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(54) **Machine for packaging wafer rolls in cylindrical tins**

(57) A packaging machine of wafer rolls that is assembled by a rotary disk (1), with fixed semicircular profiles (2) that have on them pinned quarter profiles (3).

The quarter profiles (3) take several shapes by a cam system (5) and arrange the wafer rolls cylindrically.

The packaging machine consists also of a paper feeder (7), a wheel that counts wafer rolls (6) and a module that manages the tins (8) (entrance, filling, exit of the tins).

The object of this invention is the rapid and automated packaging process of wafer rolls under absolute hygienic conditions.

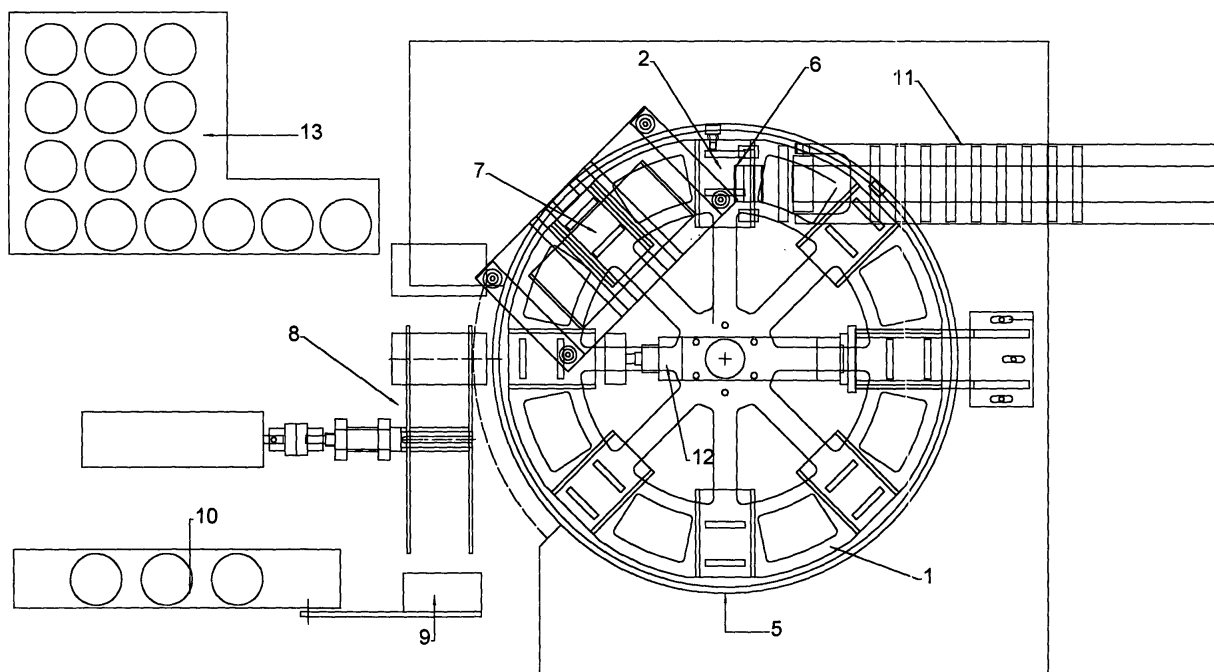


FIGURE 1.

Description

[0001] The present invention relates to a packaging machine of wafer rolls, that can arrange a requested number of wafer rolls cylindrically, wraps them with the wrapping packaging paper and places them into their cylindrical packaging tin.

[0002] There are no other similar machines known in the art and in the industry the process of placing wafer rolls in cylindrical packaging tins is performed manually. As a consequence much non-qualified labour is required, a fact that increases the final cost and degrades the hygienic conditions of the production of wafer rolls.

[0003] It is the object of this invention the rapid and automated packaging of wafer rolls in cylindrical tins under absolute hygienic conditions and the decrease in the final cost of the product.

[0004] The wafer rolls packaging machine is a rotary machine assembled by different mechanical modules (entrance and count of wafer rolls, management of cylindrical tins, feeder of wrapping paper, module of arranging wafer rolls cylindrically) and is defined by the module that arranges the requested number of wafer rolls cylindrically which consists of a rotary disk (1) that supports a number of semicircular profiles (2) symmetrically distributed on the rotary disk (1). On each semicircular profile (2) two quarter profiles (3) are pinned. Every quarter profile (3) bears a wheel (4) that rolls on a cam (5). Depending on the position of their wheel (4) that rolls on the cam (5) the quarter profiles (3), which in the beginning are open so as to permit the placing of the wafer rolls inside the semicircular profile (2), on the move they gradually close around the semicircular profile (2), arranging the wafer rolls inside cylindrically.

[0005] An application of the invention is illustrated in the figures below.

[0006] In FIG.1 a plan view of the whole machine is illustrated.

[0007] In FIG.2 we show the 3 views of the semicircular profile (2) with the quarter profiles (3) and their wheels (4).

[0008] In FIG.3 the semicircular profile (2) with the quarter profiles (3) and their wheels (4) are depicted in successive positions.

[0009] In FIG.4 we can see in a plan view the rotary disk (1) with the cam (5) and the semicircular profiles (2) with the quarter profiles (3) and their wheels (4).

[0010] In FIG.5 we can see the entrance of the wafer rolls in the machine upon a conveyer (11), the wheel that counts the wafer rolls (6) and their placement in the semicircular profile (2) with the quarter profiles (3) and their wheels (4).

[0011] In the general plan view of FIG.1 we can see the entrance of the wafer rolls on a conveyer (11), the wheel that counts the wafer rolls (6), the semicircular profiles (2) that are fixed on the clockwise rotating disk (1), the cam (5), the paper feeder (7), the flat conveyer of empty cylindrical tins (13), the conveyer that transports the filled cylindrical tins (10), a mechanism that elevates

the filled tins (9) on the conveyer of filled tins (10), the module that manages the cylindrical tins (8) and the cylinder (12) that places the cylindrically arranged wafer rolls in the tins.

[0012] The wafer rolls are transported via the conveyer (11) to the entrance of the machine. Initially the wafer rolls get into the counting wheel (6) which after gathering the requested number of wafer rolls places them into the open semicircular profile (2) which at that time is positioned under the counting wheel (6). The placement of the wafer rolls from the counting wheel (6) to the semicircular profile (2) is illustrated in FIG.5. The paper feeder (7) has placed the wrapping packaging paper into the semicircular profile (2) in the previous position. When the requested number of wafer rolls has been placed the disk (1) rotates clockwise and a new semicircular profile (2) arrives at the position below the counting wheel (6). During the rotation of the disk (1) the quarter profiles (3) gradually close the semicircular profile (2) that has been filled with wafer rolls. As it is illustrated in FIG.3 in the position that the semicircular profile (2) is filled with wafer rolls, the quarter profiles (3) let the semicircular profile (2) uncovered so as to permit the placement of wafer rolls inside (first scheme of FIG.3). During the rotation of the disk (1) the wheels (4) that roll on the cam (5) close the quarter profiles (3) and so the wafer rolls are arranged cylindrically (second scheme of FIG.3), a process that is being completed in the position in front of the module that manages the cylindrical tins (8) (third scheme of FIG.3). When the semicircular profile (2) arrives closed at the position of wafer rolls exit, in front of the module that manages the cylindrical tins (8), a cylinder (12) pushes the wafer rolls inside the empty tin that waits in the module (8). The filled tin is taken by the elevating mechanism (9) which places it on the conveyer of filled tins (10). An empty tin comes from the flat conveyer of the empty cylindrical tins (13) in the module that manages the cylindrical tins (8) so to take its turn to be filled.

Claims

1. A packaging machine of wafer rolls that arranges a requested number of wafer rolls cylindrically and places them in cylindrical tins after having wrapped them with the wrapping packaging paper, and is defined by a paper feeder (7), a wheel that counts the wafer rolls (6), a module that manages cylindrical tins (8) and a module that arranges the wafer rolls cylindrically which consists of semicircular profiles (2) fixed on a rotary disk (1) that bear on them two pinned quarter profiles (3) with wheels (4) that roll on a cam (5) taking appropriate shapes so as in the position under the counting wheel (6) to permit the filling of the semicircular profile (2) with the requested number of wafer rolls and on the move to take a cylindrical shape arranging similarly the wafer rolls inside.

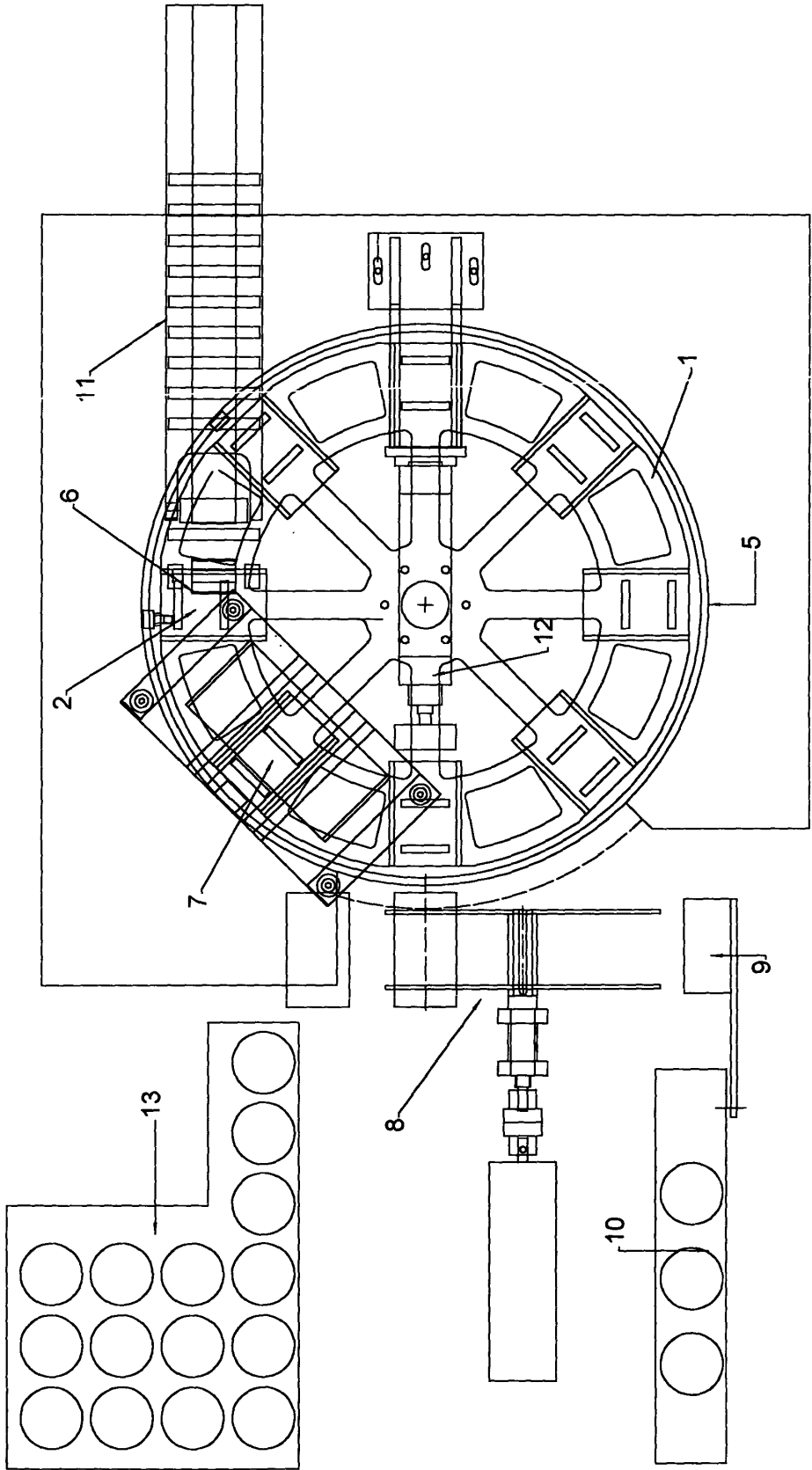


FIGURE 1.

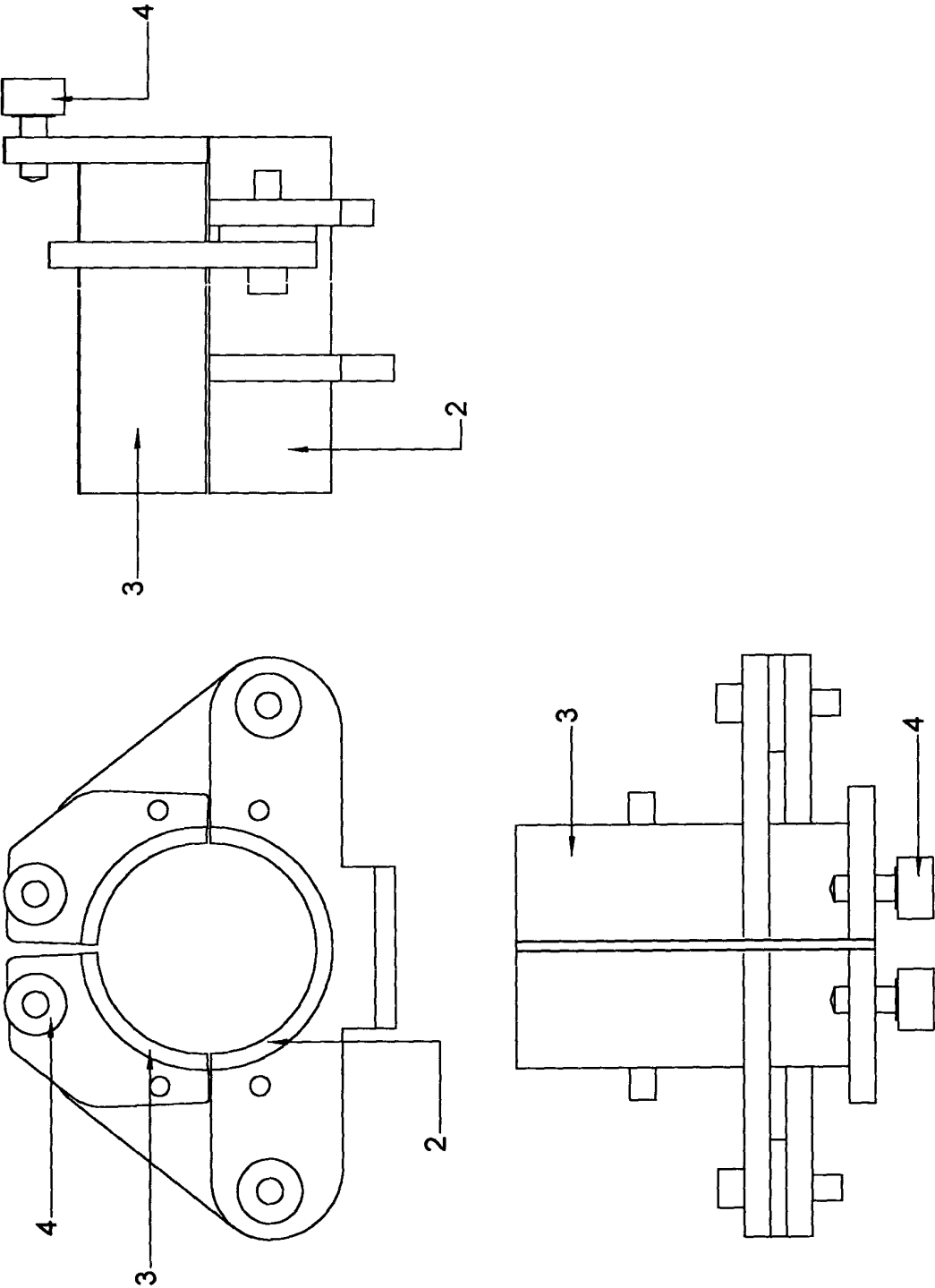


FIGURE 2.

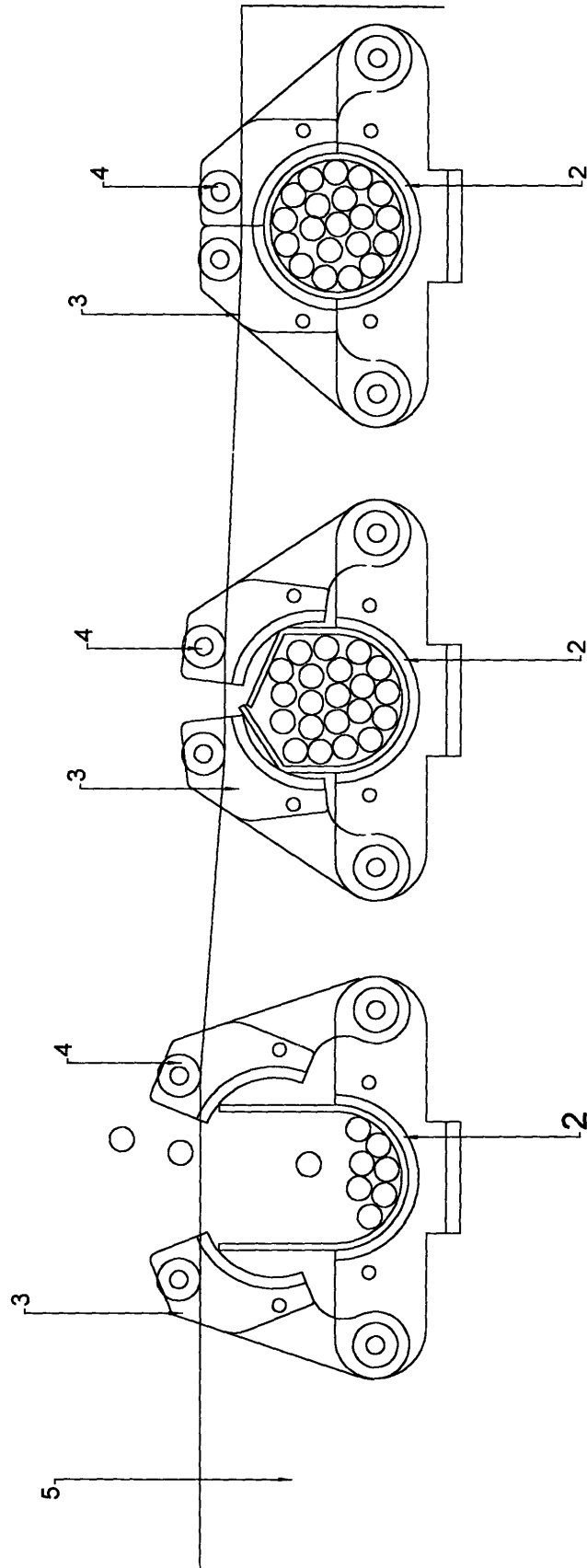


FIGURE 3

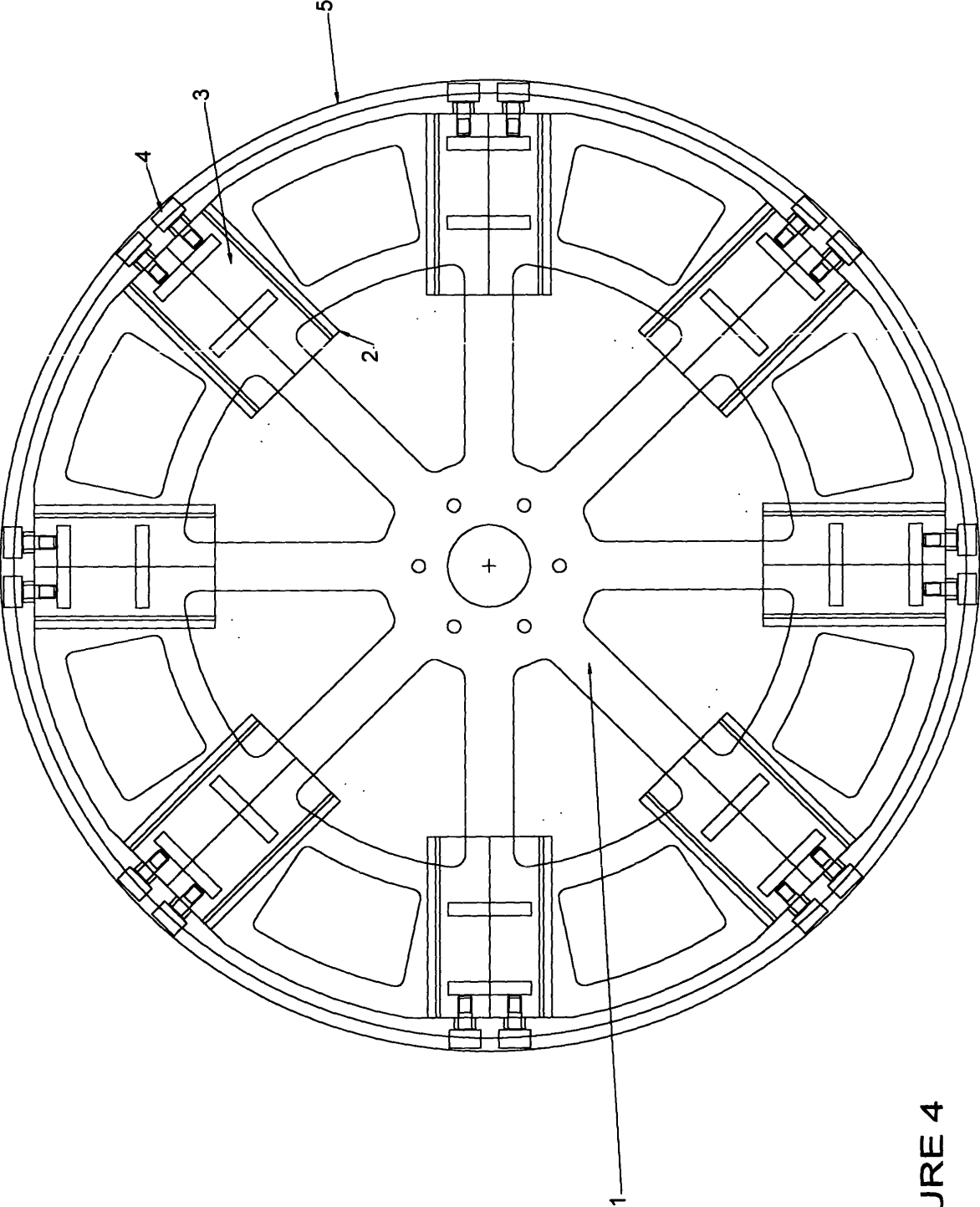


FIGURE 4

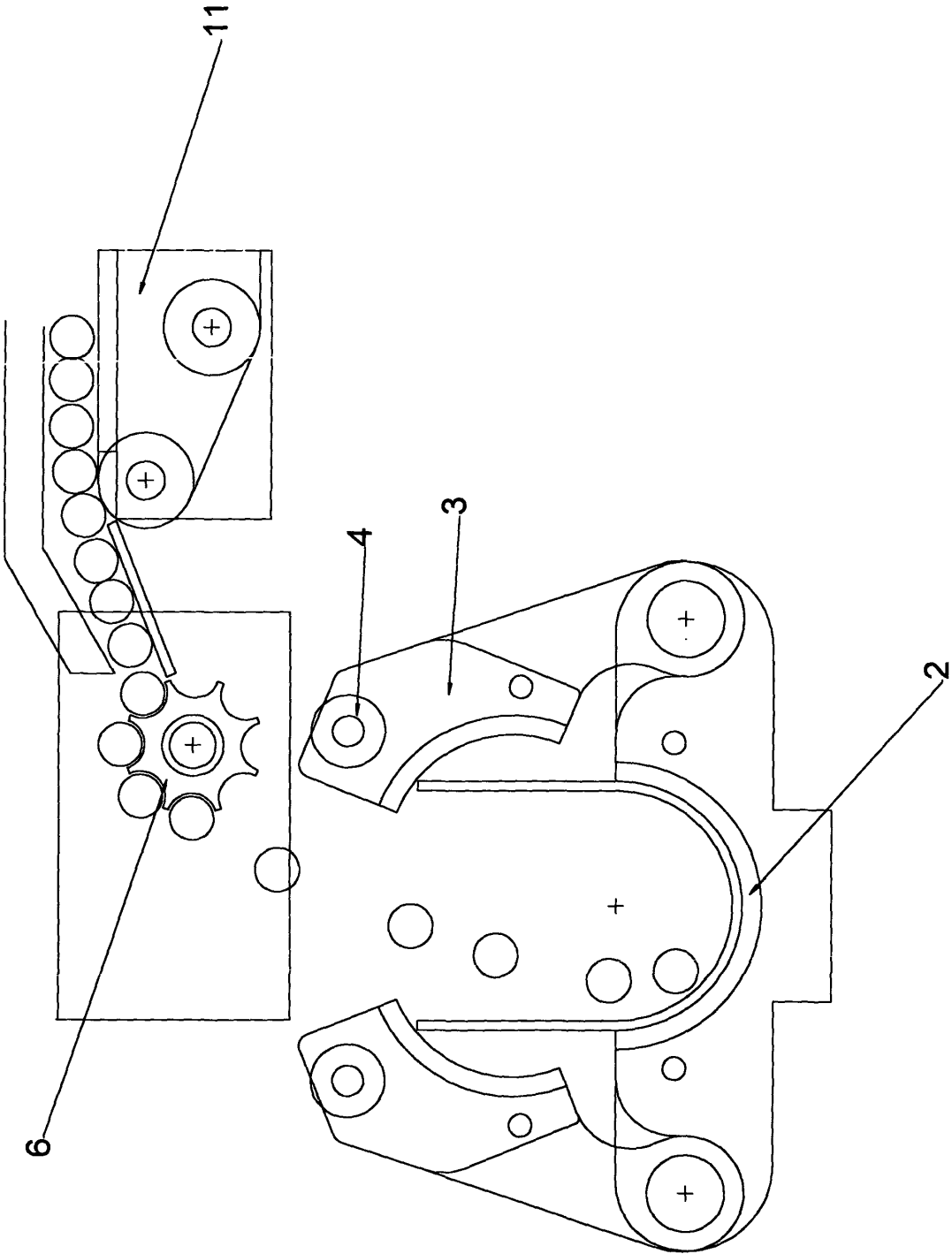


FIGURE 5



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 05 38 6017

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Y	DE 199 09 608 A1 (SELO SERVICE B.V., OLDENZAAL) 20 January 2000 (2000-01-20) * the whole document *	1	B65B19/34 B65B23/12
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			B65B B65G
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 7 October 2005	Examiner Vigilante, M
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			

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EPO FORM 1503 03.92 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 05 38 6017

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
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07-10-2005

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