(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 474 057 A1**

(12) **EUROPEAN PATENT APPLICATION**

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

(21) Application number: **24179753.9**

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

(51) International Patent Classification (IPC):
B02C 18/14 *(2006.01)* ***B02C 18/16*** *(2006.01)*

(52) Cooperative Patent Classification (CPC):
B02C 18/16; B02C 18/14; B02C 2018/162; B02C 2201/066

(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 500382023**

(71) Applicant: **Techwerk s. r. o.**
851 01 Bratislava (SK)

(72) Inventor: **Lindner, Jakub**
Prellenkirchen (AT)

(74) Representative: **Cechvalova, Dagmar**
inventa
Patent & Trademark Agency
Palisady 50
811 06 Bratislava (SK)

(54) **MODULAR CHIPPER FRAME AND CHIPPER**

(57) The modular frame of the chipper is mountable, comprising two side beams (1) which are separable connected with the rotor housing (2) at first location by mounting elements (10) and at the second location the side beams (1) are separable connected with the base plate (3) for anchoring the motor (4) by mounting elements (10). Each side beam (1) is preferably formed by the longitudinal profile (11) on which two inclined arms (12) for attaching the rotor housing (2) are fixed, which are equipped with the separable closure (13) at the top.

The chipper comprises the modular frame and consists of the motor (4) mounted on the base plate (3) with the rotor drive (8), the rotor housing (2) with the discharge spout (14) and hopper (5) and the handle (6). The rotor housing (2) comprises the cutting device with at least two chopping knives (7) mounted on the rotor (8) and the fixed knife (9) mounted on the rotor housing (2). The rotor housing (2) and the base plate (3) for anchoring the motor (4) have a variable working width.

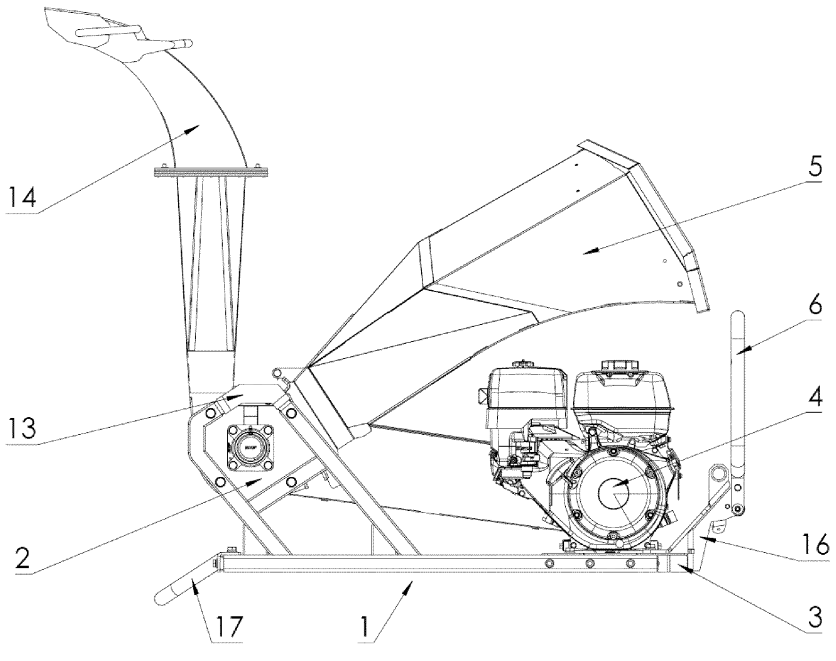

Fig. 5

EP 4 474 057 A1

Description

Technical field

[0001] The invention relates to construction of the modular frame of chipper and the chipper comprising the modular frame as a mobile device for shredding, chipping of woody mainly garden, forest and park waste. The invention belongs to the field of wood processing machinery, in particular for gardeners, arborists and landscape architects.

Background

[0002] Crushers/chippers known in the state of the art are designed and constructed for a single size of cutting device, wherein the cutting device housing is part of the welded construction of the entire frame of the chipper together with the motor holder. Manufacturers of such chippers include, for example, company JO BEAU or greenMech. This type of device is thus designed for a specific group of customers. The representative of chipper with a fixed welded frame is, for example, the chipper described in document US 5680998 A, where the chipping mechanism directly connected with the motor is mounted on the fixed welded frame of trailer. The disadvantage of these solutions is the impossibility of varying the individual essential components of the chipper, such as the chipping mechanism with different rotor lengths.

[0003] For the above mentioned reasons, the opportunity arose to design a frame for the chipper which would be modular in terms of possible type substitution as regards the working cutting width of the rotor or the replacement of worn individual components thereof, resulting in construction of the modular frame for the chipper and the chipper itself comprising the modular frame according to the invention.

Substance of the invention

[0004] The above mentioned deficiencies of the chippers are eliminated by construction of the modular frame of chipper and the chipper itself with included modular frame according to the invention. Substance of construction of the modular frame of the chipper is that it is mountable, comprising two side beams which are at first location separable connected with the rotor housing by mounting elements and at the second location the side beams are separable connected with the base plate for anchoring the motor by mounting elements. The use of mounting elements such as bolts is generally known to one skilled in this art. For safety protection of the rotor housing and the chipper discharge spout, the side beams can be connected at first face of the frame with the bumper that defines the front edge of the chipper. On the second face, the side beams are connected by the handle bracket with the handle which makes the machine more compact in the transport position and performs the safety function in the working position by moving the operator away from the cutting device and at the same time allowing better handling of the machine. For this modular chipper frame solution, it is advantageous if both the left and right side beams are formed by the longitudinal profile on which two inclined arms are fixed for attaching the rotor housing, which are equipped with the separable closure in the upper part.

[0005] Substance of the construction of the chipper itself is that it comprises the above described modular frame. The motor is mounted on the modular frame by means of the rotor-driven base plate. The rotor housing with the chip discharge spout and the hopper for wood waste is mounted on the modular frame. The chipper also has the handle, which performs the safety function of moving the operator away from the cutting device and also the function of the handle for handling the machine during repositioning. The rotor housing comprises the cutting device with at least two chopping knives mounted on the rotor and the fixed knife mounted on the rotor housing. The chipper comprising the modular frame is capable of different widths of rotor housing and base plate for anchoring the motor, i.e. it has a variable working width.

[0006] The advantages of construction of the modular frame of the chipper and of the chipper itself comprising the modular frame according to the invention are apparent from its effects, by which it is indicated externally. The effects consist in the fact that the manufacturer, in order to satisfy a larger group of clients, offers the modular frame which is adaptable to different sizes of cutting device of the chipper. Thus, it does not have to produce many different complete machines, but only a certain group of parts. The whole chipper is thus very modular and many parts, which are designed and manufactured mainly for the left and right frame, can be reused by the manufacturer in different versions of the machine. Thus, it can make the production of several types of chippers more efficient and cheaper. Another advantage for the end user of the machine is also that with this type of prefabricated frame design, if the cutting device housing or any other part of the frame is damaged, there is no need to replace the whole frame (a large, expensive, welded part), but just replace the damaged part, which significantly improves serviceability and reduces operating costs.

Overview of figures on the drawings

[0007] The modular frame of the chipper and the chipper itself incorporating the modular frame according to the invention will be further explained in the drawings, wherein:

Fig. 1 shows the rotor housing and the base plate for anchoring the motor, which connect the left and right side beams of the frame of the chipper at the mounting points.

Fig. 2 shows the rotor housing with the rotor and knives in an open side view.

Fig. 3 shows the open inclined arms of the side beam for fitting of the rotor at its mounting.

Fig. 4 shows the inclined arms of the side beam connected with the closure after the rotor has been mounted.

Fig. 5 shows the chipper assembly with the essential components to be protected.

Examples of embodiment

[0008] It is understood that the individual embodiments of the invention are presented for purposes of illustration and not as limitations of the solutions.

Example 1

[0009] In this example of the specific embodiment, the construction of the modular chipper frame according to the invention is described as illustrated in Fig. 1. The modular chipper frame is mountable. It comprises two side beams 1, which at first location are separable connected with the rotor housing 2 by mounting elements 10, and at the second location the side beams 1 are separable connected with the base plate 3 by mounting elements 10 for anchoring the motor 4. Each side beam 1 is formed, in this specific case, by the longitudinal profile 11 on which two inclined arms 12 are fixed for mounting the rotor housing 2, which are provided at the top with the separable closure 13 as shown in Fig. 4. On first face, the side beams 1 are connected by the bumper 17. On the second face, the side beams 1 are connected via brackets 16 with the handle 6.

Example 2

[0010] In this example of the specific embodiment, the construction of the chipper itself is described with the modular frame according to the invention included as illustrated in Fig. 5. A chipper comprising the modular frame as described in Example 1. The chipper further comprises the motor 4 mounted on the base plate 3 with the drive to the rotor 8, the rotor housing 2 with the chip discharge spout 14 and the hopper 5 for loading the wood mass to be chipped. It also has the handle 6. The rotor housing 2 comprises the cutting device, two chopping knives 7 of which are fixed on the rotor 8 and the fixed knife 9 is fixed against the rotor housing 2 which is covered by the lid 15 as shown in Figures 1 and 4. The chipper has a variable working width derived from the width of the rotor housing 2 and the base plate 3 for anchoring the motor 4.

Industrial applicability

[0011] The modular frame of the chipper and the chipper itself with the modular frame according to the invention can be used wherever wood or green waste suitable for such processing arises, in particular in gardens, parks, orchards, golf courses, but also in forests.

List of related marks

[0012]

1	side beam
2	rotor housing
3	base plate
4	motor
5	hopper
6	handle
7	chopping knives
8	rotor
9	fixed knife
10	mounting elements
11	longitudinal profile
12	inclined arms
13	closure
14	chip discharge spout
15	rotor housing lid
16	handle bracket
17	bumper

Claims

1. A modular chipper frame, **characterized in that,** it is mountable, comprising two side beams (1) which are separable connected with a rotor housing (2) at first location by mounting elements (10) and at the second location the side beams (1) are separable connected with a base plate (3) by mounting elements (10) for anchoring a motor (4).

2. The modular chipper frame according to claim 1, **characterized in that,** the side beams (1) are connected with a bumper 17 at a first face.

3. The modular chipper frame according to any one of the previous claims, **characterized in that,** the side beams (1) are connected with a handle (6) via brackets (16) of the handle at a second face.

4. The modular chipper frame according to any one of the previous claims, **characterized in that** each side beam (1) is formed by a longitudinal profile (11) on which two inclined arms (12), for attaching the rotor housing (2), are fixed, the said arms (12) are equipped with a separable closure (13) at the top.

5. A chipper comprising the modular frame according

to any one of the previous claims, **characterized in that,** it further comprises the motor (4), mounted on the base plate (3), with a rotor drive (8), the rotor housing (2) with an discharge spout (14), a hopper (5) and a handle (6), wherein the rotor housing (2) comprises a cutting device having at least two chopping knives (7) mounted on the rotor (8) and a fixed knife (9) which is mounted on the rotor housing (2).

6. The chipper comprising the modular frame according to claim 5, **characterized in that,** the rotor housing (2) and the base plate (3) for anchoring the motor (4) have a variable working width.

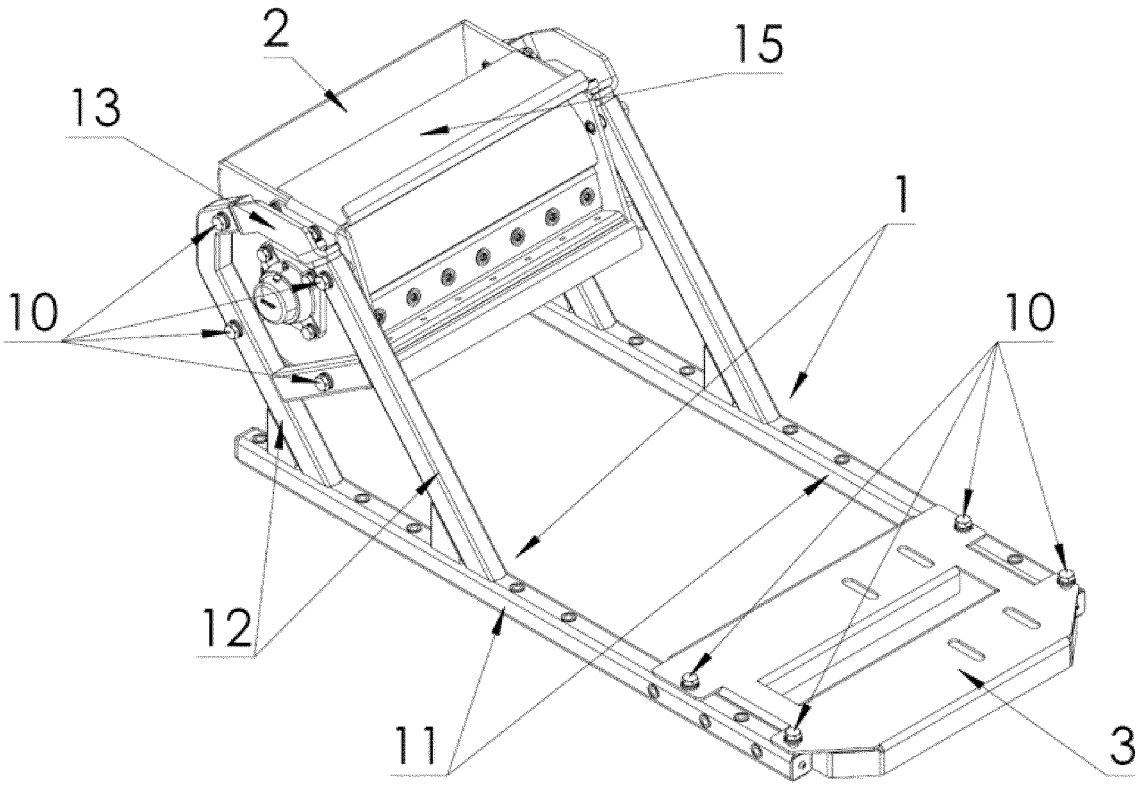

Fig. 1

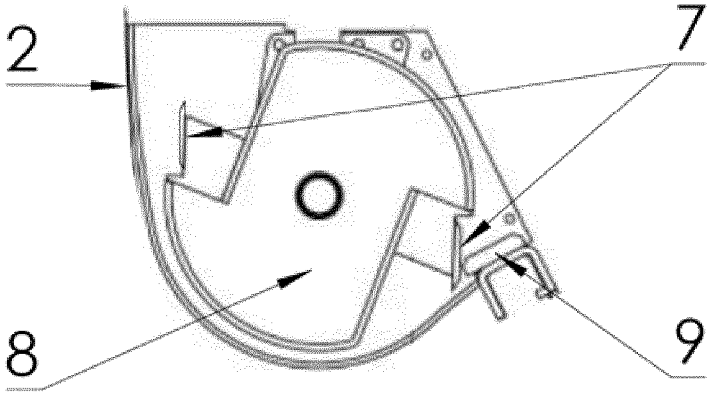

Fig. 2

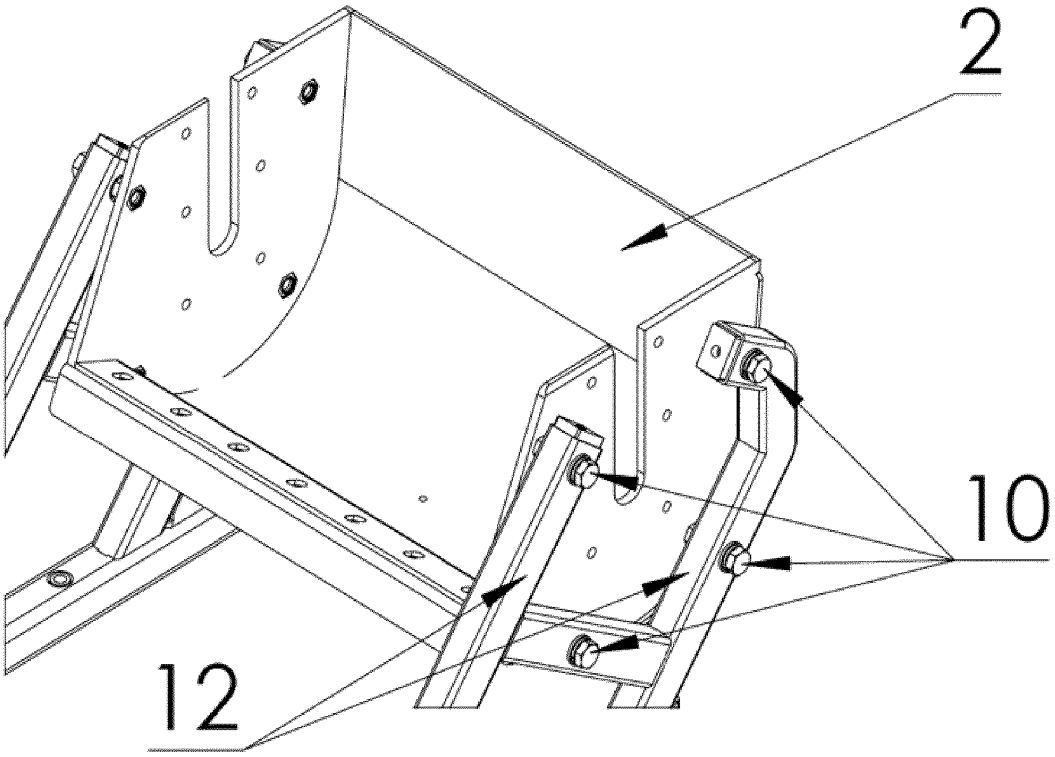

Fig. 3

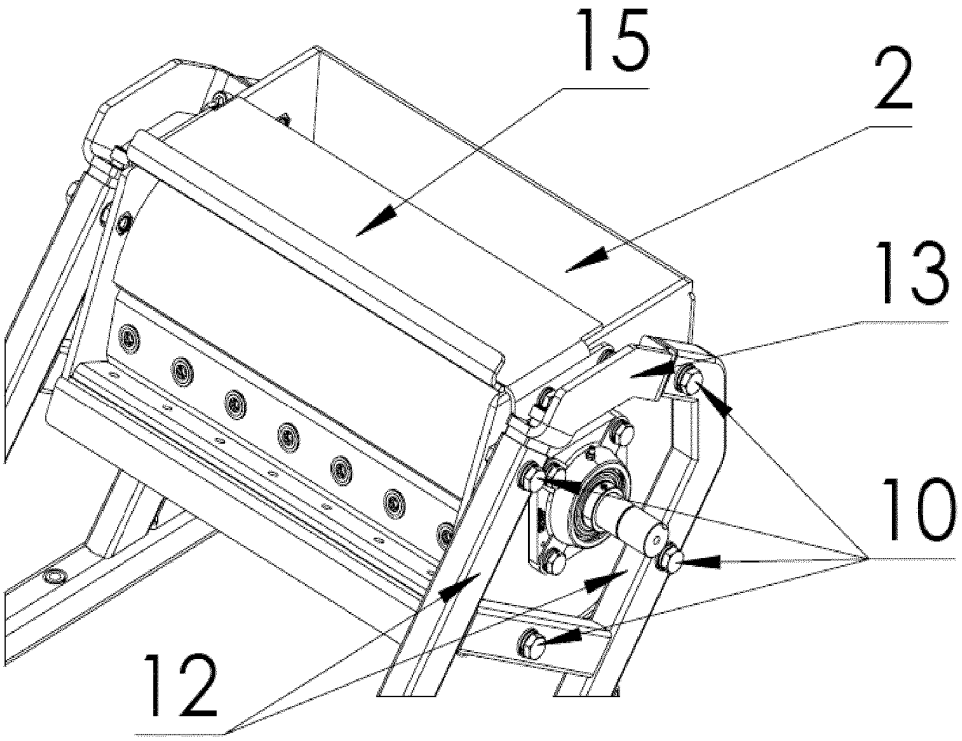

Fig. 4

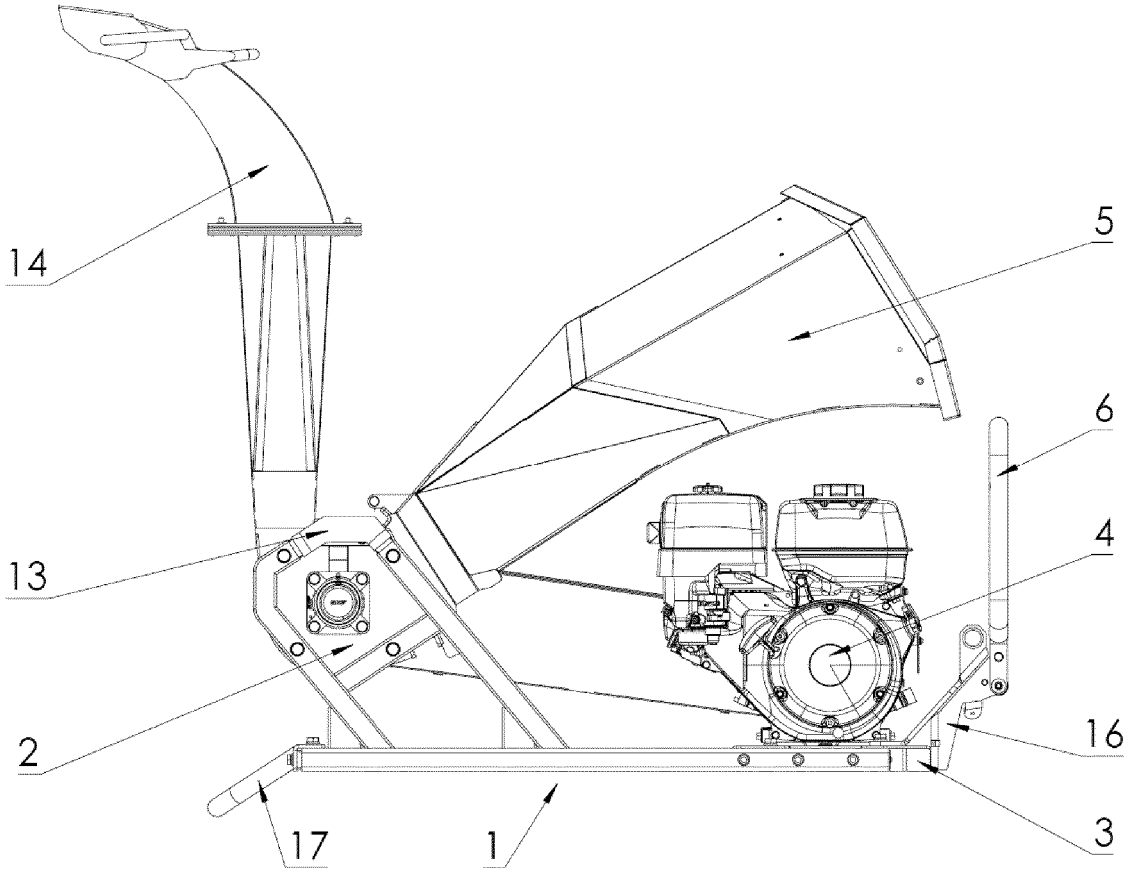

Fig. 5

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 24 17 9753

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 203 400 763 U (ZHEJIANG GREATBULL INDUSTRY & TRADE CO LTD) 22 January 2014 (2014-01-22) * figures 1-2 * * page 3 - page 4 *	1-6	INV. B02C18/14 B02C18/16
X Y A	US D 967 867 S (JIN XUANCONG [CN]) 25 October 2022 (2022-10-25) * figures 1-7 *	1-3 5,6 4	
Y A	US 5 390 865 A (VANDERMOLEN ALDO [US] ET AL) 21 February 1995 (1995-02-21) * figures 1-9 * * column 8, line 30 - line 43 *	5,6 1-4	
A	CN 109 433 356 A (FUFENG YONG HENG AGRICULTURE AND ANIMAL HUSBANDRY MACHINE MFG CO LTD) 8 March 2019 (2019-03-08) * the whole document *	1-6	
A	CN 217 594 805 U (CHEN JINHAI) 18 October 2022 (2022-10-18) * the whole document *	1-6	TECHNICAL FIELDS SEARCHED (IPC) B02C
A	CN 215 903 686 U (WEIFANG AOSITE IND AND TRADE CO LTD) 25 February 2022 (2022-02-25) * figures 1, 2 *	1-6	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	28 October 2024	Jovanovic, Mihajlo

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

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 24 17 9753

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

28-10-2024

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
CN 203400763 U	22-01-2014	NONE	
US D967867 S	25-10-2022	NONE	
US 5390865 A	21-02-1995	NONE	
CN 109433356 A	08-03-2019	NONE	
CN 217594805 U	18-10-2022	NONE	
CN 215903686 U	25-02-2022	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US 5680998 A **[0002]**