



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
06.09.2023 Bulletin 2023/36

(51) International Patent Classification (IPC):
B65F 1/14 ^(2006.01) **B66C 1/66** ^(2006.01)

(21) Application number: **22159451.8**

(52) Cooperative Patent Classification (CPC):
B65F 1/1452; B66C 1/663

(22) Date of filing: **01.03.2022**

(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

• **Chiorri, Venuse**
41740 Sevilla (ES)

(72) Inventor: **CHIORRI, Venuse**
41740 SEVILLA (ES)

(74) Representative: **Del Valle Valiente, Sonia**
C/ Miguel Angel Cantero Oliva, 5,53
28660 Boadilla del Monte-Madrid (ES)

(71) Applicants:
• **Ballester Reboloso, Fernando**
46930 Valencia (ES)

(54) **COUPLER FOR CONTAINER ANCHORS**

(57) The present invention relates to a coupler (1) for container anchors (2) comprising, at least, one tubular hauling anchor (2) provided with a fixed wing (20) and a coaxial and moveable locking bolt (21) inside the hauling anchor (2), comprising:

- a first upper fork (3)
- a second lower fork (4), and
- a zenithal foot (5);

the forks (3, 4) comprising a width equal to or greater than the width of the bolt (21) but less than the width of the head (21a) of the bolt (21) and fixed wing (20) or upper wing (21b) of the mouth of the anchor; wherein the zenithal foot (5) comprises a fastening (50) to lifting means; wherein the first fork (3) is mounted on the foot (5) through first linear movement means; and wherein the second fork (4) is mounted on the first fork (3) through second linear movement means.

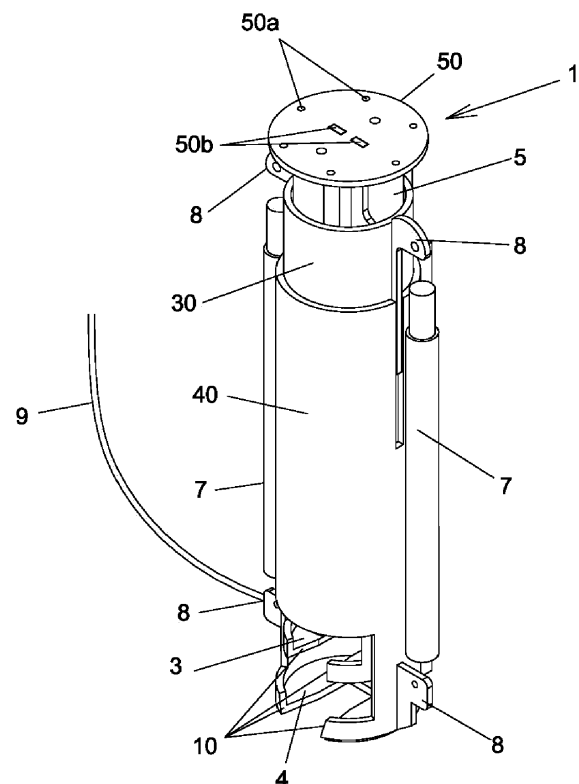


Fig 1

Description**OBJECT OF THE INVENTION**

[0001] The present invention relates to a coupler for container anchors, which can be used for hauling containers of the urban type comprising emptying hatches with hauling anchors provided with coaxial bolts for locking said hatches.

BACKGROUND OF THE INVENTION

[0002] Currently, urban waste management requires municipalities to install various containers for depositing legally established fractions separately. An allocation of trucks for emptying these containers is implemented near this urban collection system, for transporting the waste to management plants or landfills.

[0003] The increasing implementation of this type of container requires streamlined means for unloading the same onto trucks. For this reason, a type of container comprising tubular hauling anchors (at least one), provided with a fixed wing and a coaxial and moveable locking bolt, inside the hauling anchor, is widely used. With this configuration, there are two types that are widely used:

- in one of them the hatch is opened by upper pulling of the bolt. For this, said bolt comprises a widened head to be able to pull the same, also comprising a lower fixed wing, to be able to lift the container over the truck by means of a clamp, and once in this position, pull the bolt to open the unloading thereof.
- in the other type, the hatch opens by the effect of gravity, and therefore when the container is lifted, the bolt must be locked (kept in the closed position thereof by pushing it) until the container is positioned over the truck, since otherwise the unloading would open by the effect of gravity and the waste would fall outside the truck. Likewise, in this case, the hauling anchor has a fixed wing, for hauling by means of a jib crane clamp, and said hauling anchor also comprises an upper wing at the mouth thereof.

[0004] The problem in both cases is that lifting by means of a clamp can be dangerous in the event of a hydraulic failure, possibly causing hundreds of kilos to fall in some cases, which at best can cause material damage and in other cases personal misfortune.

DESCRIPTION OF THE INVENTION

[0005] The coupler for container anchors of the invention can be used for hauling containers comprising, at least, one tubular hauling anchor provided with, at least, one fixed wing and a coaxial and moveable locking bolt, inside the hauling anchor, and which according to the invention comprises:

- a first upper fork
- a second lower fork, and
- a zenithal foot;

the forks comprising a width equal to or greater than the width (diameter) of the bolt (or of the tubular anchor, where appropriate, in order to be able to cover them externally) but less than the width of the head of the bolt and of the fixed wing, in the case of anchors where the opening is caused by pulling, specifically to be able to carry out said pulling, or of the upper wing of the mouth of the anchor, in the case where the opening is caused by the effect of gravity so as to have a support on said wing in order to maintain the position of the bolt in cases where the opening is caused by the effect of gravity; and wherein the zenithal foot comprises an attachment to lifting means (typically to the jib crane of the truck), wherein the first fork is mounted on the foot through first linear movement means, and wherein the second fork is mounted on the first fork through second linear movement means.

[0006] In this way, a first advantageous effect is caused, consisting of the fact that the anchor will always be held by support, not by clamping, on one of the wings thereof through one of the forks of the coupler, so that in case of hydraulic failure, the anchor's bearing function will not fail in any case, with the additional advantage that the configuration of the coupler enables it to operate indistinctly with the two anchor modes: pulling and gravity.

DESCRIPTION OF THE DRAWINGS**[0007]**

Figure 1 shows an overall view of the coupler of the invention.

Figure 2 shows an exploded view of the coupler of the invention.

Figures 3a to 3d show an operating sequence of the coupler of the invention for a variant of container anchors wherein the hatch is opened by upper pulling of the bolt through the widened head thereof, and wherein it can be seen that the anchor also comprises a lower fixed wing, to be able to lift the container over the truck, and once in this position, pull the bolt to open the unloading thereof.

Figures 4a to 4d show an operating sequence of the coupler of the invention for another variant of container anchors wherein the hatch is opened by the effect of gravity, and therefore when the container is lifted, the bolt must be locked until the container is positioned over the truck, since otherwise the unloading opens by the effect of gravity and the waste would fall outside the truck, and wherein the anchor comprises a fixed wing, and an upper wing at the mouth thereof (through which the bolt appears or comes out).

PREFERRED EMBODIMENT OF THE INVENTION

[0008] Starting with Figures 1 and 2, it can be seen how the coupler (1) for container anchors (2) of the invention can be used for hauling containers comprising, at least, one tubular hauling anchor (2) provided with, at least, (see Figs. 3a to 3d and 4a to 4d) a fixed wing (20) and a coaxial and moveable locking bolt (21), inside the hauling anchor (2), and according to the invention it comprises (back to Figs. 1 and 2):

- a first upper fork (3)
- a second lower fork (4), and
- a zenithal foot (5);

the forks (3, 4) comprising a width equal to or greater than the width of the bolt (21) but less than the width of the head (21a) of the bolt (21) and of the fixed wing (20) (for the variant shown in the Figures 3a to 3d) or of the upper wing (21b) of the mouth of the anchor (for the variant shown in Figs. 4a to 4d); wherein the zenithal foot (5) comprises a fastening (50) to lifting means, and wherein the first fork (3) is mounted on the foot (5) through first linear movement means (first hydraulic cylinders (6) in this preferred example), and wherein the second fork (4) is mounted on the first fork (3) through second linear movement means (second hydraulic cylinders (7) in this preferred example).

[0009] In the preferred embodiment shown in the figures, the first fork (3) is configured (continue with Figs. 1 and 2) by the bottom of a first tubular part (30) and the second fork (4) is configured by the bottom of a second tubular part (40) which is coaxially arranged outside the first tubular part (30); the zenithal foot (5) being arranged inside the first tubular part (30). This configuration has the advantages of the robustness thereof and the ease of arranging the linear movement means around the entire perimeter, due to the closed contour thereof. In addition, in this configuration it is preferred that the first tubular part (30) and the second tubular part (40) comprise complementary longitudinal reliefs (12) (see Fig. 2), to guide the movement of the first tubular part (30) through the inside of the second tubular part (40), preventing this movement from being obstructed.

[0010] As said, it is preferred that the first linear movement means comprise first hydraulic cylinders (6), and the second linear movement means comprise second hydraulic cylinders (7): comprising fastening flanges (8) for the cylinders (6, 7) arranged in the first fork (3), in the second fork (4) and the foot (5). This enables the operation by means of the crane truck's hydraulic system.

[0011] For its part, the fastening (50) of the zenithal foot (5) to the lifting means ideally comprises (see Fig. 1) a plate provided with holes (50a) for the passage of fastening screws, not shown, for fastening to the lifting means, and notches (50b) for the passage of fastening elements (screws or plates) for fastening to the upper end of the foot (5).

[0012] Additionally, the arrangement of a lifeline (cable or chain) (9) that is located connecting the second lower fork (4) with the lifting means (the crane) in the event that the fastening (50) fails, preventing the fall of the load, is envisaged.

[0013] For correct operation with existing container anchors, it is preferred that the width of the forks is between 55 and 60 millimetres wide, which ensures a good hold and solidity. In addition, the arrangement of mouthpieces (10) at the entrance of the forks is preferred.

[0014] In the sequence of Figs. 3a to 3d, it can be seen, for a variant of containers wherein the hatch is opened by upper pulling of the bolt through the widened head thereof, how Figure 3a shows the way the coupler (1) approaches the anchor (2) with the foot (5) lifted to enable receiving the head (21a) of the bolt (5) in the first upper fork (3), while the fixed wing (20) is received in the second fork (4) (see Fig. 3b). Then the foot (5) descends due to the action of the first cylinders (6) to fasten the position of the head (21a) in the first fork (3) (see Fig. 3c), whereby the container can be lifted to be placed over the truck, and finally (see Fig. 3d) the second hydraulic cylinders (7) are unloaded (the corresponding valves are opened), so that gravity itself separates the first fork (3) from the second fork (4) and it causes the bolt to be pulled over the head (21a) and, therefore, the opening of the unloading hatch of the container, keeping the foot (5) pressed on the head (21a) of the bolt (5) and preventing it from coming out of the coupler (1).

[0015] Figs. 4a to 4d show the operating sequence for another variant of containers wherein the container hatch is opened by the effect of gravity, so the bolt (21) must be pushed until the container is placed over the truck. In Fig. 4a, the coupler (1) approaches the anchor (2) with the foot (5) lifted to enable receiving an upper wing (21b) from the mouth of the anchor (2) in the first upper fork (3), which is initially affixed to the second fork (4). Next (see Fig. 4c), the second lower fork (4) is lowered by the action of the second cylinders (7) to rest against the fixed wing (20) of the anchor (2) and improve the immobilisation thereof, and the foot (5) is also lowered by the action of the first cylinders (6) to push against the head (21a) or tip of the bolt (5) and prevent it from rising, until the container is over the truck, and once in this position (see Fig. 4d) said first hydraulic cylinders (6) are unloaded (the corresponding valves are opened), so that gravity itself causes the first fork (3) to descend with respect to the foot (5), maintaining the position thereof, whereby the ascent of the bolt (21) and the opening of the unloading hatch of the container are enabled.

[0016] Having sufficiently described the nature of the invention, it is indicated that the description of the same and of the preferred embodiment thereof should be interpreted in a non-limiting manner, and that it encompasses all the possible variant embodiments that may be deduced from the contents of the present specification and the claims.

Claims

1. A coupler (1) for container anchors (2), that can be used for hauling containers comprising, at least, one tubular hauling anchor (2) provided with, at least, one fixed wing (20) and a coaxial and moveable locking bolt (21) inside the hauling anchor (2), **characterised in that** it comprises:
 - a first upper fork (3)
 - a second lower fork (4), and
 - a zenithal foot (5);

the forks (3, 4) comprising a width equal to or greater than the width of the bolt (21) but less than the width of the head (21a) of the bolt (21) and of the fixed wing (20) or of the upper wing (21b) of the mouth of the anchor; and wherein the zenithal foot (5) comprises a fastening (50) to lifting means; wherein the first fork (3) is mounted on the foot (5) through first linear movement means; and wherein the second fork (4) is mounted on the first fork (3) through second linear movement means.
2. The coupler (1) for container anchors (2) according to claim 1, **wherein** the first fork (3) is configured by the bottom of a first tubular part (30) and the second fork (4) is configured by the bottom of a second tubular part (40) that is coaxially arranged outside the first tubular part (30); the zenithal foot (5) being arranged inside the first tubular part (30).
3. The coupler (1) for container anchors (2) according to claim 2, **wherein** the first tubular part (30) and the second tubular part (40) comprise complementary longitudinal reliefs (12).
4. The coupler (1) for container anchors (2) according to any of the preceding claims, **wherein** the first linear movement means comprise first hydraulic cylinders (6) and the second linear movement means comprise second hydraulic cylinders (7): comprising fastening flanges (8) for the cylinders (6, 7) arranged in the first fork (3), in the second fork (4) and the foot (5).
5. The coupler (1) for container anchors (2) according to any of the preceding claims, **wherein** the fastening (50) of the zenithal foot (5) to the lifting means comprises a plate provided with holes (50a) for the passage of fastening screws for fastening to the lifting means, and notches (50b) for the passage of fastening elements for fastening to the upper end of the foot (5).
6. The coupler (1) for container anchors (2) according to any of the preceding claims, **comprising** a lifeline (9) that is located connecting the second lower fork (4) with the lifting means.
7. The coupler (1) for container anchors (2) according to any of the preceding claims, **wherein** the forks (3, 4) have a width comprised between 55 and 60 millimetres.

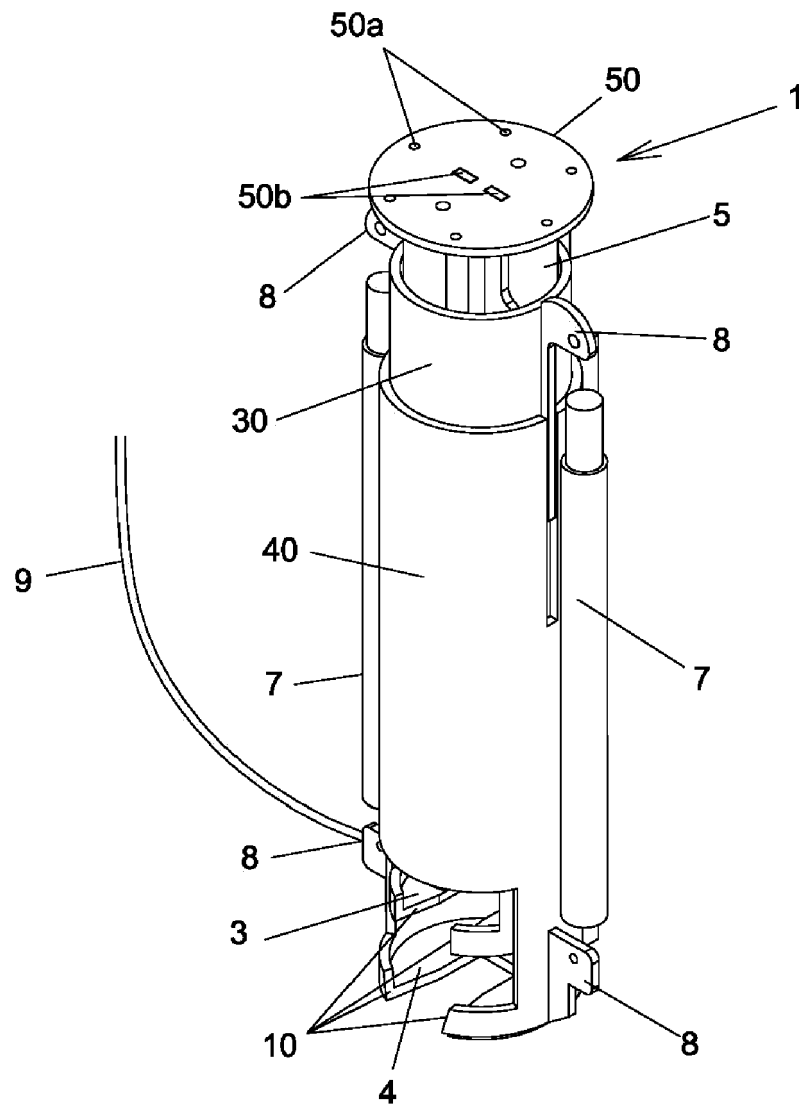


Fig 1

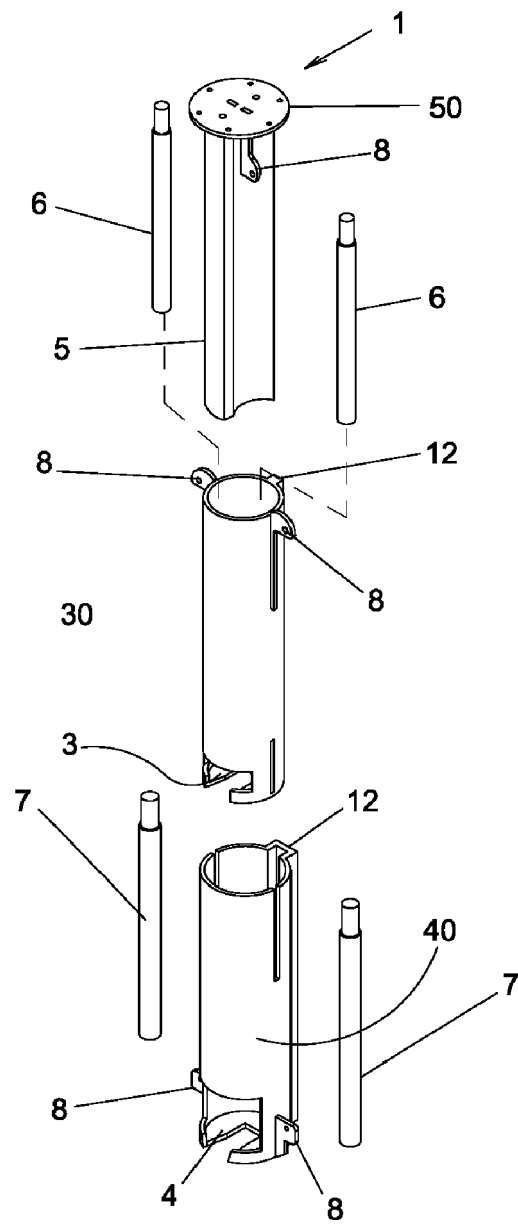


Fig 2

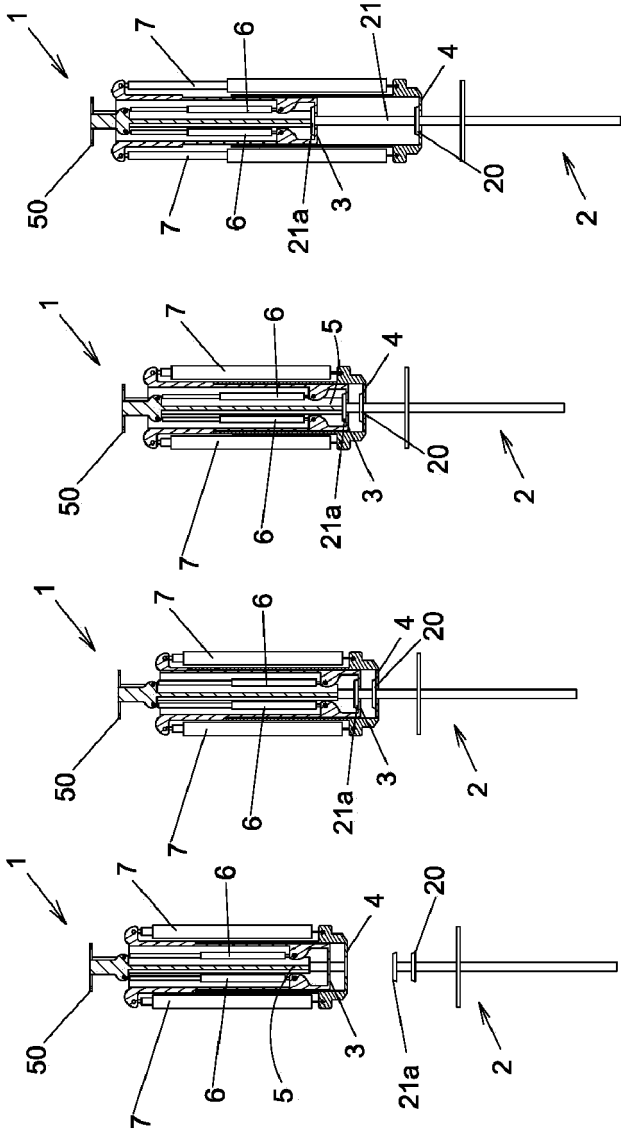


Fig 3a Fig 3b Fig 3c Fig 3d

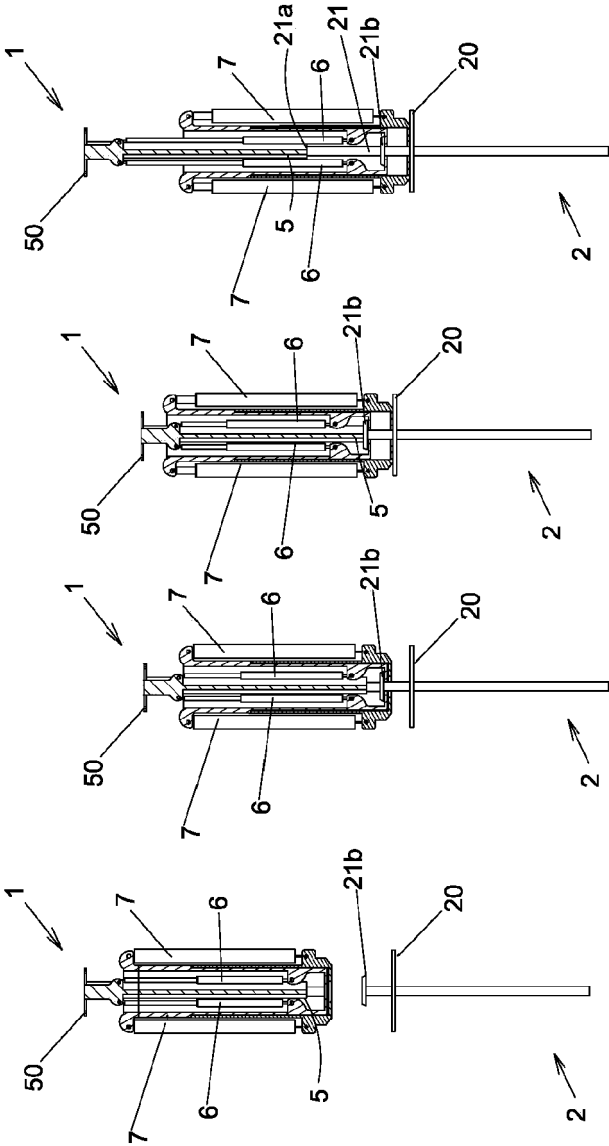


Fig 4d

Fig 4c

Fig 4b

Fig 4a



EUROPEAN SEARCH REPORT

Application Number

EP 22 15 9451

5

10

15

20

25

30

35

40

45

50

55

1

EPO FORM 1503 03.82 (P04C01)

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	EP 2 754 624 A1 (MECAGIL LEBON SA [FR]; SALEUR RECYCLAGE SAS [FR]) 16 July 2014 (2014-07-16)	1, 2, 5-7	INV. B65F1/14 B66C1/66
A	* figure 2 *	3, 4	
X	DE 299 05 551 U1 (SINTERPLAST S P A [IT]) 29 July 1999 (1999-07-29) * figures 2, 3 *	1, 2, 5-7	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65F B66F B66C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 5 August 2022	Examiner de Miscault, Xavier
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
ON EUROPEAN PATENT APPLICATION NO.**

EP 22 15 9451

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

05-08-2022

10

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2754624 A1	16-07-2014	EP 2754624 A1	16-07-2014
		FR 3000732 A1	11-07-2014
DE 29905551 U1	29-07-1999	DE 29905551 U1	29-07-1999
		ES 1042692 U	16-09-1999
		FR 2776645 A3	01-10-1999
		IT BG980020 A1	27-09-1999

15

20

25

30

35

40

45

50

55

EPO FORM P0459

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