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(54) **UNIT FOR TRANSFERRING REELS OF LABELLING MATERIAL**

(57) A transfer unit (12) for feeding reels (6) of labelling material to a labelling module (13) configured to apply labels (2) onto articles (4) is described; the transfer unit (12) comprises: a support member (14) configured to support a plurality of reels (6) organized vertically in at least one a stack (15); and a robotic arm (16) configured to remove at least one reel (6) at a time from the stack (15) at a gripping station (G) and to release it at a release

station (R); the support member (14) being movable horizontally, during use, at least from a remote position, where the reels (6) are arranged stacked vertically on the support member (14), to the gripping station (G), where the transfer unit (12) is configured to eliminate a vertical distance between the stack (15) and the robotic arm (16)

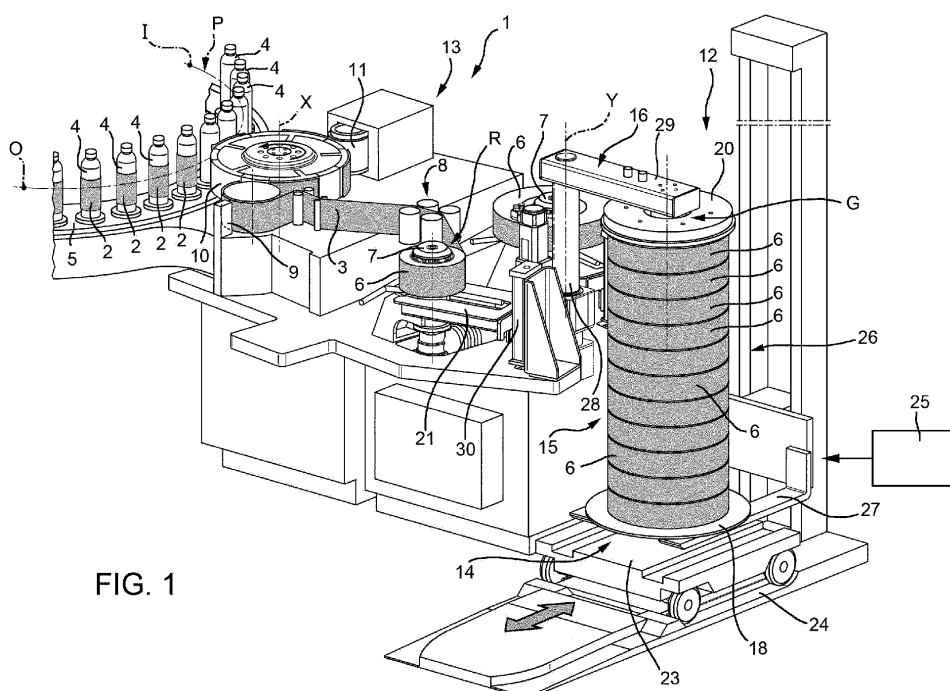


FIG. 1

Description

TECHNICAL SECTOR

[0001] The present innovation relates to a reel transfer unit. In particular, the present innovation may be advantageously, but not exclusively, used to transfer, i.e. to load or feed, automatically reels of labelling material to the labelling module of a labelling machine configured to apply labels onto articles, in particular containers designed to contain a pourable product, preferably a food product.

BACKGROUND ART

[0002] The bottling of pourable food or non-food products inside respective containers is usually accompanied by the labelling of these containers with respective labels, in the form of thin bands which are obtained from a strip of labelling material, during a labelling process.

[0003] Generally, the strip of labelling material is wound onto one or more storage reels which typically have a disc-like form, with a height substantially equal to the transverse extension of the strip.

[0004] The labelling of the container is performed before, during or after the filling thereof, by means of special labelling machines.

[0005] Labelling machines which are configured to prepare, transport and apply, during a labelling process, labels onto respective containers designed to be filled with a pourable product are known.

[0006] In detail, during this process, a succession of containers is moved forwards, along a predetermined travel path, towards a labelling module of the labelling machine configured to label each container.

[0007] Various types of labelling processes are known where glued labels, adhesive labels (PSL) or sleeve labels may be used. The present description will refer specifically to labels of the glued type, although this is not to be regarded as limiting the scope of protection defined by the attached claims.

[0008] According to this type of labelling process, within the labelling module, the strip of labelling material is firstly unwound from the respective storage device and then fed, along a predetermined feeding path, to a cutting device, typically a cutting blade, which is configured to separate the strip into a succession of single labels which have the same length. The labels thus obtained are then transferred and glued onto the outer side surface of respective articles.

[0009] The labelling module further comprises a label transfer device, typically a vacuum drum which is configured to receive each label, retain it on an outer surface thereof by means of suction and apply it onto a respective container, in an application station.

[0010] Before application onto the respective container, a layer of glue is spread on an inner side of each label, namely on its rear side, namely the side which is intended

to cooperate by means of contact, in particular to be pressed, onto the respective container, after application.

[0011] Whatever the type of labelling process involved, in order to ensure the uninterrupted feeding of labelling material to the transfer device of the labelling unit, new reels must be transferred:

- from a storage position, where a plurality of reels are positioned, usually stacked, in a special support or storage member;
- to a working position, where each reel is transferred (loaded) from the storage member to a receiving shaft of the labelling module, designed to support and unwind the strip of labelling material from the respective reel in order to feed it to the vacuum drum.

[0012] The transfer or loading operation is performed by means of a transfer (or loading) unit usually comprising one or more robotic arms configured to remove the reels from the respective stack and release them to the labelling module.

[0013] Typically a transfer unit of the known type comprises one or more storage members, for example vertical supports, each consisting of a column supported in a vertical position by a base (for example a tripod); the reels are secured to the support by inserting the column concentrically inside the central hubs of the respective reels. In this way, stacks of concentric reel are obtained, said stacks being positioned, for example by an operator, in the vicinity of the labelling module.

[0014] Each reel is then removed from the respective stack by means of the aforementioned robotic arm, for example by means of engagement of a respective gripping device mounted on the robotic arm with the associated central hub of the reel.

[0015] An example of the aforementioned transfer unit is described in WO-A-2019048044.

[0016] Although the known transfer units are functionally valid, the Applicant has realized that they may be subject to further improvements. In particular, in the sector there exists the need to increase the degree of automation of the labelling process and increase the flexibility of the known labelling modules, without complicating the architecture of the entire labelling machine.

OBJECT AND SUMMARY OF THE INNOVATION

[0017] The object of the present innovation is to provide a unit for transferring reels of labelling material, which is very reliable and has a low cost and which is able to overcome at least some of the aforementioned drawbacks associated with the units for transferring reels of labelling material of the known type.

[0018] According to the innovation, this object is achieved by a transfer unit according to Claim 1.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] For a better understanding of the present innovation, a preferred non-limiting embodiment thereof is described purely by way of example with the aid of the attached drawings, in which:

- Figure 1 is a perspective view, with parts removed for greater clarity, of a labelling machine comprising a labelling module and a transfer unit designed according to the present invention;
- Figures 2a-2c show schematic top plan views, on a larger scale and with parts removed for greater clarity, of the labelling module and the transfer unit according to Figure 1, in three different operating conditions;
- Figure 3 shows a schematic top plan view, on a larger scale and with parts removed for greater clarity, of the transfer unit and the labelling module according to Figure 1, during a different operating mode.

DETAILED DESCRIPTION

[0020] With reference to the attached figures, 1 denotes in its entirety a labelling machine (shown in schematic form and with parts removed for greater clarity) configured to handle a labelling material in an automated labelling process.

[0021] In particular, the labelling machine 1 forms part of a plant for packaging pourable products and is configured to apply labels 2 obtained from a strip 3 of labelling material onto articles.

[0022] More particularly, the articles consist of containers 4, for example bottles, cans or the like, which are made of plastic, metallic or glass material, able to contain (namely be filled with) a pourable product, preferably a food product.

[0023] In the example shown, the labels 2 applied are glued labels, namely portions of labelling material of predefined length, which are cut from the strip 3 of labelling material and then covered with glue. These cut and glued labels 2 are then transferred and applied onto the outer surface of the respective containers 4.

[0024] The labelling machine 1 comprises essentially:

- a carousel 5 rotating about a vertical axis Z, designed to convey a plurality of containers 4 in succession along a horizontal travel path P in the form of a circle arc;
- an inlet station I through which the containers 4 to be labelled are fed to the carousel 5;
- an outlet station O receiving the labelled containers 4 from the carousel 5; and
- at least one labelling module 13 (shown schematically and only with the parts essentially needed for understanding of the present invention) arranged on the periphery of the carousel 5 and configured to feed a plurality of labels 2 to the said carousel 5 and

apply them onto the respective containers 4, in an application station A.

[0025] As is known, the strip 3 is initially wound - and stored - on respective storage reels 6 having a disc-like form and a height substantially equal to the transverse extension of the said strip 3.

[0026] The labelling module 13 comprises essentially:

- at least one shaft 7, two in the example, each configured to support rotatably a respective storage reel 6 from which, during use, the strip 3 of labelling material is unwound;
- a plurality of unwinding and feeding rollers 8 which support the strip 3 unwound from the reel 6 and guide it along a feeding path, which is preferably horizontal;
- a cutting device, for example a cutting blade 9, designed to separate, in particular cut, in sequence each label 2 from the strip 3 of labelling material, thus forming labels 2 which have the same length;
- a transfer device, in particular a vacuum drum 10 for transferring the labels 2, rotatable about its axis X, positioned peripherally with respect to the carousel 5 and configured to receive, retain and feed each label 2 which has been previously cut and to apply this label 2 onto the respective container 4, in the application station A.

[0027] Preferably, the vacuum drum 10 has a substantially cylindrical-toroidal lobe-shaped form.

[0028] More precisely, the drum 10 receives in sequence, during use, the labels 2 which have been cut beforehand by the cutting blade 9, retains the labels 2 by means of suction on its side surface and, after a rotation through a given angle about the axis X, releases these labels 2 in the application station A, so that they are applied onto the respective containers 4, in a manner known and not described in detail.

[0029] The labelling module 13 comprises, furthermore, a glue application device 11, for example a glue roller, configured to apply a certain predetermined amount of glue onto each label 2, before the latter is applied onto the associated container 4.

[0030] In particular, the application device 11 is configured to spread a layer of glue on an inner side of each label 2.

[0031] It is pointed out that "inner side" of the label 2 is understood as being the rear of the label 2, namely the side intended to cooperate by means of contact, namely to be pressed, onto the side surface of the respective container 4, after application. The inner side therefore forms the non-visible part of the label 2 after application.

[0032] In order to ensure the uninterrupted feeding of labels 2 to the vacuum drum 10 of the labelling module 13, the labelling machine 1 further comprises a transfer unit 12 configured to feed - i.e. to transfer or load - in sequence the reels 6, in particular at least one reel 6 at a time to the labelling module 13.

[0033] In detail, the transfer unit 12 is configured to position one reel 6 at a time on each shaft 7 of the labelling module 13 and to remove the empty reels 6 from the said shafts 7.

[0034] In greater detail, the transfer unit 12 comprises:

- a support member 14 configured to support a plurality of reels 6 organized vertically to form a stack 15; and
- a robotic arm 16 configured to remove at least one reel 6 at a time from the stack 15 at a gripping station G and to release it at a release station R.

[0035] In the example described, each of the two shafts 7 defines an aforementioned release station R.

[0036] According to this preferred non-limiting embodiment, the support member 14 is arranged at the rear of the labelling module 13, in particular on the side of the labelling module 13 opposite to that of the carousel 5.

[0037] The support member 14 comprises a vertical column 17 engaging, during use, with the central of hubs of the stacked reels 6 and a disc-like base 18 mounted slidably on the column 17 and supporting above it, during use, the stack 15.

[0038] In other words, during use, the reels 6 are stacked vertically on the disc-like base 18 with their central hubs engaged by the vertical column 17.

[0039] In the example described, the robotic arm 16 comprises a gripping member 20 configured to remove at least one reel 6 from the stack 15, at the gripping station G, and to release it at the corresponding release station R, namely onto the corresponding shaft 7.

[0040] As shown in the attached drawings, when the stack 15 is located at the gripping station G, it is arranged underneath the robotic arm 16, in particular underneath the gripping member 20.

[0041] In other words, in this condition, it is possible to define, or identify, a vertical distance between the stack 15 - namely between the first reel 6 of the stack 15, namely that located highest up - and the gripping member 20.

[0042] Conveniently, the gripping member 20 comprises vacuum suction means for removing and retaining one reel 6 at a time.

[0043] In detail, the gripping member 20 is defined by a substantially circular plate comprising, on its bottom surface facing, during use, the stack 15 (and therefore directed downwards), a plurality of holes (not shown); these holes are connected in fluid communication with a vacuum source (known per se and not shown) designed to generate a sucking action in the region of the said holes.

[0044] By means of this sucking action, the gripping member 20, and therefore the robotic arm 16, is able to remove and retain in sequence the reels 6, in particular one reel 6 at a time.

[0045] Once the release station R is reached, the sucking action is interrupted and the reel 6 is released to the corresponding shaft 7; in this condition the central hub

of the reel 6 is engaged by this shaft 7 so that the shaft 7 itself rotatably supports the reel 6.

[0046] Suitably, the holes extend radially over the entire bottom surface of the gripping member 20; in this way it is possible to avoid the undesirable separation of the strip 3 from the reel 6 during transfer from the gripping station G to the associated release station R.

[0047] Preferably, the labelling module 13 comprises, on each shaft 7 of the means for raising the reels 6, in particular fork members 21 movable vertically between:

- an upper position, where they receive, during use, the new reels 6 from the gripping member 20 or feed the empty reels 6 towards the gripping member 20; and
- a lower position, where they release the new reels 6 onto the corresponding shafts 7 or remove the empty reels 6 from the said shafts 7 in order to move them (raise them) towards the gripping member 20.

[0048] In particular, the fork members 21 are slidably connected to respective vertical guides 30 which are fixed onto the labelling module 13.

[0049] Suitably, the empty reels 6 are transferred, by means of the robotic arm 6, to a special collection device 22 (schematically shown).

[0050] According to one aspect of the present innovation, the support member 14 is movable horizontally, during use, at least from a remote position, where the reels 6 are arranged stacked vertically on the said support member 14, to the gripping station G, where the transfer unit 12 is configured to eliminate the vertical distance between the stack 15 and the robotic arm 16, namely between the stack 15 and the bottom surface of the gripping member 20.

[0051] For this purpose, the transfer unit 12 comprises a trolley 23 carrying the support member 14, in particular carrying on top of it the support member 14 and movable horizontally at least from the remote position to the gripping station G.

[0052] In detail, the column 17 is fixed to the trolley 23 and therefore transported, during use, by the trolley 23.

[0053] Conveniently, the trolley 23 is provided with wheels and the transfer unit 12 further comprises a guide rail 24 extending horizontally at least from the remote position to the gripping station G and configured to seat slidably the trolley 23, in particular the wheels of the trolley 23.

[0054] Suitably, the transfer unit 12 further comprises a control unit 25 configured to control the sliding movement of the trolley 23 along the guide rail 24 at least from the remote position to the gripping station G. Consequently, the trolley 23 defines an automatic robotic trolley.

[0055] In an alternative embodiment, the trolley 23 could be moved manually by an operator.

[0056] During use, when the trolley 23 is located in the remote position, it carries the support member 14 which supports, in turn, a plurality of reels 6 organized in a ver-

tical stack 15, as specified above.

[0057] Then the trolley 23 is operated by the control unit 25 so as to move from the remote position to the gripping station G where the stack 15 is arranged underneath the gripping member 20 of the robotic arm 16.

[0058] At this point, the transfer unit 12 eliminates the vertical distance between the stack 15 and the gripping member 20.

[0059] For this purpose, the transfer unit 12 comprises raising means designed to move vertically the stack 15 when the support member 14 is located at the gripping station G and therefore when the stack 15 is located underneath the gripping member 20.

[0060] According to this preferred non-limiting embodiment, the raising means comprise a vertical guide 26 and a lifting fork 27 slidably engaged with the vertical guide 26.

[0061] In particular, the fork 27 is configured to cooperate by means of contact with the disc-like base 18, more particularly with a bottom surface of the disc-like base 18.

[0062] In other words, when the stack 15 is located at the gripping station G, the fork 27 raises, during use, the disc-like base 18 so as to move vertically the stack 15 itself and bring the first reel 6 (that arranged highest) in the stack 15 within the reach of the gripping member 20.

[0063] During use, as soon as the gripping member 20 grips this reel 6, the fork 27 is operated by the control unit 25 so as to move downwards, so that the reel 6 to be transferred remains gripped by the said gripping member 20 and so that the stack 15 does not interfere with the subsequent movement of the gripped reel 6.

[0064] When the next reel 6 must be transferred, the fork member 27 will be operated so as to move again upwards, thus bringing the new first reel 6 within the reach of the gripping member 20.

[0065] This operation is repeated for each reel 6 present in the stack 15.

[0066] When the stack 15 is empty, namely when all the reels 6 in the stack 15 have been transferred to the labelling module 13, the control unit 25 causes the displacement of the trolley 23 from the gripping station G to the remote position.

[0067] In this condition, two operations may be performed, in an alternating manner:

- a new stack 15 is loaded onto the column 17 of the support 14; or
- the empty trolley 23 is extracted from the guide rail 24 and replaced with a new trolley 23 which has been provided beforehand (preloaded) with a stack 15 of reels 6.

[0068] In this way, the efficiency of the labelling process is increased since it is possible to provide several trolleys 23 preloaded with respective stacks 15 of reels 6.

[0069] Moreover, in the case where it is required to change the format of the labels 2, it is sufficient to intro-

duce a trolley 23 carrying a stack 15 of reels 6 with a different format, which is to be transferred to the labelling module 13.

[0070] In this way the flexibility of the labelling machine 1 is improved.

[0071] According to this preferred non-limiting embodiment, the robotic arm 16 is fixed pivotably, in particular rotatably, to a rear portion of the labelling module 13.

[0072] In particular, the robotic arm 16 comprises:

- a spindle 28 which is preferably cylindrical and mounted rotatably on the rear portion of the labelling module 13 about a vertical axis Y; and
- a bar element 29 mounted integrally with the spindle 28 on a first end portion thereof and carrying the gripping member 20 on a second end portion thereof opposite to the first end portion.

[0073] More precisely, the bar element 29 is arranged perpendicularly with respect to the axis Y.

[0074] The robotic arm 16 is configured to move the gripping member 20 along a substantially circular gripping path W concentric with the axis Y and passing through the gripping station G and the release stations R.

[0075] According to an alternative embodiment (not shown) the robotic arm 16 is fixed to the ground supporting the labelling module 13, the transfer unit 12 and the carousel 5.

[0076] In the light of the above description, when the support member is in the gripping position G, it is the stack 15 which must be moved vertically towards the gripping member 20, while the latter remains fixed along the vertical direction.

[0077] According to an embodiment not shown, the gripping member 20 is movable vertically towards/away from the support member 14 when the support member 14 is in the gripping station G.

[0078] In detail, according to a first alternative, the spindle 28 of the robotic arm 16 is extendable/retractable along the axis Y; since the bar element 29 is mounted integrally with the spindle 28, it causes a corresponding vertical movement of the gripping member 20.

[0079] According to a further alternative, the gripping member 20 is mounted so as to be movable with the bar element 29, for example by means of a coupling extendable telescopically in the vertical direction.

[0080] In this way, the gripping member 20 is able to reach the aforementioned first reel 6 in the stack 15 and grip it, at the gripping station G.

[0081] In this configuration, the presence of the vertical 26 and the fork 27 is not necessary. The stack 15 therefore remains fixed along the vertical direction.

[0082] According to a further alternative embodiment schematically shown in Figure 3, the transfer unit 12 comprises at least two support members 14 each configured to support a respective plurality of reels 6 organized vertically in respective stacks 15.

[0083] In this case, at least two gripping stations G1

and G2 are defined and passed through by the gripping path W defined, during use, by the gripping member 20 of the robotic arm 16 about the axis Y.

[0084] Operation of the transfer unit 12 according to the present invention will be described below, with particular reference to Figures 2a-2c and to an initial condition in which a reel 6 loaded onto one of the shafts 7 is nearly empty and there therefore exists the need to move away the roller supporting this reel 6 and transfer a new reel to the labelling module 13, taking it from the stack 15.

[0085] In this condition, the trolley 23 is operated by the control unit 25 so as to move from the remote position to the gripping station G, or is already located in the gripping station G. Moreover, the robotic arm 16 is operated to move into the gripping station G (situation shown in Figure 2a).

[0086] At the same time, the labelling module 13, so as not to interrupt production, draws material from the full reel 6 which has already been loaded onto the other one of the shafts 7 by means of a system for splicing the strip 3, known per se and not described in detail.

[0087] Then the robotic arm 16 is operated to move along the path W towards the associated release station R in order to pick up the empty reel 6, unload it onto the collection device 22 (Figure 2b) and move towards the gripping station G.

[0088] At this point, the fork 27 raises the stack 15 and the gripping member 20 grips the new reel 6 from the stack 15. Alternatively, the gripping member 20 moves down vertically towards the stack 15 in order to pick up the new reel 6, as specified above.

[0089] Thereafter, the robotic arm 16 is operated to move again into the release station R in order to release the reel 6 to the respective shaft 7 (Figure 2c).

[0090] The process is repeated whenever it is required to transfer a new reel 6 to the labelling module 13.

[0091] From an examination of the characteristic features of the transfer unit 12 according to the present innovation the advantages which may be obtained with said unit are clear.

[0092] In particular, the degree of automation of the labelling process is increased and consequently the risks of accidents involving operators during production are also reduced.

[0093] In addition, owing to the possibility of providing different trolleys 23 already pre-loaded with reels 6 having different formats (for example having different decorative patterns), the flexibility of the transfer unit 12 and of the entire labelling machine 1 is increased, without complicating the architecture thereof.

[0094] It is clear that the transfer unit 12 described and illustrated here may be subject to modifications and variations without thereby departing from the scope of protection defined by the claims.

[0095] In particular, the labels 2 applied, during use, by the labelling machine 1 could be of the PSL type, namely self-adhesive labels which are initially attached to a backing strip defining the strip 3 of labelling material.

[0096] Alternatively, the labels 2 could consist of sleeve labels, namely tubular labels which are fitted loose onto the containers 4 in a known manner by means of special spindles and which then undergo heat-shrinking.

Claims

1. Transfer unit (12) for feeding reels (6) of labelling material to a labelling module (13) configured to apply labels (2) onto articles (4); said transfer unit (12) comprising:

- a support member (14) configured to support a plurality of said reels (6) organized vertically in at least one a stack (15); and
- a robotic arm (16) configured to remove at least one reel (6) at a time from said stack (15) at a gripping station (G) and to release it at a release station (R);

said support member (14) being movable horizontally, during use, at least from a remote position, where said reels (6) are arranged stacked vertically on said support member (14), to said gripping station (G), where said transfer unit (12) is configured to eliminate a vertical distance between said stack (15) and said robotic arm (16).

2. Transfer unit according to Claim 1, further comprising a trolley element (23) carrying said support member (14) and movable horizontally at least from said remote position to said gripping station (G).

3. Transfer unit according to Claim 2, further comprising a guide rail (24) configured to seat slidably said trolley element (23) and extending horizontally at least from said remote position to said gripping station (G).

4. Transfer unit according to Claim 3, further comprising a control unit (25) configured to operate slidably said trolley element (23) along said guide rail (24) at least from said remote position to said gripping station (G).

5. Transfer unit according to any one of the preceding claims, wherein said robotic arm (16) comprises a gripping member (20) configured to remove, during use, at least one reel (6) one at a time from said stack (15), at said gripping station (G), and to release it in said release station (R); wherein said support member (14) is movable horizontally into said gripping station (G) so as to position said stack (15), during use, below said gripping member (20); said vertical distance being defined between said stack (15) and said gripping member (20).

6. Transfer unit according to Claim 5, wherein said gripping member (20) comprises vacuum suction means for removing and retaining at least one reel (6) at a time from said stack (15). 5
7. Transfer unit according to Claim 5 or 6, further comprising raising means (26, 27) designed to move vertically said stack (15) of reels towards/away from said gripping member (20) when said support member (14) is at said gripping station (G), in order to eliminate said vertical distance. 10
8. Transfer unit according to Claim 7, wherein said raising means comprise a vertical guide (26) and a lifting fork (27) slidably connected to said vertical guide (26) and configured to move, during use, said stack (15). 15
9. Transfer unit according to Claim 8, wherein said support member (14) comprises a vertical column (17) configured to engage inside the central hubs of the respective stacked reels (6) and a disc-like base (18) configured to support at the top said stack (15) and mounted slidably on said column (17); said fork (27) cooperating by means contact, during use, with said disc-like base (18) so as to move said disc-like base (18) along said column (17). 20 25
10. Transfer unit according to Claim 5 or 6, wherein said gripping member (20) is movable, in particular vertically movable, towards/away from said support member (14) when said support member (14) is at said gripping station (G). 30
11. Transfer unit according to any one of the preceding claims, wherein said robotic arm (16) is fixed to said labelling module (13). 35
12. Transfer unit according to any one of Claims 1 to 10, wherein said robotic arm (16) is fixed to the ground supporting said transfer unit (12). 40
13. Transfer unit according to any one of the preceding claims, comprising two or more support members (14) configured to support respective pluralities of reels (6) organized vertically in respective stacks. 45
14. Labelling machine (1) configured to apply labels (2) onto containers (4) designed to contain a pourable product, said machine (1) comprising: 50
- at least one labelling module (13), configured to form a plurality of labels (2) from a strip (3) of labelling material wound onto one or more reels (6) and to apply them onto said containers (4); 55
 - and
 - a transfer unit (12) according to any one of the preceding claims for feeding said reels to said

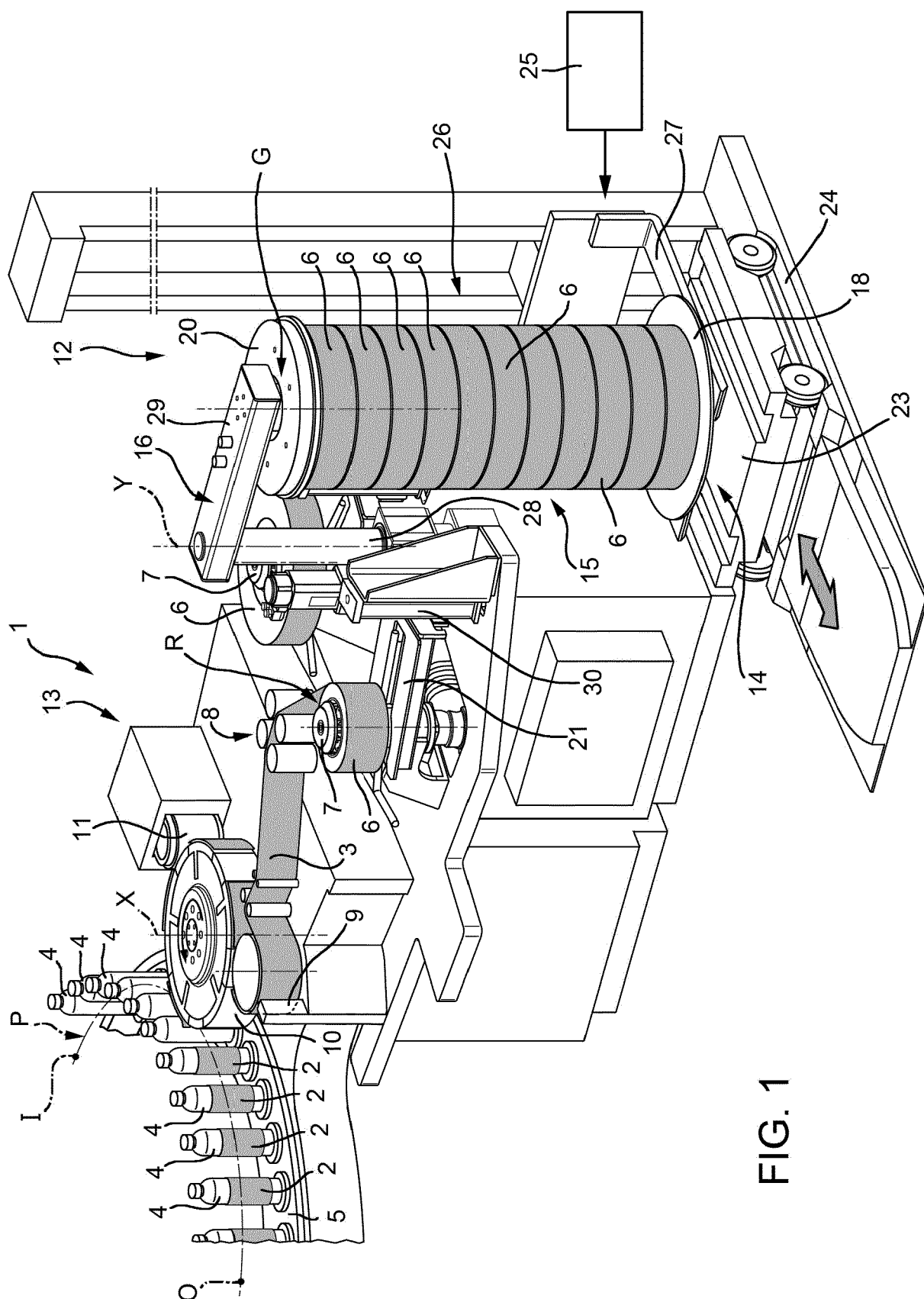


FIG. 1

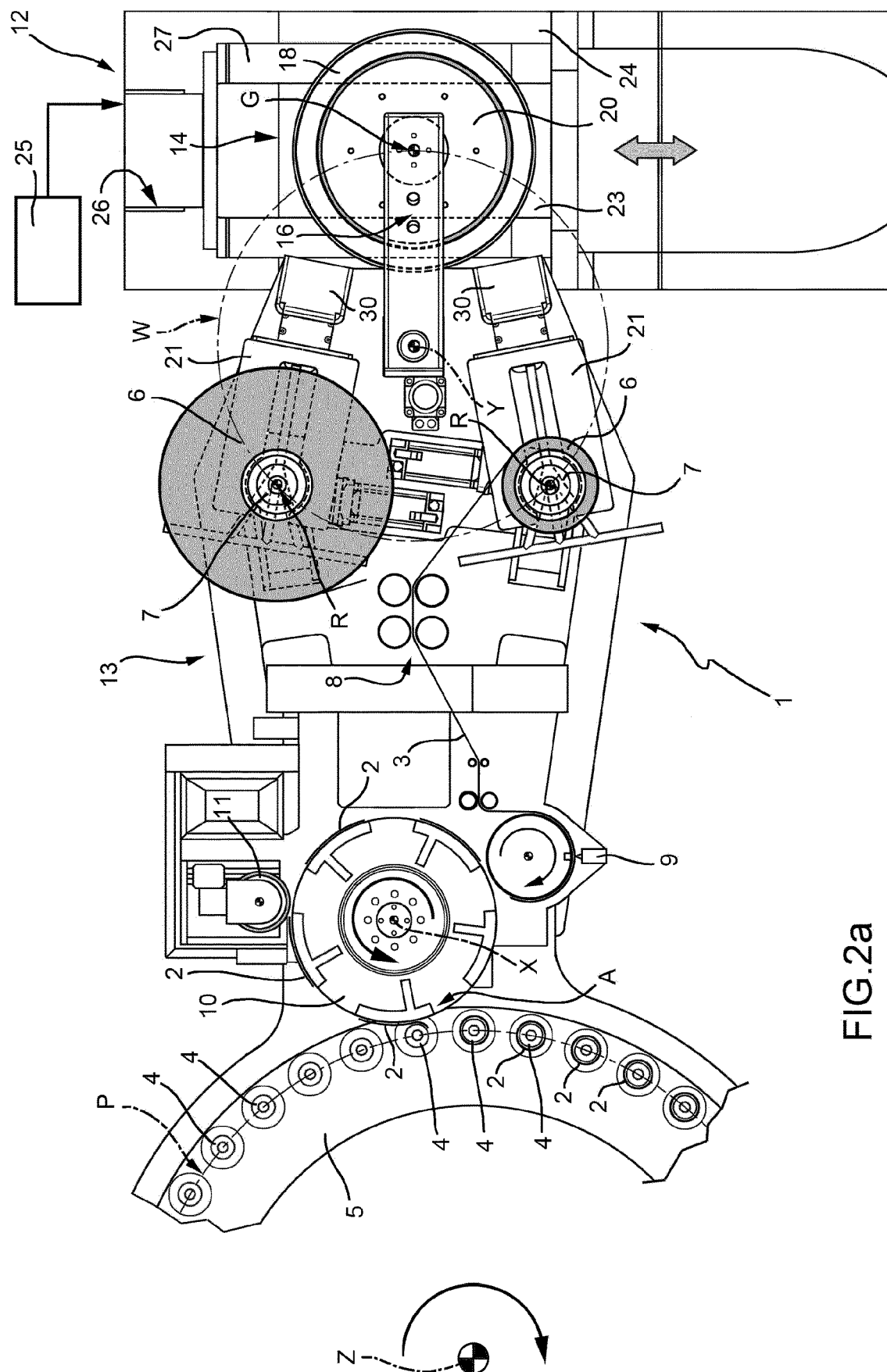


FIG. 2a

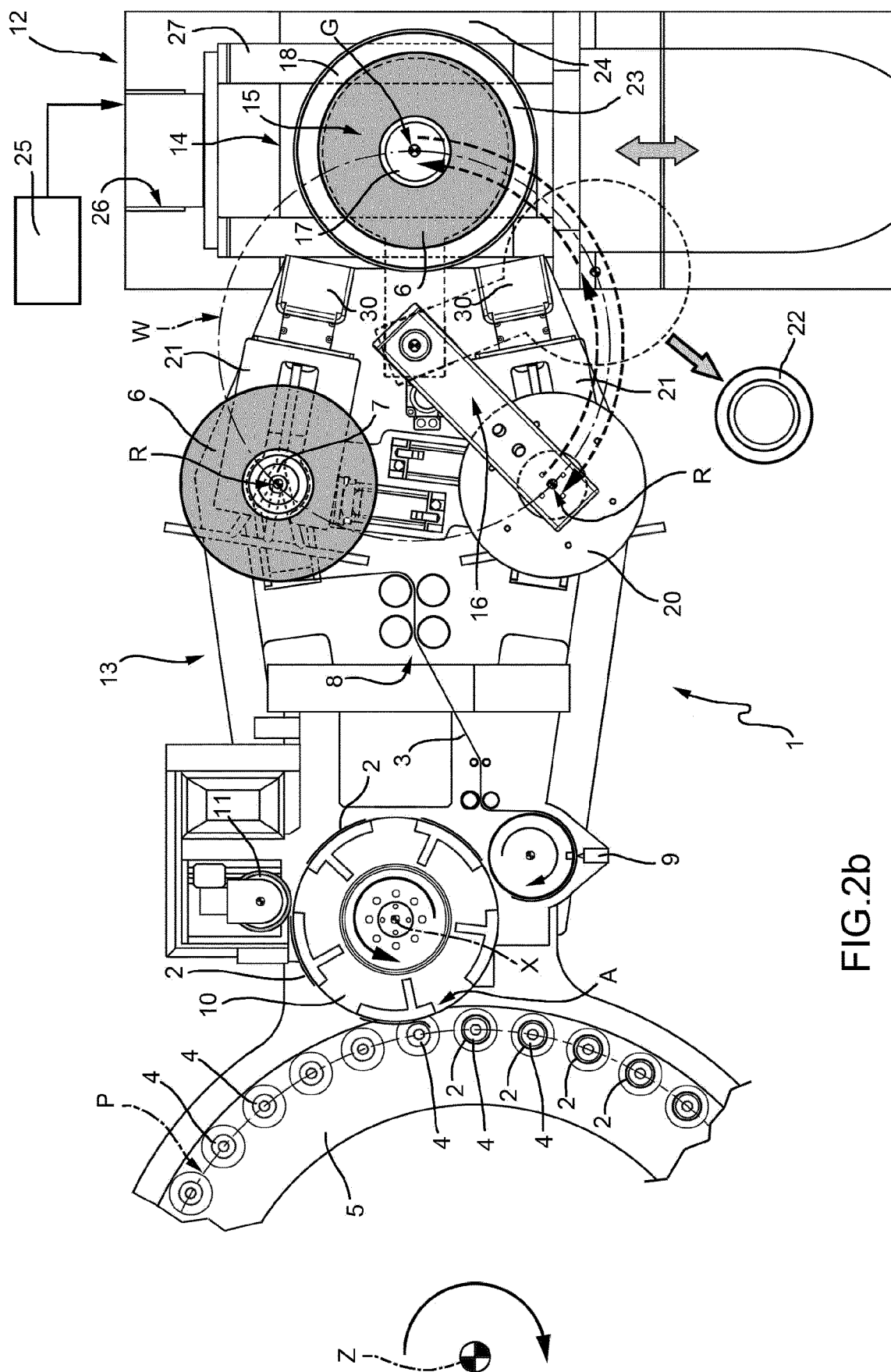


FIG. 2b

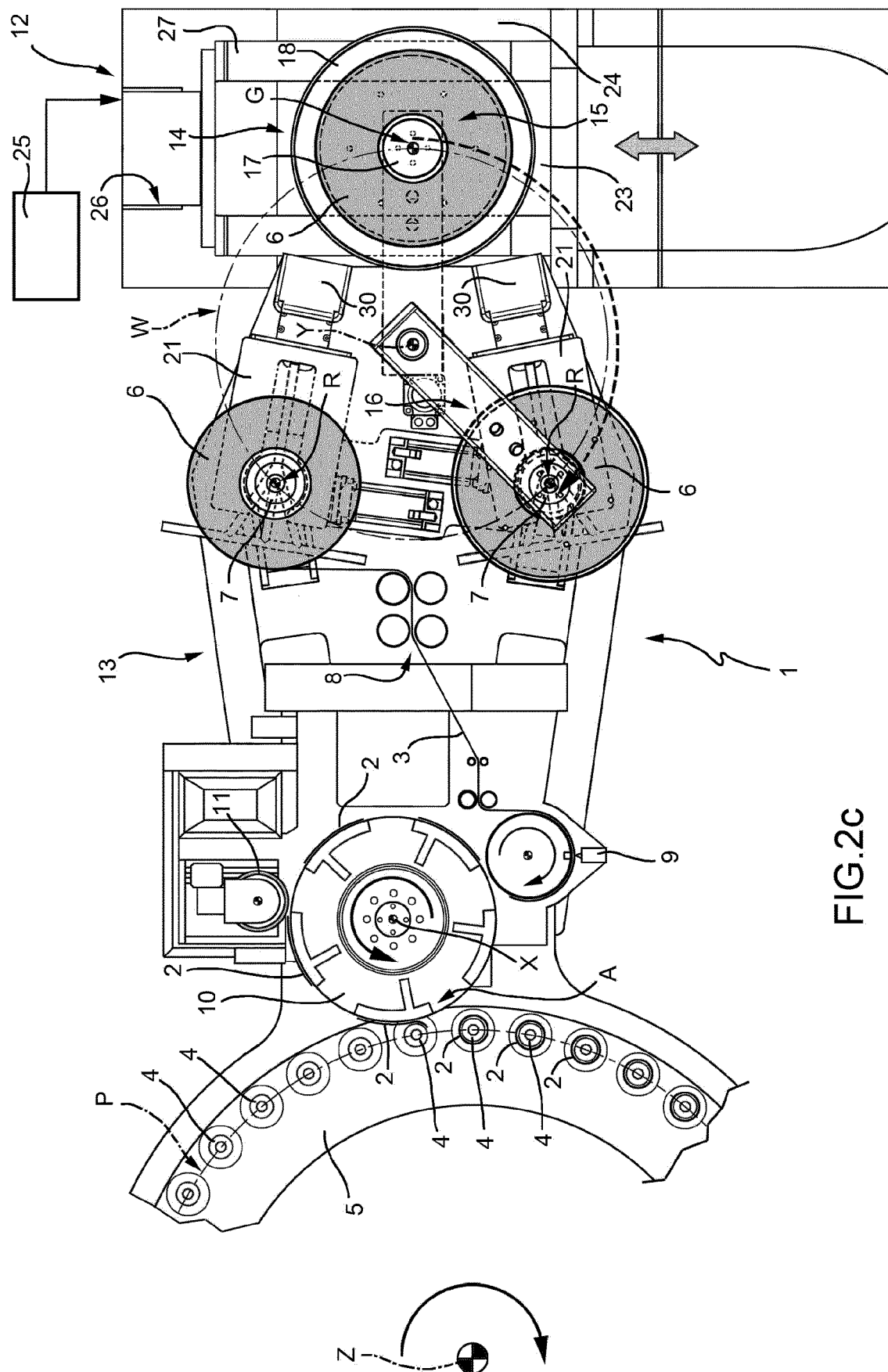


FIG. 2c

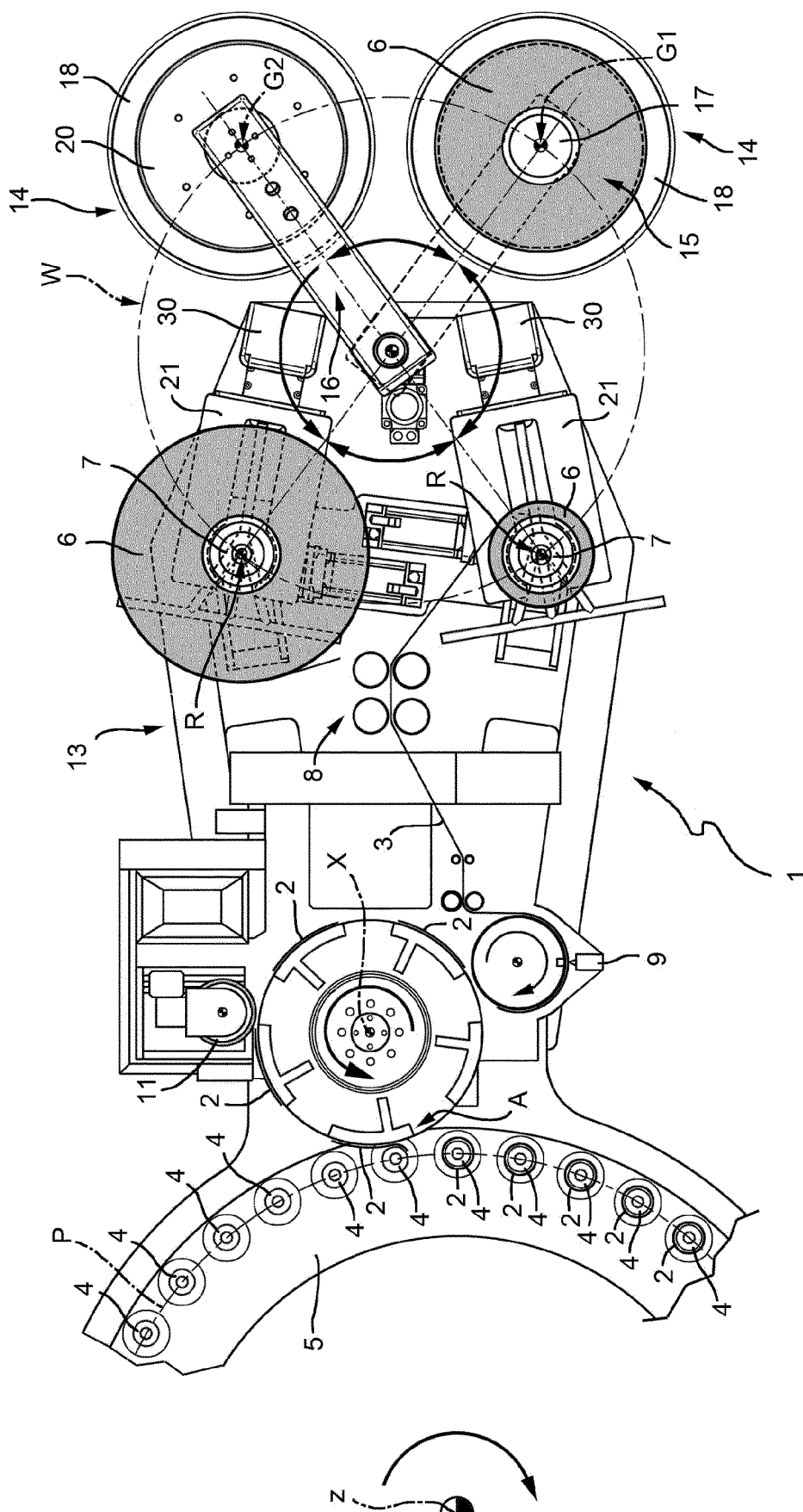


FIG.3



EUROPEAN SEARCH REPORT

 Application Number
 EP 20 17 0504

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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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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 5 October 2020	Examiner Oliveira, Casimiro
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 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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