim 9, document D1 (BR 102020026440 A2) teaches a lifting device (5) (D1: paragraph [0045]; figures 10, 11, 12, 13) for whole cane harvesters.

D1 does not teach or obviously suggest, in relation to claim 9, a slide guide (51) comprising a pair of columns (510) joined by an intermediate structure (510), each column (510) having a substantially S-shaped profile that forms in each column (510) a recess (512), inside which the lifting structure (52) moves.

The subject matter of claim 9 therefore involves an inventive step and thus complies with PCT Article 33(3).

In relation to claim 10, document D1 (BR 102020026440 A2) teaches a lifting device (5) (D1: paragraph [0045]; figures 10, 11, 12, 13) for whole cane harvesters.

Document D1 does not teach or obviously suggest, in relation to claim 10, that the lifting structure (54)

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comprises two transversal plates (541) fastened to the lifting guide (51) and two perpendicular plates (542) linked to the transversal plates (541).

The subject matter of claim 10 therefore involves an inventive step and thus complies with PCT Article 33(3).

In relation to claim 11, document D1 (BR 102020026440 A2) teaches a topping device (5) (D1: paragraph [0048], figures 1-3) with cut material direction adjustment for whole cane harvesters, carrying a body (no reference sign) (D1: visible in figures 1-3) linked to a wall (72) (D1: paragraph [0049], figures 1-3) provided with end portions (no reference sign) (D1: visible in figures 1-3), each end portion (no reference sign) (D1: visible in figures 1-3) containing a deflection plate (73) (D1: paragraph [0049], figures 2-3) with selective freedom of movement inside the corresponding end portion thereof (no reference sign) (D1: visible in figures 1-3).

Document D1 does not teach or obviously suggest, in relation to claim 11, that the wall (63) comprises a static cutting component (65), and that the body (60) is provided with projections (61) that support the cutting components (62), the body (60) being linked to a wall (63) formed by a hollow profile or by a series of hollow profiles that form two concave end portions (64) designed for partially accommodating the cutting components (62) in the vicinity of the end portions (64). Document D1 does not clearly disclose a static cutting component, nor does it describe in detail how the cutting components of the topping device are supported on the assembly. A

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person skilled in the art aware of D1 would not derive from this document the presence of a static cutting component, nor the specific way of fastening the cutting components to the body of the device, as proposed and claimed in the present application. Consequently, a person skilled in the art would not achieve cutting efficiency by using a static cutting component together with rotary cutting components, nor would he identify any details on how to fasten the rotary cutting components to the body of the topping device.

The subject matter of claim 11 therefore involves an inventive step and thus complies with PCT Article 33(3).

In relation to claim 12, document D1 (BR 102020026440 A2) teaches a topping device (5) (D1: paragraph [0048]; figures 1-3) with cut material direction adjustment for whole cane harvesters.

D1 does not teach or obviously suggest, in relation to claim 12, that the deflection plate (66) comprises at least one elongated hole (660) corresponding to the at least one hole (640) in the corresponding end portion (64), the elongated hole (660) and the hole (640) being designed for receiving a fastening component.

The subject matter of claim 12 therefore involves an inventive step and thus complies with PCT Article 33(3).

In relation to claim 13, document D1 (BR 102020026440 A2) teaches a whole cane harvester (1) (D1: paragraph [0038]; figures 1-3).

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Document D1 does not teach or obviously suggest, in relation to claim 13:

- a device (2) for adjusting a lateral conveyor belt, as defined in any of the claims 1-3;
- a device (3) for adjusting the inclination of rubber segments, as defined in any of the claims 4-5;
- a device (4) for adjusting the height of gears of lateral and/or front conveyor belts, as defined in any of the claims 6-7;
- a lifting device (5) for a harvester (1), as defined in any of the claims 8-10; and
- a topping device (6) with an adjustable direction, as defined in any of the claims 11-12.

The subject matter of claim 13 therefore involves an inventive step and thus complies with PCT Article 33(3).

Industrial applicability

The subject matter of claims 1-13 is considered industrially applicable and therefore complies with PCT Article 33(4).

Box No. VII **Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:

Pursuant to PCT Rule 10.2, the terminology and the reference signs should be the same throughout the international application. This requirement is not met in this international patent application because reference sign (21) is used to designate "a base portion" and "rubber segments" in the description, the claims and the drawings.

Pursuant to PCT Rule 10.2, the terminology and the reference signs should be the same throughout the international application. This requirement is not met in this international patent application because reference sign (510) is used to designate "an intermediate structure" and "columns" in the description and the claims.

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: BOX II

Pursuant to PCT Article 8(2)(a), the conditions for any priority claim are as provided in Article 4 of the Stockholm Act of the Paris Convention, which establishes that a subsequent application for the same subject matter as a first prior application can only be regarded as a first application if the prior application had not yet served as a basis for claiming the right of priority. In the case of the present application, the priority application, BR102021025427-0, filed on 16.12.2021, claims the priority of a prior application, BR102020026440-0, filed on 22.12.2020, and therefore the claimed priority cannot be considered valid for the subject matter of BR102020026440-0 described hereinafter.

1. A device (2) for adjusting the lateral conveyor belt of a whole cane harvester, characterised in that it comprises means (20) for adjusting the opening between at least one pair of lateral conveyor belts (21).

2. A device (3) for adjusting the inclination of rubber segments of lateral conveyor belts (21) of a whole cane harvester, characterised in that it comprises means (30) for adjusting the inclination of at least one section of the lateral conveyor belt (21).

3. A device (4) for adjusting the height of gears of a whole cane harvester, characterised in that it comprises means (40) for adjusting the height of a gear (41) of the harvester.

Supplemental Box

4. A lifting device (5) for a whole cane harvester, characterised in that it comprises means (50) for lifting at least part of the harvester.

5. A basic cutting tower (6) for a whole cane harvester, characterised in that it comprises a lifting device (5) as defined in claim 4.

6. A topping device (7) for a whole cane harvester, characterised in that it comprises means (70) for adjusting the angle of at least one cutting component (71).

7. A whole cane harvester (1) characterised in that it comprises at least one of the following:

- a device (2) for adjusting a lateral conveyor belt, as defined in claim 1;
- a device (3) for adjusting the inclination of rubber segments, as defined in claim 2;
- a device (4) for adjusting the height of gears of lateral and front conveyor belts, as defined in claim 3;
- a lifting device (5) for the harvester (1), as defined in claim 4;
- a basic cutting tower (6) with height and direction adjustment by pulleys, as defined in claim 5;
- a topping device (7) with direction adjustment, as defined in claim 6.