



(11) **EP 4 137 415 A1**

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
22.02.2023 Bulletin 2023/08

(51) International Patent Classification (IPC):
B65B 1/02 ^(2006.01) **B65B 1/22** ^(2006.01)
B65B 61/00 ^(2006.01)

(21) Application number: **21789555.6**

(52) Cooperative Patent Classification (CPC):
B65B 1/02; B65B 1/22; B65B 61/00

(22) Date of filing: **12.04.2021**

(86) International application number:
PCT/ES2021/070238

(87) International publication number:
WO 2021/209661 (21.10.2021 Gazette 2021/42)

(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

(71) Applicant: **Coalza Systems, S.L.**
46470 Massanassa (Valencia) (ES)

(72) Inventor: **COMPANY PUCHADES, Ramón**
46470 MASSANASSA (Valencia) (ES)

(74) Representative: **Ungria López, Javier**
Avda. Ramón y Cajal, 78
28043 Madrid (ES)

(30) Priority: **16.04.2020 ES 202030654 U**

(54) **IMPROVED CAROUSEL MACHINE FOR THE MANUFACTURE OF PACKAGING BAGS**

(57) A carousel machine that performs a manufacturing process, where said machine has a mobile disc (10), configured to rotate around its own axis, with a plurality of cups (7) disposed around an external perimeter of said disc (10); and a fixed structure (2) with regard to which the mobile disc (10) rotates. Said carousel machine (1) comprises a geared mechanism having in turn a rigid, fixed crown wheel (3) concentric with the circular mobile disc, and a drive gearwheel (4) installed on the

fixed structure (2) and engaged interiorly with the crown wheel (3) and disposed excentrically to said crown wheel (3); where said drive gearwheel (4) is operable by a motor (6) in such a way that by activating the drive gearwheel (4) a synchronised circular movement of the mobile disc (10) with regard to the fixed structure (2) is produced, between the stages of the process of the carousel machine.

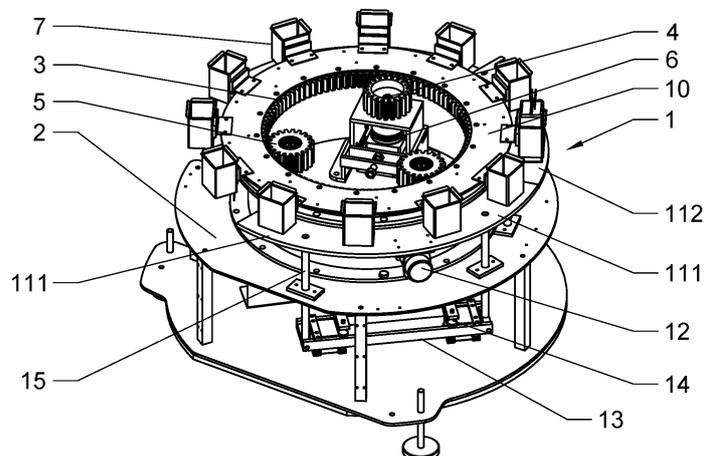


Fig. 1

EP 4 137 415 A1

Description

FIELD AND OBJECT OF THE INVENTION

[0001] The invention consists of an improved carousel machine configured for the manufacture of packaging bags, performing the filling, closing and cutting of said bags in a process that follows a circular path.

[0002] The field of application of the present invention falls within the sector of machinery configured for the manufacture of packing containers, more specifically in the field of filling, folding and closing said containers made of flexible material.

BACKGROUND OF THE INVENTION

[0003] There is currently a wide variety of automatic machines on the market, packaging machines for packages with a substantially rectangular geometry, where the trajectory of said packages, and therefore the structure of the machine, can have a rectilinear shape, a more or less elongated curved shape, or a circular shape.

[0004] Document ES2123369B1 describes an automatic circular carousel machine intended for the manufacture of packaging bags, of rectangular format, which follows a process of package deposition, filling, vibrating, closing and welding of the opening, cutting and ejection of the package, basically characterised in that it comprises a cylindrical structure, which receives the synchronised circular movement through a single axis, comprising a sliding track conveniently disposed for the vibrating and ejecting of the package.

[0005] This machine has a plurality of cups or vessels in the shape of a straight rectangular duct, without bases, with rigid walls, disposed in the shape of a circular matrix with regard to the axis around which the machine rotates, so that said vessels or cups go through different stations, such as filling, vibrating, bag opening folding, bag opening sealing and bag ejection stations, each time the carousel rotates one position. The sliding track on which the bottom of the bags rests during each of the processes of the carousel is adjustable in height through an easily accessible wheel or steering wheel.

[0006] This machine described in document ES2123369B1 presents problems that are solved in the machine described in document ES1105556U, which describes a carousel machine, with the aim of making packaging bags more efficiently.

[0007] In this way, document ES2123369B1 describes a carousel comprising a gear motor to transmit a rotation movement to the machine with regard to a central vertical axis. Said gear motor allows the packaging bags to be manufactured to be moved around a circumferential perimeter of said carousel machine, making scheduled stops for each one of the packaging bags at each manufacturing station.

[0008] Moreover, the machine described in ES1105556U comprises a Maltese cross gear mecha-

nism that prevents the engine from having to perform said scheduled stops. In this way, the angular distribution of all the grooves of said Maltese cross is in accordance with the time the cups stay in the machine stations, and more specifically with the time they stay in the station that requires the most time to perform its task. This is the reason for which the stay times are the same in all the stations of said machine described in ES1105556U.

[0009] However, this Maltese cross configuration comprises problems regarding the speed of operation, noise generated in the mechanism, wear, as well as a high cost required for the Maltese cross configuration in relation to the processes performed in the machine.

[0010] Regarding the closing of the bags, document ES2123369B1 does not describe the method used to perform the welding and cutting; while document ES1105556U describes a device for closing and cutting packaging bags comprising a support part that supports and guides two support elements with two ends, comprising two welding elements, a cutting blade and a groove for the insertion of said blade.

[0011] For the removal of the surplus material, said machine, described in ES1105556U, comprises a device connected to a support element, which holds the mouth above the cutting line, for the removal thereof when it is cut. The problem with said device is that it releases said surplus material in the machine itself, being able to generate unwanted jams that affect the operation of the machine.

[0012] Regarding the system that vibrates the bags to facilitate and improve the compaction of the product to be packaged, none of the documents, ES2123369B1 or ES1105556U, describe the method or mechanism used beyond the connection thereof with other stations of the machine itself, nor the features thereof, such as being activated only when there is a package thereon, or that it operates due to the effect of a pressurised air device.

DESCRIPTION OF THE INVENTION

[0013] To solve the aforementioned problems, the present invention describes a carousel machine comprising an improved rotation system for the mobile portion of said carousel, a novel system for removing surplus material from the bag that prevents unwanted jams, and a novel vibrating mechanism to improve the filling and distribution of the material in the packaging bags.

[0014] In this way, the invention consists of a carousel machine for the manufacture of packaging bags, comprising a process of package deposition, vibrating, folding, closing, sealing, and ejecting the package.

[0015] To perform said process, or series of stages, said carousel machine comprises a circular mobile disc configured to rotate around its own axis, i.e., with regard to the axis that defines the circular shape of said mobile disc, and comprising a plurality of cups disposed around an external perimeter of said disc; the carousel also comprises a fixed structure, with regard to which the mobile

disc rotates.

[0016] In this way, said carousel machine comprises a geared mechanism that comprises a crown wheel with an internal toothing, concentrically and rigidly fixed to the circular mobile disc, being able to form part of the disc itself, and a drive gearwheel assembled to the fixed structure, engaged interiorly with the crown wheel, wherein said drive gearwheel is disposed excentrically to said crown wheel.

[0017] This drive gearwheel is operable by a motor assembled on the fixed structure, in such a way that by activating the drive gearwheel, a synchronised circular movement of the mobile disc with regard to the fixed structure is produced between the different stages of the process of the carousel machine.

[0018] In other words, the motor operates the drive gearwheel and the drive gearwheel causes the crown wheel and therefore the mobile disc to rotate, displacing the cups between the different stations of the carousel machine.

[0019] In one embodiment, the geared mechanism comprises two guide gearwheels installed on the fixed structure, engaged interiorly with the crown wheel, and disposed excentrically to said crown wheel; where said two guide gearwheels are configured to limit the movement of the crown wheel solely to the rotation of the mobile disc with regard to its own axis.

[0020] In case of having a single drive gearwheel and no guide gearwheels, the mobile disc could move in any direction, in addition to rotating around its own axis, which would be a problem for the operation of the carousel machine.

[0021] In a preferred embodiment, the gearwheels are cylindrical, in which case the two guide gearwheels and the drive gearwheel are oriented in the same direction, but in non-preferred embodiments, the gearwheels may have a conical shape.

[0022] In other embodiments that do not comprise two guide gearwheels engaged with the crown wheel, the carousel machine may comprise other means for preventing the mobile disc from moving off-centre, such as being adjusted to a cylindrical cavity of the fixed structure, or comprising guide gearwheels on the outside of the crown wheel.

[0023] In one embodiment, the carousel machine comprises a closing and cutting mechanism for packaging bags comprising a support part that can be coupled to a portion of the fixed structure of the carousel machine, which supports devices for welding and cutting the packaging bags.

[0024] Said support part also supports a device for removing the surplus material configured to hold the mouth of the package above the cutting line once it is welded and before being cut.

[0025] Said device for removing the surplus material comprises a fixed handle, a rotating mobile handle connected to a first operating element, where said rotating mobile handle is configured to catch the surplus material

from the mouth of the packaging bag by pressing it on the fixed handle when the welding devices weld said mouth.

[0026] The device for removing the surplus material comprises a displacement guide oriented in a radial direction with regard to the circular mobile disc, said displacement guide configured to displace an assembly formed by the fixed handle and the rotating mobile handle, having trapped the surplus material from the mouth of the packaging bag, to a normal external position of the perimeter of the carousel machine.

[0027] In one embodiment, the closing and cutting mechanism comprises at least one linear actuator configured to activate the displacement guide. Said linear actuator has a radial direction to displace the surplus material in a normal / perpendicular direction to the perimeter of the mobile disc.

[0028] In one embodiment, the carousel machine also comprises a waste area configured so that the device for removing the surplus material releases the surplus material that is cut from the mouth of the packaging bag. In this way, said surplus material is not deposited in the mechanism of the carousel machine and does not interfere with the operation thereof.

[0029] In one embodiment of the invention, the fixed structure comprises a platform in the shape of a circular crown wheel, configured so that the packaging bags rest thereon during the process of package deposition, vibrating, folding, closing and welding, comprising an open section for the ejection of the package. Said open section may have a circular trapezoid shape or it may directly be an opening sufficient for the filled and closed packaging bags to be moved to a new stage.

[0030] In this embodiment, the carousel machine comprises a vibrating station comprising an electric motor installed on a lower face of the platform, a lower support mechanism comprising a plurality of silent anti-vibration blocks.

[0031] In a more specific embodiment, the platform comprises a first plate, in the shape of a circular trapezoid, connected to the electric motor by a lower face thereof. Said electric motor is configured to vibrate said first plate, which is connected to the lower support mechanism, located under the electric motor, by means of columns. The platform also comprises a second plate, in the shape of a circular trapezoid, located continuously to the first plate; in this way the first plate and the second plate are arranged continuously, forming a circular crown wheel. Thus, the vibration of the electric motor is not transmitted to said second plate, and the stages of the process performed by the carousel machine are not subjected to the vibration required for filling the packaging bags.

BRIEF DESCRIPTION OF THE FIGURES

[0032] To complete the description of the invention, and for the purpose of helping to make the features there-

of more readily understandable, according to a preferred exemplary embodiment thereof, a set of drawings is included wherein, by way of illustration and not limitation, the following figures have been represented:

- Figure 1 represents a perspective view of the carousel machine with the circular mobile disc installed on the fixed structure, where the geared mechanism formed by the crown wheel, the drive gearwheel and the mobile gearwheels, as well as the vibration device can be seen assembled on the platform.
- Figure 2 represents two different perspectives of the mechanism for closing, cutting and removing the surplus material from the mouths of the bag.
- Figures 3a-3h represent the process of removing the surplus material from the mouth of the bags in a normal direction of the mobile disc of the carousel machine.
- Figure 4 represents two different perspectives of the lower support mechanism comprising a plurality of silent anti-vibration blocks.

DESCRIPTION OF A PREFERRED EMBODIMENT OF THE INVENTION

[0033] As can be seen in Figure 1, the invention consists of a carousel machine (1) comprising a fixed cylindrical structure (2) on which a circular mobile disc (10) is concentrically installed.

[0034] Said mobile disc (10) is the only element that rotates in said carousel machine (1), and it does so with regard to the axis defined by the circular shape thereof, which is concentric to the axis that defines the cylindrical shape of the fixed structure (2).

[0035] This mobile disc (10) rotates in order to displace the plurality of cups (7), disposed around the external perimeter of said disc (10), between the different stages that the carousel machine (1) comprises, such as package deposition, filling and vibrating, folding, closing, welding, or ejection of said packaging bag.

[0036] Each of these cups (7) has a prismatic tubular shape, although said shape can be cylindrical or have another shape, depending on the shape of the packaging bag as well as of the filling material. To allow the inlet and outlet of said bags, the cups (7) have neither upper nor lower bases.

[0037] In order for the mobile disc (10) to rotate with regard to the fixed structure (2), the carousel machine (1) comprises a geared mechanism formed by a circular crown wheel (3) having an internal toothing, and three gearwheels (4, 5). The crown wheel (3) is fixed concentrically to the mobile disc (10) while the gearwheels (4, 5) are installed or assembled on the fixed structure (2).

[0038] Only one of the three gearwheels is a drive gearwheel (4) and is activated by a motor (6), while the other two are guide gearwheels (5), and enable the crown wheel (3) not to be displaced in any other direction other than that of rotation. In other words, said guide gear-

wheels (5) limit and hold the crown wheel (3).

[0039] The operation of this mechanism consists in that, when the motor (6) is activated, the rotation of the drive gearwheel (4) is produced, which causes the crown wheel (3) to rotate and this causes the guide gearwheels (5) to rotate. In this way, each of the cups (7) passes between the different stations of the carousel machine (1), where the motor (6) stops, while a process is performed in each corresponding cup (7), for the motor (6) to be activated again and produce a new rotation to displace the cup (7) to another process.

[0040] One of the stages that are carried out in the carousel machine (1) is the filling of the packaging bags. Normally, to favour said filling and the correct distribution of the material, the bag is subjected to a vibration process from the platform (11) on which the packaging bags rest.

[0041] Said platform (11) has the shape of a circular crown wheel and is disposed concentrically to the disc (10), so that the packaging bags are displaced between the stages of the carousel machine (1) while resting on said platform (11).

[0042] Once the packaging bags have passed through all the stages of the carousel machine (1), they fall due to the effect of gravity as they pass through an open area of the platform (11).

[0043] The vibration of said packaging bags is produced in a station where there is an electric motor (12), installed on the lower face of the platform (11), which is that which generates the vibration, and a lower support mechanism (13) comprising a plurality of silent anti-vibration blocks (14), which prevent the vibration from being transmitted to the rest of the carousel machine (1).

[0044] In order to concentrate the vibration in a single area of the platform (11), it comprises two plates, a first plate (111) that has the shape of a circular trapezoid, which is that which is connected to the electric motor (12) and to the lower support mechanism (13) by means of vertical columns (15), and a second plate (112), also in the shape of a circular trapezoid, located continuously to the first plate (111). In this way, the vibration is only produced in the first plate (111) and is not transmitted to the rest of the platform (11).

[0045] Another of the stages or processes performed in the carousel machine (1) consists of the closing and cutting of the packaging bags. Said stage is performed by a closing and cutting mechanism (8) which is shown in figure 2.

[0046] As can be seen in that figure, this closing and cutting mechanism (8) for packaging bags comprises a support part (81) rigidly fixed to the fixed structure (2) of the carousel machine (1), which supports the devices for welding and cutting (16) the packaging bags. These devices comprise two welders facing each other, a blade and a slot for the insertion of said slot, so that, when the opening of the packaging bag is located between said welders, they press against each other, and generate a welding of the bag, while the blade is pressed into the groove, cutting the surplus material (17) from the bag.

[0047] In addition to the devices for welding and cutting (16), the support part (81) also supports or holds a device for removing (9) the surplus material (17) that holds the mouth of the package above the cutting line once it is welded and before being cut.

[0048] As can be seen in figures 3a-3h, this device for removing (9) the surplus material (17) produces the removal of said material in a radial direction, normal to the mobile disc (10), towards an outside of the carousel machine.

[0049] This device comprises a fixed handle (94), a rotating mobile handle (91) connected to a first operating element (92), where said rotating mobile handle (91) catches the surplus material (17) from the mouth of the packaging bag by pressing it on the fixed handle (94) when the welding devices (16) weld said mouth.

[0050] In order for the surplus material element (17) to be displaced to an area where it does not affect the operation of the carousel machine (1), the device for removing (9) the surplus material (17) comprises a displacement guide (93) oriented in a radial direction with regard to the circular mobile disc (10), said displacement guide (93) configured to displace an assembly formed by the fixed handle (94) and the rotating mobile handle (91), having caught the surplus material (17) from the mouth of the packaging bag, to a normal external position of the perimeter of the carousel machine (1). For this, the closing and cutting mechanism (8) has a linear actuator that displaces the displacement guide (93) in said external radial direction.

Claims

1. A carousel machine (1) for the manufacture of packaging bags, comprising a process of package deposition, vibrating, folding, closing, welding, and ejection of the package, where said carousel machine comprises:

- a circular mobile disc (10) configured to rotate around its own axis and comprising a plurality of cups (7) disposed around an external perimeter of said disc (10); and
- a fixed structure (2) with regard to which the mobile disc (10) rotates;

characterised in that said carousel machine (1) comprises a geared mechanism that comprises:

- a crown wheel (3) which comprises an internal toothing, wherein said crown wheel (3) is fixed concentrically and rigidly to the circular mobile disc (10); and
- a drive gearwheel (4) assembled to the fixed structure (2) and engaged interiorly with the crown wheel (3), wherein said drive gearwheel (4) is disposed eccentrically to said crown wheel

(3);

where said drive gearwheel (4) is operable by a motor (6) assembled on the fixed structure (2); and wherein by activating the drive gearwheel (4) a synchronised circular movement of the mobile disc (10) with regard to the fixed structure (2) is produced, between stages of the process of the carousel machine.

2. The carousel machine (1), according to claim 1, where the geared mechanism comprises two guide gearwheels (5) assembled on the fixed structure (2) engaged interiorly with the crown wheel (3) wherein said two guide gearwheels (5) are disposed eccentrically to said crown wheel (3); where said two guide gearwheels (5) are configured to limit the movement of the crown wheel (3) only to the rotation of the mobile disc (10) with regard to its own axis.

3. The carousel machine (1), according to any of the preceding claims, comprising a closing and cutting mechanism (8) for packaging bags which comprises:

- a support part (81) attachable to a portion of the fixed structure (2) of the carousel machine (1), wherein said support part (81) supports devices for welding and cutting (16) the packaging bags;

where said support part (81) supports a device for removing (9) surplus material (17) configured to hold the mouth of the package above the cutting line once it is welded and before being cut;

where said device for removing (9) the surplus material (17) comprises a fixed handle (94), a rotating mobile handle (91) connected to a first operating element (92), where said rotating mobile handle (91) is configured to hold the surplus material (17) from the mouth of the packaging bag by pressing it on the fixed handle (94) when the devices for welding and cutting (16) weld said mouth; and where the device for removing (9) the surplus material (17) comprises a displacement guide (93) oriented in a radial direction with regard to the circular mobile disc (10), said displacement guide (93) is configured to displace an assembly formed by the fixed handle (94) and the rotating mobile handle (91), having caught the surplus material (17) from the mouth of the packaging bag, to a normal external position of the perimeter of the carousel machine (1).

4. The carousel machine (1), according to the preceding claim, where the closing and cutting mechanism (8) comprises at least one linear actuator configured to activate the displacement guide (93).

5. The carousel machine (1), according to claim 3 or 4,

comprising a waste area configured so that the device for removing (9) the surplus material (17) releases the surplus material (17) that has been cut from the mouth of the packaging bag.

5

6. The carousel machine (1), according to any of the preceding claims, where the fixed structure (2) comprises a platform (11) that comprises a circular crown wheel shape, configured so that the packaging bags rest thereon during the process of package deposition, vibrating, folding, closing and welding, comprising an open section for ejection of the package; wherein the carousel machine comprises a vibrating station comprising:

10

- an electric motor (12) installed on a lower face of the platform (11);
- a lower support mechanism (13) comprising a plurality of silent anti-vibration blocks (14).

15

20

7. The carousel machine (1), according to the preceding claim, where the platform (11) comprises:

- a first plate (111), that comprises a circular trapezoid shape, connected to the electric motor (12) by a lower face of said first plate (111), said electric motor (12) being configured to vibrate said first plate (111), and wherein the first plate (111) is connected to the mechanism of the lower support (13) located under the electric motor (12), connected to said first plate (111) of the platform (11) by means of columns (15);
- and a second plate (112) that comprises a circular trapezoid shape, located continuously from the first plate (111);

25

30

35

where the first section and the second section are disposed continuously, forming a circular crown wheel.

40

45

50

55

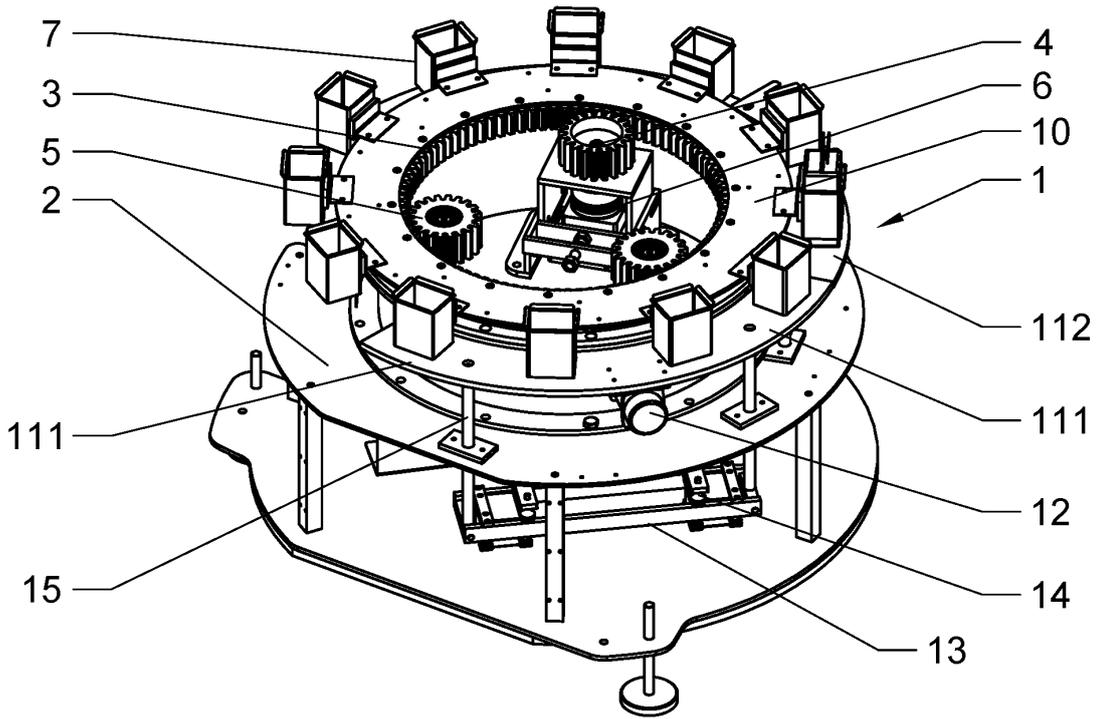


Fig. 1

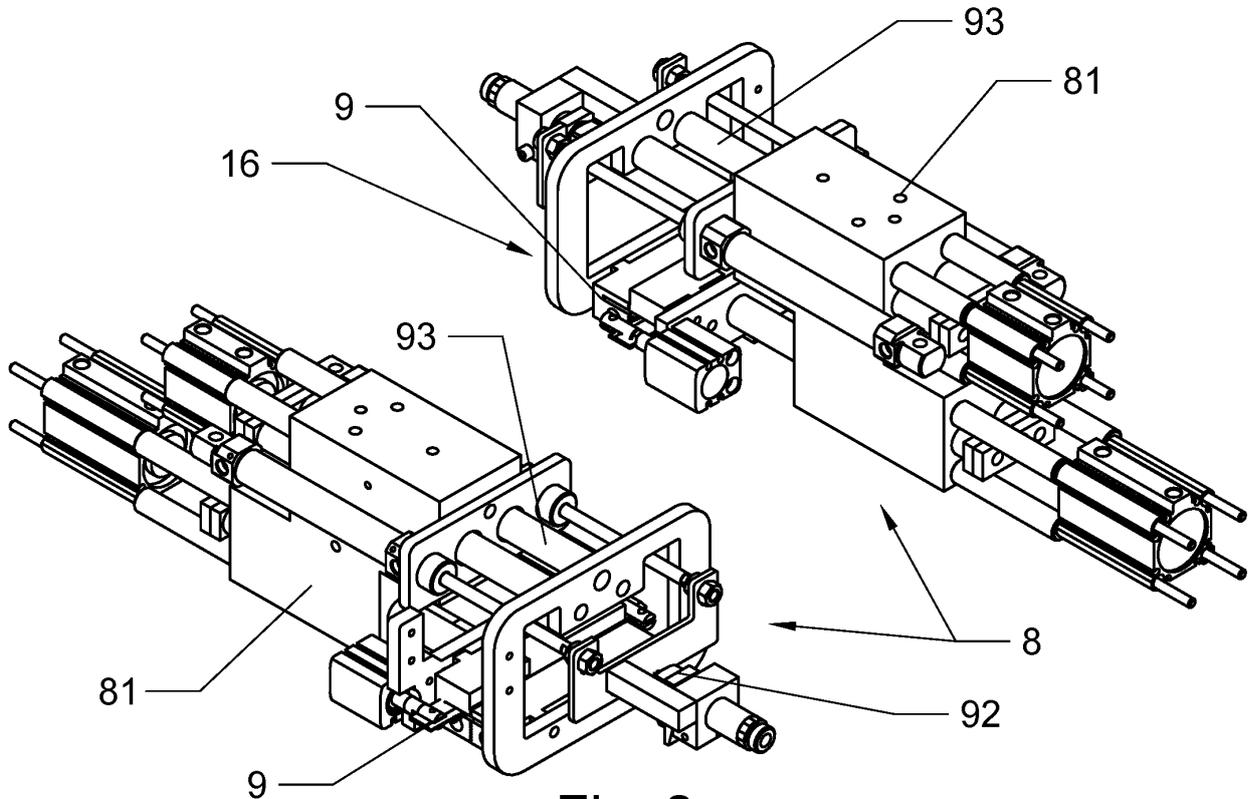
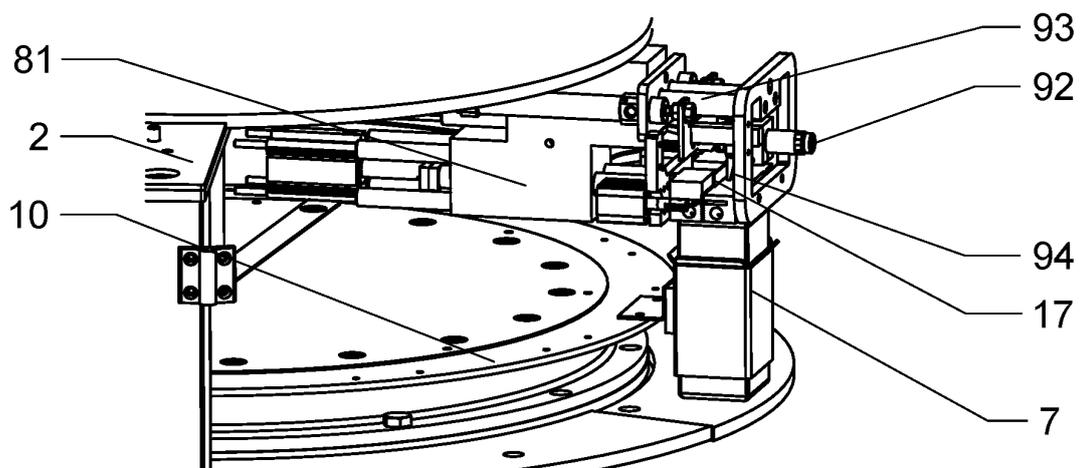
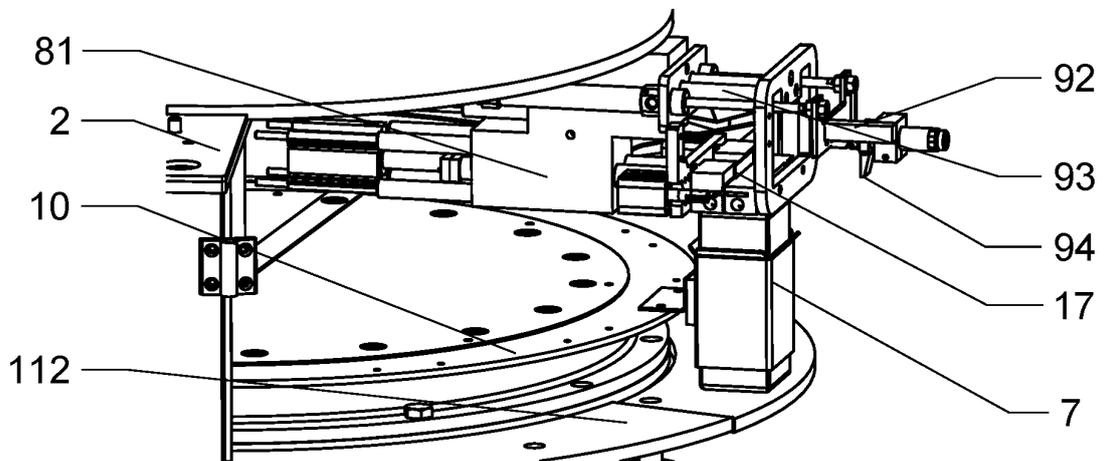
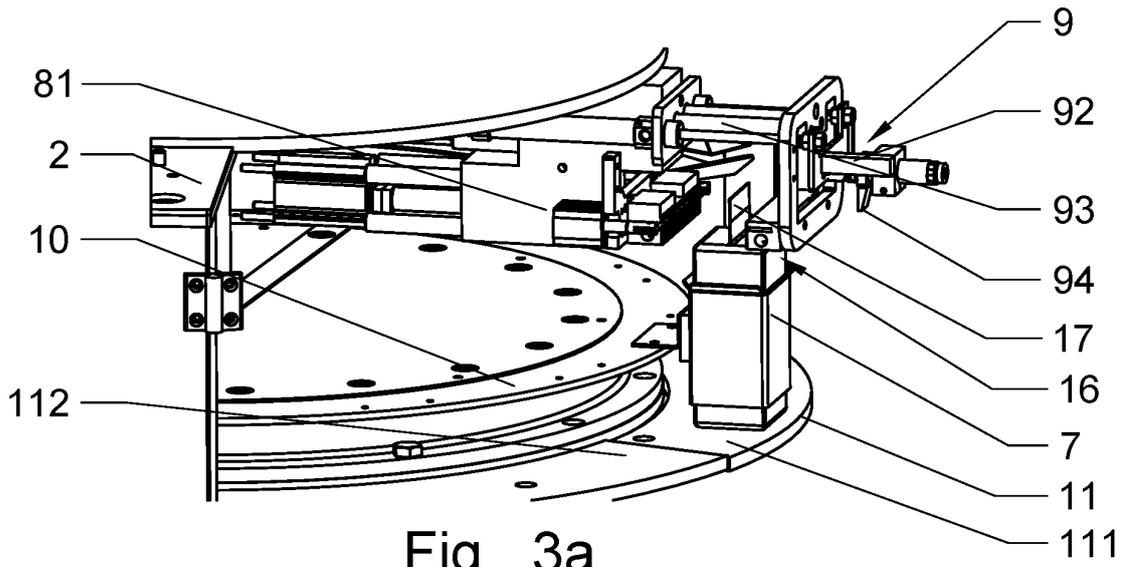


Fig. 2



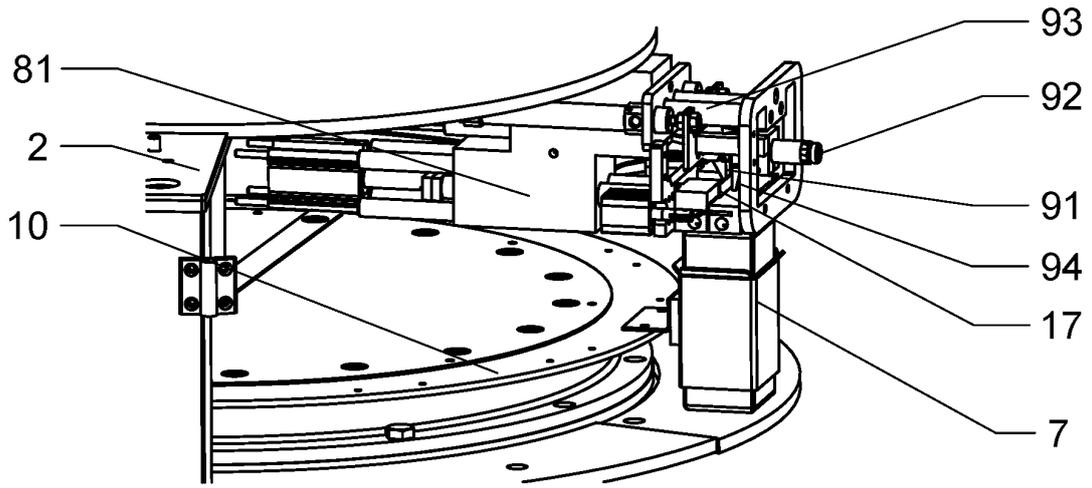


Fig. 3d

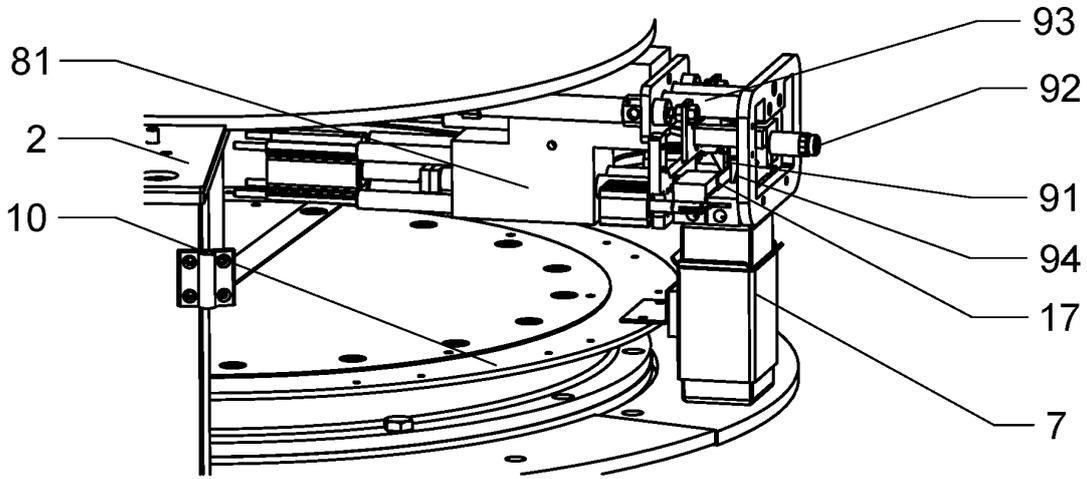


Fig. 3e

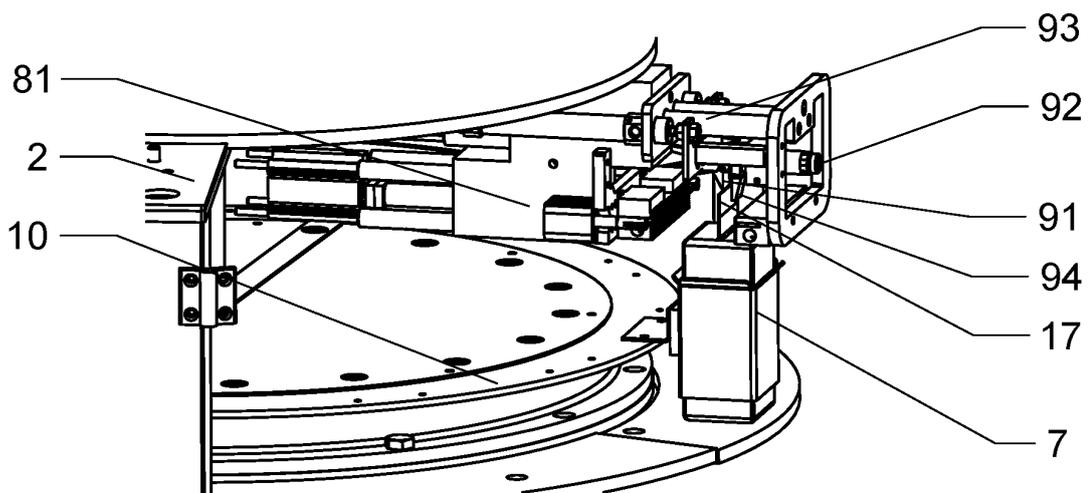


Fig. 3f

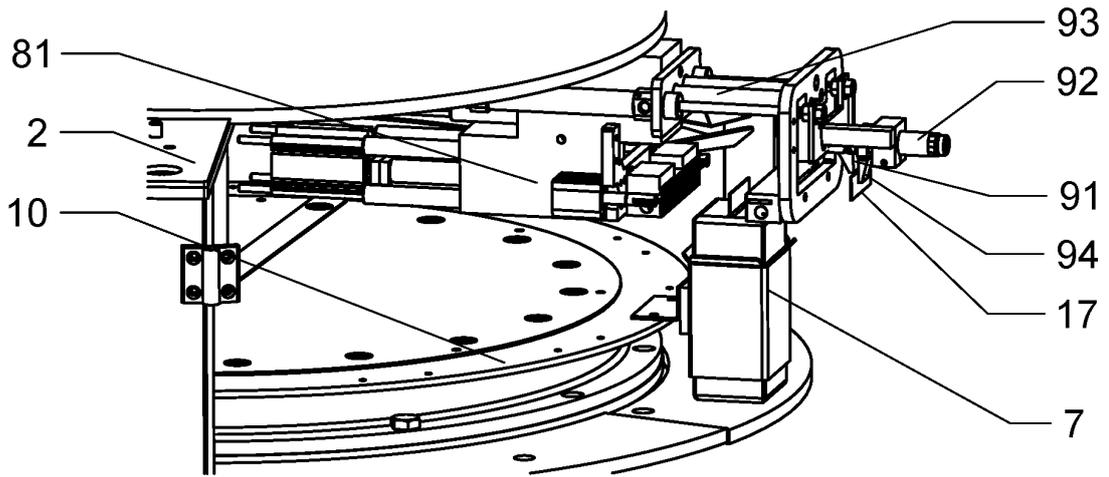


Fig. 3g

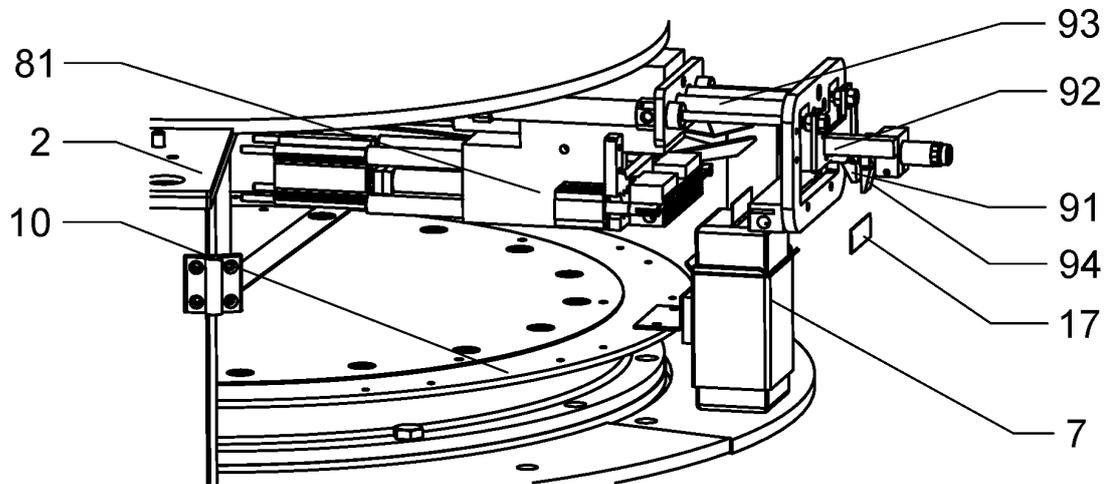


Fig. 3h

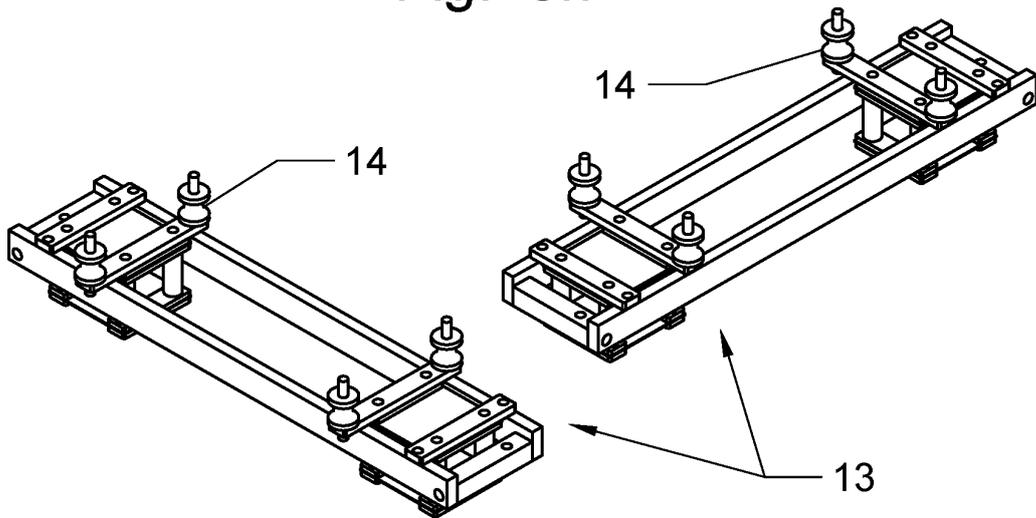


Fig. 4

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES2021/070238

5

A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet

According to International Patent Classification (IPC) or to both national classification and IPC

10

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B65B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

15

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC, INVENES, WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

20

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0685391 A1 (OPEM SRL) 06/12/1995, Column 2, line 49 – column 4, line 57; figure 1.	1, 2
A	ES 1105556 U (COALZA, S.L.) 08/04/2014, Pages 10, line 26 - page 11, line 24; claims 2-4; figures 4B, 4C, 6.	3-5
A	ES 1045707 U (PAYPER, S.A.) 01/10/2000, The whole document.	6
A	US 2013284214 A1 (MULTIVAC SEPP HAGGENMUELLER GMBH & CO KG) 31/10/2013, Paragraphs 39-72; figures 7a - 7j.	3-5
A	ES 2123369 A1 (COALZA, S.L.) 01/01/1999, The whole document.	1-7

40

 Further documents are listed in the continuation of Box C. See patent family annex.

45

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance.	
"E" earlier document but published on or after the international filing date	
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"O" document referring to an oral disclosure use, exhibition, or other means.	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other documents, such combination being obvious to a person skilled in the art
"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family

50

Date of the actual completion of the international search

05/07/2021

Date of mailing of the international search report

(07/07/2021)

Name and mailing address of the ISA/

OFICINA ESPAÑOLA DE PATENTES Y MARCAS
Paseo de la Castellana, 75 - 28071 Madrid (España)
Facsimile No.: 91 349 53 04

Authorized officer

F. Riesco Ruiz

Telephone No. 91 3496869

55

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2021/070238

5

C (continuation).		DOCUMENTS CONSIDERED TO BE RELEVANT
Category *	Citation of documents, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 9812110 A1 (KRAFT FOODS INC ET AL.) 26/03/1998, Abstract; figures 9-16.	1-7
A	WO 2010085141 A1 (MAREL STORK POULTRY PROC BV ET AL.) 29/07/2010, Abstract; figure 23.	1, 2

10

15

20

25

30

35

40

45

50

55

Form PCT/ISA/210 (continuation of second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES2021/070238

5

CLASSIFICATION OF SUBJECT MATTER

B65B1/02 (2006.01)

B65B1/22 (2006.01)

B65B61/00 (2006.01)

10

15

20

25

30

35

40

45

50

55

Form PCT/ISA/210 (extra sheet) (January 2015)

EP 4 137 415 A1

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES2021/070238

Information on patent family members

5
10
15
20
25
30
35
40
45
50
55

Patent document cited in the search report	Publication date	Patent family member(s)	Publication date
EP0685391 A1	06.12.1995	ITMI940980 A1 IT1269781 B DE69509167T T2	16.11.1995 15.04.1997 09.12.1999
-----	-----	-----	-----
ES1105556U U	08.04.2014	ES1105556Y Y	01.07.2014
-----	-----	-----	-----
ES1045707U U	01.10.2000	ES1045707Y Y	01.04.2001
-----	-----	-----	-----
US2013284214 A1	31.10.2013	US9403195 B2 CN103373499 A CN103373499B B EP2657005 A1 EP2657005 B1	02.08.2016 30.10.2013 24.06.2015 30.10.2013 25.06.2014
-----	-----	-----	-----
ES2123369 A1	01.01.1999	NONE	
-----	-----	-----	-----
WO9812110 A1	26.03.1998	US2002023411 A1 US6543206 B2 US2002023410 A1 US6343459 B1 GB2332665 A GB2332665 B EP0927134 A1 EP0927134 B1 EP0836997 A1 EP1057729 A1 EP1057729 B1 DE69724015T T2 DE69723985T T2 AU4127697 A	28.02.2002 08.04.2003 05.02.2002 05.02.2002 30.06.1999 14.06.2000 07.07.1999 06.08.2003 22.04.1998 06.12.2000 06.08.2003 12.02.2004 12.02.2004 14.04.1998
-----	-----	-----	-----
WO2010085141 A1	29.07.2010	ES2625882T T3 DK2389330T T3 BRPI1006954 A2 BRPI1006954 B1 JP2012515694 A CN102361806 A US2011277420 A1 US9181034 B2 EP2389330 A1 EP2389330 B1 NL2002441C C2	20.07.2017 03.07.2017 12.04.2016 22.01.2019 12.07.2012 22.02.2012 17.11.2011 10.11.2015 30.11.2011 15.03.2017 26.07.2010
-----	-----	-----	-----

Form PCT/ISA/210 (patent family annex) (January 2015)

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

- ES 2123369 B1 [0004] [0006] [0007] [0010] [0012]
- ES 1105556 U [0006] [0008] [0010] [0011] [0012]