(19) Europäisches Patentamt
European Patent Office
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(11) **EP 4 474 059 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
11.12.2024 Bulletin 2024/50

(21) Application number: **24179755.4**

(22) Date of filing: **04.06.2024**

(51) International Patent Classification (IPC):
B02C 18/22 *(2006.01)* ***B02C 23/02*** *(2006.01)*

(52) Cooperative Patent Classification (CPC):
B02C 18/22; B02C 18/2291; B02C 23/02;
B02C 2201/066; B27L 11/00

(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 ME MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
GE KH MA MD TN

(30) Priority: **09.06.2023 SK 500392023**

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(54) **CHIPPER LOADING MECHANISM AND CHIPPER**

(57) The loading mechanism of the chipper is formed by the short hopper and the tipping loading plate clamped against the inlet portion of the short hopper, wherein the free edge (1) of the tipping loading plate (2) has a clamping mechanism (3) which is clampable to the upper part of the tilting handle (4) of frame (6), which is the working position, or to the upper part of the hopper (5), which is the transporting position. The clamping point of the free edge (1) of the tipping loading plate (2) against the upper part of the tilting handle (4) of frame (6) is located lower than the clamping point of the tipping loading plate (2) against the short hopper (5).

The chipper is formed by the frame, the motor, the rotor cutting mechanism and the chip exhaust comprising the loading mechanism comprising the tilting handle (4) of frame (6) and the tipping loading plate (2) with the clamping mechanism (3).

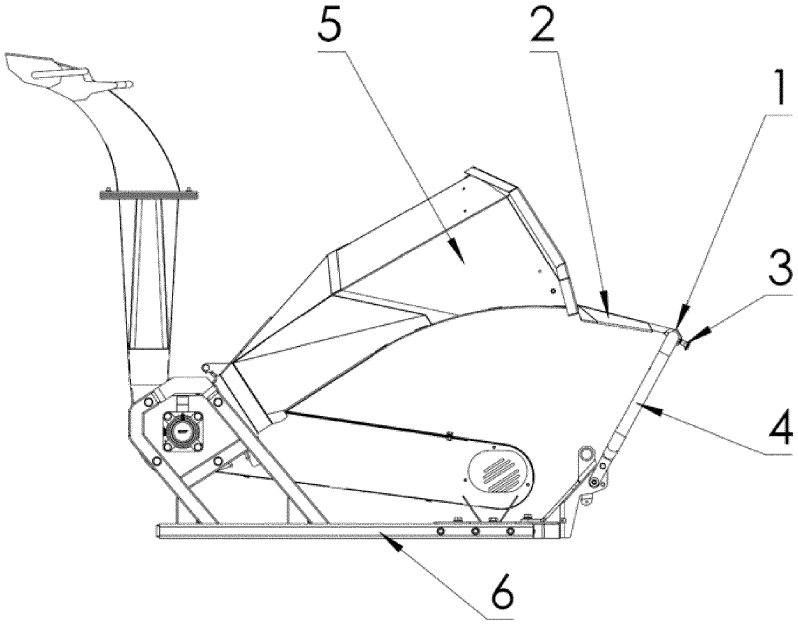

Fig. 3

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Description

Technical field

[0001] The invention relates to construction of the chipper loading mechanism and to chipper itself with the loading mechanism as a mobile device intended for crushing, chipping of wood, in particular garden, forest and park waste. The invention belongs to the field of wood processing machines intended in particular for gardeners, arborists and landscape architects.

Background

[0002] In the state of the art, known shredder/chippers are designed and constructed so as to ensure the safety of the operator. For this purpose, chippers having the long hopper are known. Such solution has the disadvantage that the whole chipper is bulkier and so may not fit into a standard transport vehicle without having to remove the hopper. Another disadvantage is that the operator has to saw and prepare the branches so that they are sufficiently slender and long that the branches are able to enter the knife opening, and also so that the chipper is able to use the knives to pull the branches into the hopper without the branches being further caught on the edges of the hopper. Also, due to the long and heavy hopper, large tensions are generated at the point of attachment of the hopper to the rotor housing. Another significant disadvantage is that with a long hopper the loading height of the branches is high and therefore the ergonomics as well as the stability of the machine is much worse. The operator has to lift the heavy branches higher and gets tired faster.

[0003] Chippers that have the short hopper with the tipping protection plate clamped on the hopper also have the disadvantage of generating high stresses at the point of clamping the hopper to the rotor housing. Also, the loading height of the hopper is high and therefore the ergonomics for the operator is worse and also the stability of the machine.

[0004] Chippers that have the short hopper with the frame structure attached to the frame of the chipper have the disadvantage that there is a free space between the frame construction and the hopper, where branches can get stuck, and also through this space a green waste in the form of dust, bark, leaves, etc. falls into the space where the air suction for the motor is located.

[0005] For the above mentioned reasons, the opportunity arose to design such construction of the loading mechanism of the chipper and the chipper itself which would ensure the safety of the operator, reduce the tension on the rotor housing, ensure the stability of the entire chipper and at the same time improve the ergonomics, which resulted in construction of the loading mechanism of the chipper and the chipper itself with the included loading mechanism according to the invention.

Summary of the invention

[0006] The above mentioned deficiencies of the chippers are eliminated by the construction of the loading mechanism of the chipper and the chipper itself comprising the loading mechanism according to the invention. Substance of the construction of the loading mechanism of the chipper is that it comprises a short hopper and a tilting loading plate clamped against the inlet part of the short hopper, wherein the free edge of the tilting loading plate has a clamping mechanism which is clampable to the upper part of the tilting handle of the chipper or to the upper part of the hopper. The clamping point of the free edge of the tipping loading plate against the top of the hinged frame handle is located lower than the clamping point of the tipping loading plate against the short hopper. The tipping loading plate has its transport position in the state of tipping into the hopper and being secured at the top of the hopper by the clamping mechanism. The tipping loading plate has its working position in the state of being tipped out of the hopper, when it is tipped out, placed on the handle and secured by the clamping mechanism against the upper part of the tilting handle of the frame.

[0007] Substance of construction of the chipper itself is that it comprises the loading mechanism described above. The motor is mounted on the frame by means of the base plate with drive for motor. The rotor housing with exhaust of chip and wood waste hopper is mounted on the frame. The chipper also comprises the tilting handle on the frame, which performs both the function of stabilising the hopper in the processing process and the function for better handling of the machine, and the tipping loading plate with the clamping mechanism. Construction of the clamping mechanisms is well known to one skilled in the art, e.g. the use of the locking ball pin is possible.

[0008] The advantages of the construction of the loading mechanism of the chipper and of the chipper itself comprising the loading mechanism according to the invention are apparent from its effects, which are indicated externally. The effects are that the manufacturer, in order to satisfy a larger group of clients in terms of safety and ergonomics of work, offers a design of the loading mechanism which distributes the tension generated by the laying of the heavy wood mass on the loading plate, on the handle anchored in the frame and on the point of clamping of the hopper to the rotor housing. This makes the operator's job safer because it reduces the risk of the hopper welds breaking/cracking at the clamping point on the rotor housing, and simultaneously improves machine stability by keeping the machine's centre of gravity lower. This also makes the operator's work less stressful because the clamping point of the free edge of the tipping loading plate against the upper part of the tilting frame handle is located lower than the clamping point of the tipping loading plate against the short hopper.

Overview of figures on the drawings

[0009] The loading mechanism of the chipper and the chipper itself comprising the loading mechanism according to the invention will be further explained in the drawings, wherein Fig. 1 shows the chipper with the loading mechanism in the working position in axonometric view. In Fig. 2, the chipper with the loading mechanism in the transport position is shown in axonometric view. In Fig. 3, the side view shows the chipper loading mechanism in the working position. In Fig. 4, the loading mechanism of the chipper in the working position is shown in axonometric view. Fig. 5 shows, in the side view, the loading mechanism of the chipper in the transport position.

Examples of embodiment of the invention

[0010] It is understood that the individual embodiments of the invention are presented for illustration and not as limitations of the solutions.

Example 1

[0011] In this example of the specific embodiment, the construction of the chipper loading mechanism according to the invention is described as illustrated in Figs. 1, 3 and 4 for arrangement in a working position. The chipper loading mechanism comprises the short hopper 5 and the tipping loading plate 2 clamped against the inlet part of the short hopper 5, wherein the free edge 1 of the tipping loading plate 2 has the clamping mechanism 3 which is clampable to the upper part of the tilting handle 4 of the frame 6 of the chipper or to the upper edge of the inlet opening of the hopper 5. The clamping point of the free edge 1 of the tipping loading plate 2 against the upper part of the tilting handle 4 of the chipper frame 6 is located lower than the clamping point of the tipping loading plate 2 against the short hopper 5. The loading mechanism of the chipper, wherein the tipping loading plate 2 in its transport position is tipped into the hopper and secured by the clamping mechanism 3 to the upper edge of the inlet opening of the hopper 5, is illustrated in Figure 5.

Example 2

[0012] In this example of the specific embodiment, construction of the chipper itself is described with the included loading mechanism according to the invention in the working position as illustrated in Fig. 1 and in the transport position as illustrated in Fig. 2. The chipper comprising the loading mechanism as described in Example 1 further comprising the motor 7 mounted on the base plate with rotor drive, the rotor housing 8 having the chip exhaust 9 and hopper 5 for loading the wood mass to be chipped.

Industrial applicability

[0013] The loading mechanism of the chipper and the chipper itself with the included loading mechanism according to the invention is usable wherever wood or green waste suitable for such processing arises, in particular in gardens, parks, orchards, golf courses but also in forests.

List of reference numbers

[0014]

1	free edge of the tipping loading plate
2	tipping loading plate
3	clamping mechanism
4	tilting handle of the chipper
5	hopper
6	frame
7	motor
8	rotor housing
9	exhaust

Claims

1. A chipper loading mechanism comprising a short hopper and a tipping loading plate attached to an inlet part of the short hopper, **characterized in that,** a free edge (1) of the tipping loading plate (2) has a clamping mechanism (3) having clamping elements in the upper part of a tilting handle (4) of the chipper and also in the upper edge of the inlet opening of the hopper (5).

2. The chipper loading mechanism according to claim 1, **characterized in that** the clamping point of the free edge (1) of the tipping loading plate (2) against the upper part of the tilting handle (4) of frame of the chipper is located lower than the clamping point of the tipping loading plate (2) against the short hopper (5).

3. The chipper with frame, motor, rotor cutting mechanism and chip exhaust comprising a loading mechanism according to any one of the previous claims, **characterized in that,** it has the tilting handle (4) of the chipper and the tilting loading plate (2) with clamping mechanism (3).

4. The Chipper according to claim 3, **characterized in that,** the clamping mechanism (3) comprises the locking ball pin.

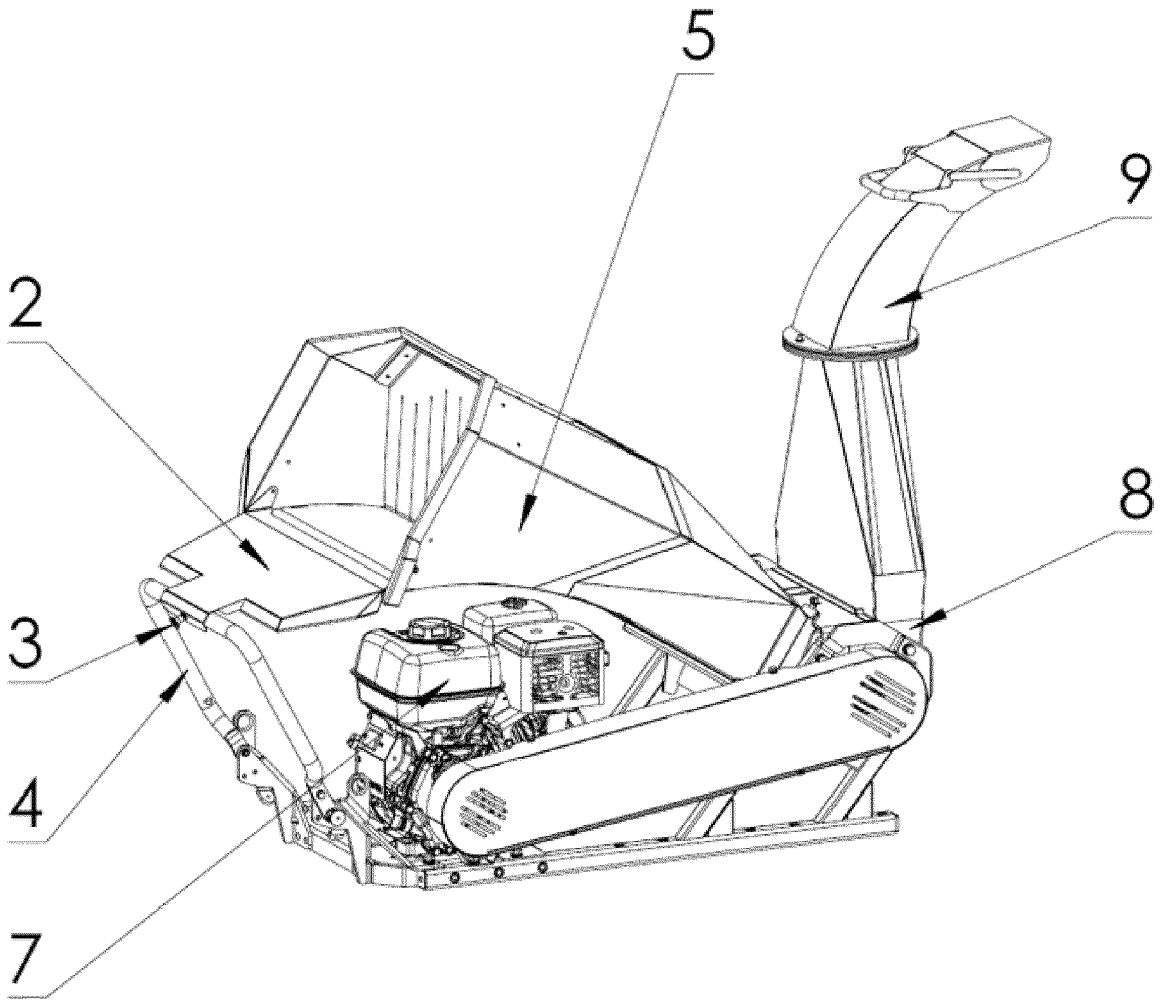

Fig. 1

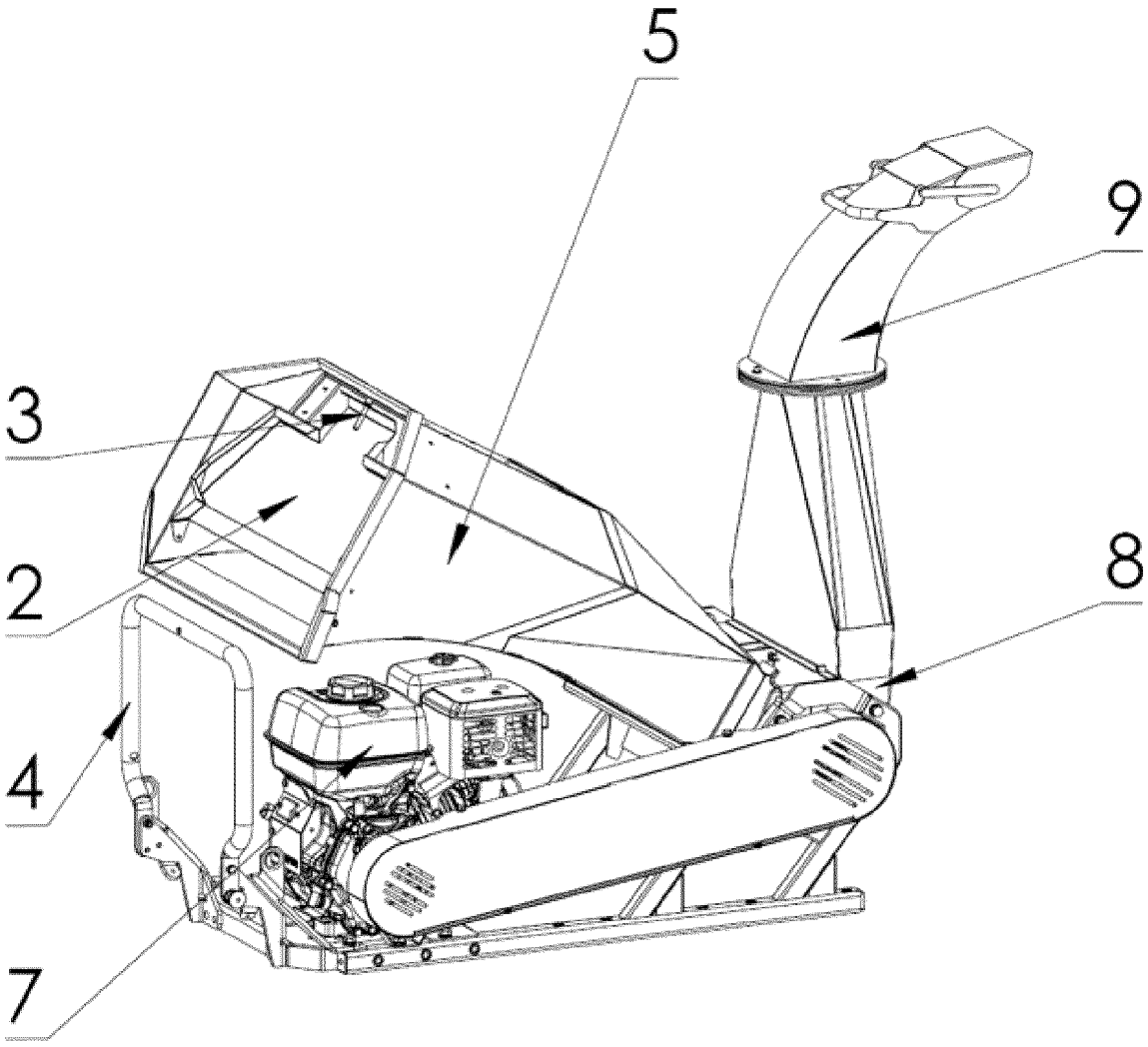

Fig. 2

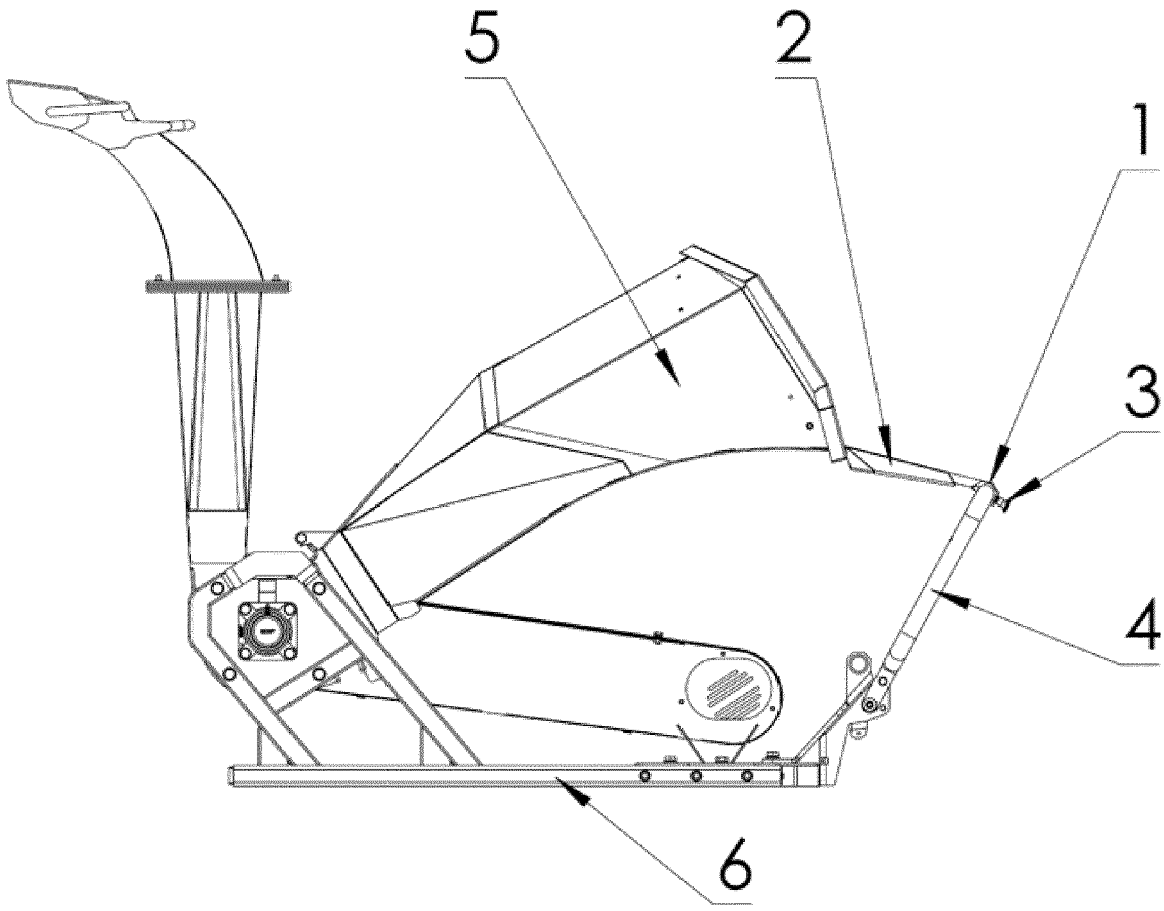

Fig. 3

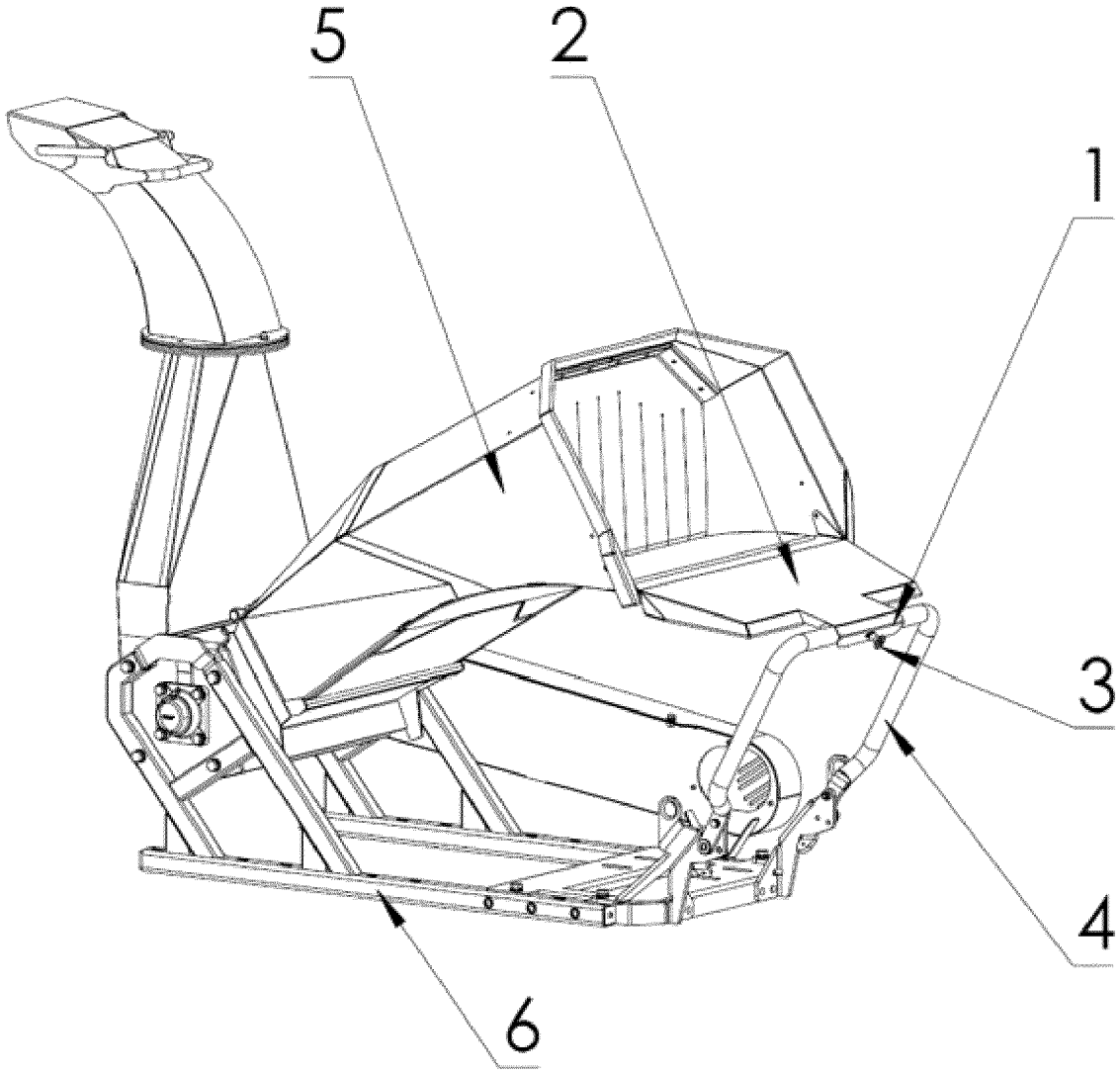

Fig. 4

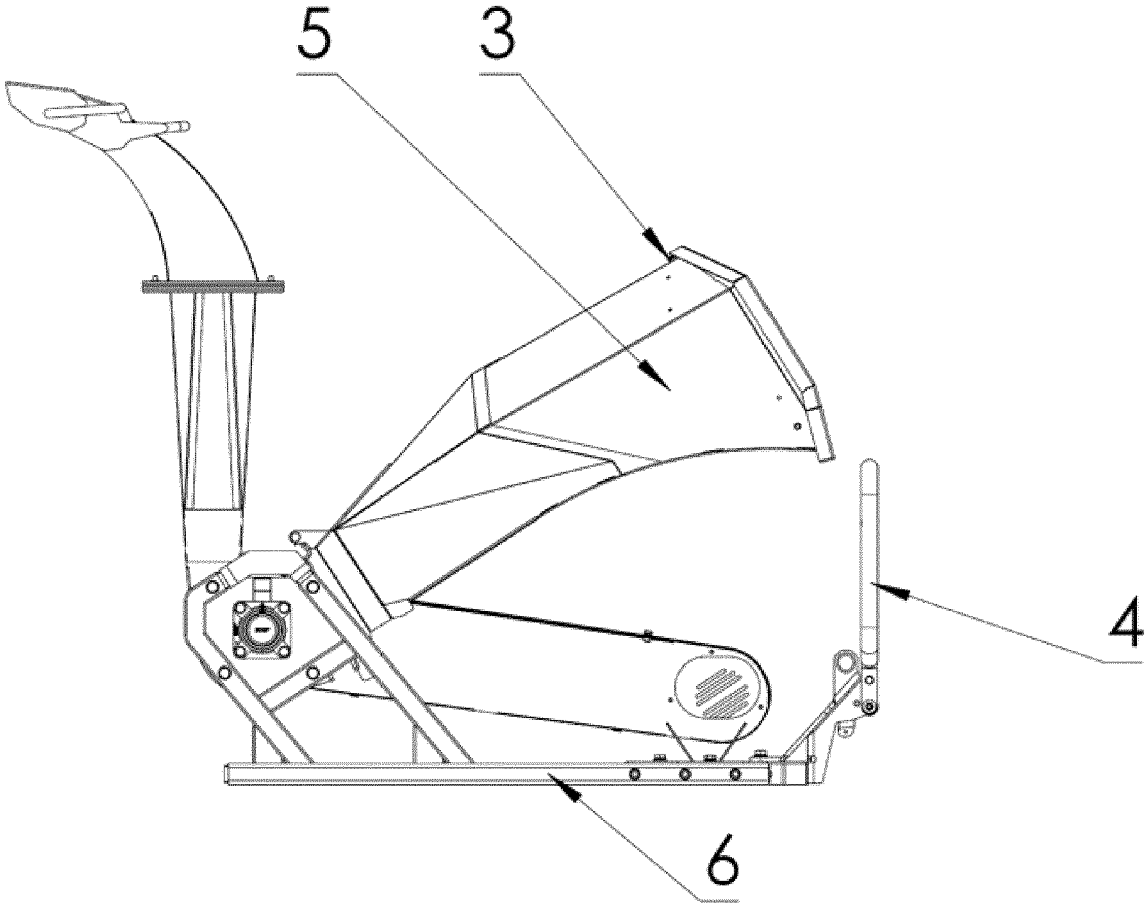

Fig. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 24 17 9755

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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A	CN 107 020 183 A (UNIV GANSU AGRICULTURAL) 8 August 2017 (2017-08-08) * the whole document *	1-4	
A	CN 214 132 123 U (HU ZHENDUO) 7 September 2021 (2021-09-07) * the whole document *	1-4	
A	CN 207 614 994 U (BEIJING QIANJIAN GREENING ENG CO LTD) 17 July 2018 (2018-07-17) * the whole document *	1-4	TECHNICAL FIELDS SEARCHED (IPC)
A	CN 209 379 170 U (HENAN RUYILIN GARDEN MACHINERY CO LTD) 13 September 2019 (2019-09-13) * the whole document *	1-4	A01G A01F B02C B27L

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	7 August 2024	Jovanovic, Mihajlo

CATEGORY OF CITED DOCUMENTS

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EPO FORM 1503 03.82 (P04C01)

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