

(19)



(11)

EP 4 140 902 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
01.03.2023 Bulletin 2023/09

(51) International Patent Classification (IPC):
B65C 9/04 (2006.01)

(21) Application number: **21192625.8**

(52) Cooperative Patent Classification (CPC):
B65C 9/04

(22) Date of filing: **23.08.2021**

(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

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(54) **LABELLING MACHINE FOR APPLYING LABELS ONTO CONTAINERS ADAPTED TO CONTAIN A POURABLE PRODUCT**

(57) There is described a labelling machine (1) for applying labels (2) onto containers (3) and comprising: a conveyor (4) for conveying a plurality of containers (3) along a labelling path (L) and through a labelling station (S); and a labelling module (5) for sequentially applying labels (2) onto the containers (3) at the labelling station (S); the conveyor (4) comprises: a work platform (7) onto which the labelling path (L) extends; a plurality of carts (8) configured to carry at least one container (3) each and movable onto said work platform (7) to advance the containers (3) along the labelling path (L) and sequen-

tially through the labelling station (S); and a planar motor (10) for defining a magnetic-inductive interaction between the work platform (7) and the carts (8) for moving the carts (8) independently from one another and in a levitating manner relative to the work platform (7); each cart (8) comprises: a base portion (11) for magnetic-inductively interact with the planar motor (10); and a rotary member (12) movably carried by the base portion (11), rotatable relative to the base portion (11) for revolving the container (3) at least at the labelling station (S).

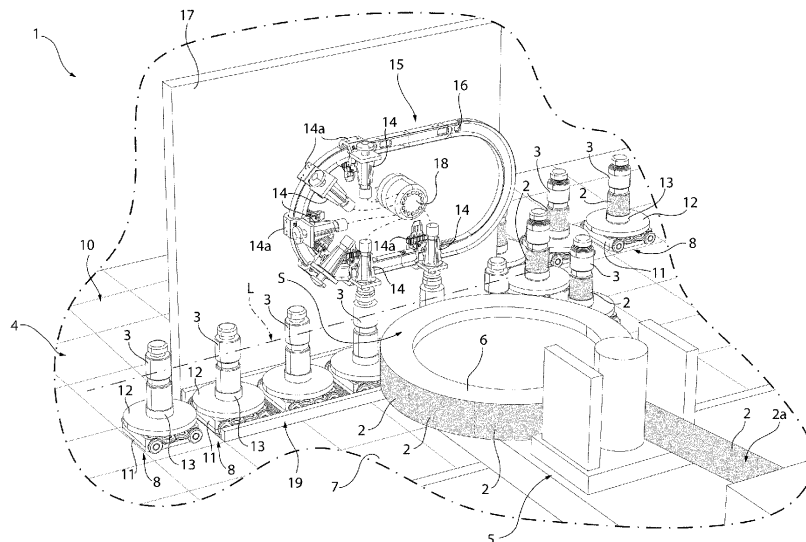


FIG. 1

EP 4 140 902 A1

DescriptionTECHNICAL FIELD

[0001] The present invention relates to a labelling machine for applying labels onto containers adapted to contain, i.e. to be filled with, a pourable product, preferably a pourable food product.

BACKGROUND ART

[0002] Labelling machines are known, which are commonly used to prepare, transport and apply labels onto articles, such as bottles, containers, or the like destined to be filled with a pourable product, in particular a pourable food product.

[0003] Particularly widespread is the use of glued labels, i.e. portions of a labelling material that are cut at appropriate lengths from a web of labelling material initially wound around one or more reels, then sprinkled with glue and eventually applied onto the respective containers.

[0004] Labels of the tubular kind, known as "sleeve labels" and obtained starting from a web of heat-shrinking film wound around one or more storage reels are also known; the sleeve labels are applied with a certain clearance on the respective containers and then heated in an oven to obtain their shrinking and perfect adhesion to the lateral surfaces of the containers themselves. These types of labels do not require the use of glue.

[0005] Regardless of the type of label used, a known labelling machine typically comprises:

- a rotary carousel, rotatable around a vertical axis and configured to convey a plurality of containers along an horizontal, arc-shaped labelling path;
- an input station, at which the containers to be labelled are received by the carousel;
- an output station, at which the labelled containers exit the carousel; and
- a labelling module, peripherally arranged relatively to the carousel and configured to feed a sequence of labels to the carousel itself at an application station, in order to apply such labels to respective containers.

[0006] According to a well-known configuration, a labelling module typically comprises:

- one or more storage units, for example reels or spools around which the web of labelling material is initially wound;
- a plurality of unwinding rollers, which support, in use, the web progressively unwound from the reel and guide it, in use, along a feeding path; and
- a label transfer device, for example a known vacuum drum configured to receive, retain and advance each label and to feed each label to the carousel, at the

application station, for the application thereof onto the relative container.

[0007] Usually, the carousel comprises a plurality of support plates, peripherally carried by the carousel itself in respective fixed positions and each configured to support one container to be labelled at a time, and to move it along the labelling path. In most cases, the carousel also comprises a plurality of gripping heads, each arranged in a respective fixed position above one respective support plate and configured to grip the top part of the neck portion of the container to be labelled in order to define a firm support for the same during labelling, thereby counteracting the forces exerted on the container during labelling.

[0008] Although being functionally valid, the Applicant has observed that the labelling machines of the above-mentioned type are prone to further improvement, in particular as to simplify their architecture, to improve their reliability and flexibility, and to reduce the total number of their components and their overall size.

[0009] In addition, the labelling machines of the above-mentioned type are usually part of an apparatus for packaging the pourable product, which typically comprises several units for carrying out respective operations within the packaging process, namely:

- the labelling machine;
- at least one filling machine (filler) for filling the containers with the pourable product;
- a capping machine (capper) for applying caps onto the filled containers, thereby closing them; and, in case the containers are made of plastic material,
- a blowing machine (blower) configured to produce fully-formed containers, for example plastic bottles, starting from known preforms made of plastic material.

[0010] Typically, as stated before for the labelling machine, all these units comprise respective carousels to convey the containers undergoing the relative operations along respective operative paths (the labelling path, a filling path, a capping path, a forming path).

[0011] Although being functionally valid, the Applicant has observed that the known packaging apparatuses are prone to further improvement, in particular as to improve their reliability and flexibility, to simplify their architecture, and to reduce the total number of their components and their overall size.

DISCLOSURE OF INVENTION

[0012] It is therefore an object of the present invention to provide a labelling machine, which is designed to meet at least one of the above-mentioned needs in a straightforward and low-cost manner.

[0013] This object is achieved by a labelling machine as claimed in the appended independent claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] Non-limiting embodiments of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 is a larger-scale perspective view, with parts removed for clarity, of a labelling machine according to the present invention;

Figure 2 is a larger-scale perspective view of a cart of the labelling machine of Figure 1;

Figure 3 is a side view, with parts removed for clarity, of the labelling machine of Figure 1;

Figure 4A is a perspective view, with parts removed for clarity, of a first embodiment of a guiding structure of the labelling machine of Figure 1;

Figure 4B is a perspective view, with parts removed for clarity, of a second embodiment of the guiding structure of the labelling machine of Figure 1; and Figures 5 and 6 are two schematic top views, with parts removed for clarity, of a packaging apparatus comprising the labelling machine according to the present invention, during two distinct operative configurations.

BEST MODE FOR CARRYING OUT THE INVENTION

[0015] With reference to Figures 1 and 3, number 1 indicates as a whole a labelling machine for applying labels 2 onto containers 3 adapted to contain, i.e. to be filled with, a pourable product, preferably a pourable food product, such as water, wine, beer, juice, soft drinks, milk, yogurt, or the like.

[0016] Preferably, labels 2 are obtained starting from a web 2a of labelling material which is sequentially cut, in a known manner not described in detail, at predetermined intervals so as to produce labels 2 of equal length, which are then sprinkled with glue and eventually applied onto the respective containers 3.

[0017] In one embodiment, the web 2a is self-adhesive and the glue is not needed.

[0018] In one embodiment, the labels 2 are of the type known as "sleeve labels" and the glue is not needed.

[0019] Labelling machine 1 comprises:

- a conveyor 4 for conveying a plurality of containers 3 along a labelling path L and through a labelling station S; and
- a labelling module 5 for preparing, transporting and sequentially applying the labels 2 onto the containers 3 at the labelling station S, according to the above-mentioned known manner.

[0020] Preferably, the labelling module 5 comprises a transfer drum, in particular a vacuum drum 6 of the known type, configured to receive the labels 2 previously cut from the web 2a and to transfer the labels 2 to the labelling station S, at which they are applied onto the respective

containers 3.

[0021] According to one aspect of the present invention, the conveyor 4 comprises:

- 5 - a work platform 7 onto which the labelling path L extends;
- a plurality of carts 8 configured to carry at least one container 3 each and movable onto the work platform 7 to advance the containers 3 along the labelling path L and sequentially through the labelling station S; and
- 10 - a planar motor 10, the functioning of which is known and therefore not described in detail, for defining a magnetic-inductive interaction between the work platform 7 and the carts 8 for moving the carts 8 independently from one another and in a levitating manner relative to the work platform 7. The conveyor 4 is configured so that each cart 8 is moved kinematically independently from the other carts 8, and in a levitating manner relative to the work platform 7.

[0022] In detail, the planar motor 10 comprises a plurality of electrically and individually excitable solenoids (not shown), preferably embedded in work platform 7, and apt to be supplied, in use, with electric current for generating an electromagnetic field.

[0023] Accordingly, each cart 8 is equipped with a permanent magnet configured to magnetically interact with the solenoids, thereby producing the levitating movement of the cart 8 relative to the work platform 7.

[0024] According to the preferred example shown, work platform 7 is defined by a flat table onto which carts 8 are distributed and relative to which carts 8 levitate by means of planar motor 10.

[0025] In light of the above, planar motor 10 is arranged, particularly embedded, in work platform 7.

[0026] According to another aspect of the present invention, each cart 8 comprises (Figure 2):

- 40 - a base portion 11 for magnetic-inductively interact with the planar motor 10, in particular with the solenoids embedded therein; and
- a rotary member 12 movably carried by the base portion 11, configured to receive and support at least one container 3 at a time, and rotatable relative to the base portion 11 for revolving such container 3 at least at said labelling station S.

[0027] Thanks to the above configuration, the presence of a carousel for conveying the containers, as per in the prior art, can be avoided. Hence, the labelling path L can be shorter and extremely flexible and variable, since containers 3 are not to be carried in respective positions which are fixed with respect to the carousel. In addition, the mechanical configuration of labelling machine 1 is less complex. In other words, the labelling machine 1 according to the invention has a simplified architecture, an improved flexibility and reliability, a reduced

number of components, and a reduced size.

[0028] Preferably, base portion 11 carries the above-mentioned permanent magnet.

[0029] In greater detail, each rotary member is defined by a rotary plate 12. Preferably, each rotary plate 12 carries a sleeve 13 open on one (upper) side to define a seat for receiving, holding and supporting the bottom portion of at least one container 3 at a time. In this way, each container 3 is firmly supported and the risk of fall or misalignment is at least limited, preferably avoided.

[0030] Each container 3 has a longitudinal axis. Each rotary plate 12, and particularly each sleeve 13, is configured to receive the container 3 with its longitudinal axis orthogonal to the rotary plate 12 itself and to the work platform 7.

[0031] Each rotary plate 12 is rotatable to revolve the respective container 3 about its longitudinal axis, i.e. on itself.

[0032] According to an alternative embodiment, permanent magnets are embedded/arranged in work platform 7, while each cart 8 is equipped with at least one individually-excitable solenoid.

[0033] Advantageously, each rotary plate 12 is rotatable relative to the base portion 11 by means of interaction with the labelling module 5, and preferably by: mechanical contact of the rotary plate 12 itself with a component of the labelling module 5 (e.g. with a portion of the vacuum drum 6); and/or by mechanical contact of the sleeve 13 with a component of the labelling module 5 (e.g. with a portion of the vacuum drum 6); and/or by magnetic or electromagnetic interaction of the rotary plate 12 itself and/or of the sleeve 13 with a component of the labelling module 5 (e.g. with a portion of the vacuum drum 6). The component of the labelling module 5 can be for example a toothed surface or a magnetic surface.

[0034] In this way, the above-mentioned effects are achieved with even less components, since there is no need for a dedicated actuation of the rotary plate 12.

[0035] In light of the above, labelling machine 1 is configured so that the rotary plate 12 of each cart 8 rotates on itself at least while the cart 8 is moving through the labelling station S.

[0036] As visible in Figures 1 and 3, labelling machine 1 comprises a plurality of gripping heads 14 each configured to grip and hold the top portion, i.e. the neck or mouth portion, of at least one container 3 at a time at least during the label application thereon at labelling station S, i.e. when container 3 passes through (is conveyed through) labelling station S.

[0037] According to another aspect of the present invention, labelling machine 1 comprises an auxiliary conveyor 15 for cyclically conveying gripping heads 14 at labelling station S. The auxiliary conveyor is configured so that each gripping head 14 is cyclically conveyed at labelling station S kinematically independently from the other gripping heads 14. The machine 1 is configured so that each gripping head 14 is cyclically conveyed at labelling station S kinematically independently from the

carts 8.

[0038] In particular, auxiliary conveyor 15 is configured so that, for each container 3 conveyed by one respective cart 8 through labelling station S, one gripping head 14 engages the top portion of such container 3 while the gripping head 14 is moving through labelling station S, so as to support and hold the container 3 against the one respective cart 8.

[0039] Thanks to this configuration, each gripping head 14 has to follow the respective member supporting the container only at the labelling station. Therefore, the number of the gripping heads 14 can be reduced. The above results in a labelling machine 1 with an increased flexibility, reliability, with a reduced number of components, and therefore with reduced costs.

[0040] In fact, contrarily to the prior art, wherein the carousel comprises support plates and gripping heads which must be in fixed positions relative to one another for the whole labelling path, labelling machine 1 according to the invention has a more flexible configuration.

[0041] Advantageously, auxiliary conveyor 15 comprises:

- an endless closed-loop rail 16 defining an endless conveying path for the cyclical movement of the gripping heads 14, the gripping heads 14 being movably coupled to the rail 16, e.g. by means of respective cart members 14a; and
- a wall 17 supporting the rail 16, the wall 17 being arranged in a position transversal, preferably orthogonal, to the work platform 7.

[0042] More precisely, since in the example shown work platform 7 is conveniently horizontal, wall 17 is arranged vertically.

[0043] In this way, the size, and particularly the horizontal extension of the labelling machine 1 can be reduced, allowing a more efficient coupling of the labelling machine with other machines.

[0044] In one embodiment, rail 16 comprises a linear motor for moving gripping heads 14, the linear motor being of the known type (i.e. involving individually-excitable solenoids and permanent magnets).

[0045] In detail, one of the rail 16 and the carts 14a is equipped with individually-excitable solenoids and the other of the rail 16 and the carts 14a is equipped with permanent magnets.

[0046] According to another aspect of the present invention, each gripping head 14 is further configured to pressurize internally at least one container 3 at a time at least during the label application thereon.

[0047] The pressurization of containers 3 allows the containers 3 to withstand and counteract the forces applied thereto by the labelling process.

[0048] This is particularly advantageous in case of labelling containers 3 before filling them.

[0049] To this end, labelling machine 1 comprises a rotary distributor 18 fluidly connected to each gripping

head 14 and configured for cyclically feeding a pressurizing fluid (such as sterile or aseptic air, nitrogen, or the like) to the gripping heads 14, independently from one another, at least when the gripping heads 14 are moving, in use, through labelling station S.

[0050] In detail, rotary distributor 18 is fluidly connected to gripping heads 14 by respective ducts 18a (schematically shown in Figures 1 and 3) and is configured to receive the pressurizing fluid from a known source (not shown).

[0051] In use, labelling machine 1 is configured so that, for each container 3 being conveyed through labelling station S, a gripping head 14 pressurizes internally the container 3 while the gripping head 14 is moving through the labelling station S, by means of the auxiliary conveyor 15.

[0052] Thanks to the above configuration, a pressurization of the containers 3 can be implemented, when needed, in an easy manner within the labelling machine 1 according to the invention. Moreover, since the number of gripping heads 14 can be reduced (see above), the rotary distributor 18 can be simplified.

[0053] Conveniently, rotary distributor 18 is fixed to wall 17 and associated to auxiliary conveyor 15.

[0054] Preferably, rotary distributor 18 is encircled by rail 16.

[0055] In this way, labelling machine 1 has an even more compact configuration.

[0056] According to another aspect of the present invention, labelling machine 1 comprises a guiding structure 19 arranged at labelling station S and configured to cooperate in contact with carts 8 for guiding and supporting carts 8 at least at the labelling station S, by means of mechanical contact.

[0057] In detail, guiding structure 19 is arranged on work platform 7.

[0058] In greater detail, guiding structure 19 extends on work platform 7 so as to follow the portion of labelling path L which passes through labelling station S.

[0059] Guiding structure 19 comprises:

- a bottom guide 20 configured to cooperate in contact with the base portion 11 of each cart 8 at the side of the cart 8 opposite to the rotary plate 12, more precisely opposite to the gripping head 14 when the cart 8 is at labelling station S; and
- a lateral guide 21 configured to cooperate in contact with the base portion 11 of each cart 8 at the side of the cart 8 opposite to the labelling module 5 when the cart 8 is at labelling station S.

[0060] In one embodiment, guiding structure 19 comprises only one of bottom guide 20 and lateral guide 21.

[0061] Advantageously, bottom guide 20 is arranged onto work platform 7 between work platform 7 and auxiliary conveyor 15, so as to be arranged operatively between work platform 7 and each gripping head 14 moving through the labelling station S.

[0062] Hence, with reference to Figures 4a and 4b, on each container 3 being conveyed through labelling station S are applied, in use:

- a lateral force deriving from the label application and exerted by labelling module 5; and
- a vertical force exerted by the respective gripping head 14.

[0063] Thanks to the presence of guiding structure 19, such forces are counteracted and balanced in a simple and easy manner.

[0064] According to the preferred embodiment shown, and with particular reference to Figure 4a, at least one, preferably both, of the bottom guide 20 and lateral guide 21 defines a continuous surface.

[0065] Conveniently, each cart 8 includes at least one wheel 8a, 8b for sliding in contact onto the continuous surface.

[0066] In detail, wheel 8a, 8b is mounted on base portion 11.

[0067] In greater detail, each cart 8 comprises:

- a first plurality of wheels 8a for sliding in contact onto the continuous surface defined by the bottom guide 20; and
- a second plurality of wheels 8b for sliding in contact onto the continuous surface defined by the lateral guide 21.

[0068] In one embodiment, each cart 8 comprises only one of the first and second pluralities of wheels.

[0069] The above configuration of the guiding structure 19 allows to reduce complexity and therefore maintenance costs thereof.

[0070] According to an alternative embodiment shown in Figure 4b, at least one, preferably both, of the bottom guide 20 and lateral guide 21 includes a plurality of rollers 22 for cooperating in sliding contact with the base portion of each cart 8.

[0071] In this case, as shown in Figure 4b, carts 8 do not include any wheel, but instead base portion 11 slides, in use, on rollers 22.

[0072] The above configuration of the guiding structure 19 allows to reduce complexity and therefore maintenance costs of each cart 8.

[0073] In one embodiment, one of bottom guide 20 and lateral guide 21 defines the continuous surface, while the other of bottom guide 20 and lateral guide 21 includes the rollers 22.

[0074] Advantageously, bottom guide 20 is made of an electromagnetically inert material, so as to prevent a perturbation of the magnetic-inductive interaction between the work surface 7 and each cart 8.

[0075] In this way, bottom guide 20 does not interact or hinder the magnetic-inductive action of planar motor 10.

[0076] With reference to Figure 5 and 6, labelling ma-

chine 1 is part of an apparatus 100 for packaging the pourable product.

[0077] In particular, apparatus 100 is configured for packaging the pourable product by means of containers 3.

[0078] Apparatus 1 comprises:

- the labelling machine 1 as described above according to the present invention and ;
- a filling machine or filler 23 for filling containers 3 with the pourable product at a filling station F;
- a capping machine or capper 24 for capping the filled containers 3 at a capping station C, thereby closing them; and, in case containers 3 are made of plastic material,
- a blowing machine or blower 25 for producing fully-formed containers 3, e.g. plastic bottles, starting from known preforms 3a (only schematically shown) which are made of plastic material.

[0079] Preferably, filling machine 23 is arranged on said work platform 7.

[0080] According to an aspect of the present invention, conveyor 4 is configured to convey containers 3, by means of said magnetic-inductive interaction between the carts 8 and the work platform 7, from the filling machine 23 to the labelling machine 1 or from the labelling machine 1 to the filling machine 23, selectively.

[0081] In particular, apparatus 100 is configured to be selectively arranged by a user in:

- a first operative configuration (figure 5), in which each cart 8 is conveyed at labelling station S after being conveyed at the filling station F, so that each container 3 is labelled after being filled; and
- a second operative configuration (figure 6), in which each cart 8 is conveyed at the labelling station S prior to being conveyed at the filling station F, so that each container 3 is filled after being labelled.

[0082] Furthermore, conveyor 4 is configured to convey, by means of said magnetic-inductive interaction, carts 8 at the capping station C prior to or after having conveyed them at the labelling station S.

[0083] Thanks to the above configuration of apparatus 100, and in particular thanks to the presence of work platform 7, carts 8 and the planar motor 10 defined between the two, apparatus 100 is extremely flexible and can be switched between the first and second operative configuration in a simple manner and without modifying the layout of apparatus 100, i.e. without modifying the position of labelling machine 1, filling machine 23 or capping machine 24.

[0084] The operation of labelling machine 1 and apparatus 100 is described hereinafter with reference to a single container 3 to be filled and starting from a condition in which a container 3 is formed by blowing machine 25 and is fed to a cart 8.

[0085] If the apparatus 100 is arranged in the first operative configuration, conveyor 4 conveys, by means of planar motor 10, cart 8 first to labelling machine 1 and then to filling machine 23 and to capping machine 24.

[0086] In such case, when cart 8 conveys the container 3 to be labelled at labelling station S, one respective gripping head 14 grips the top portion of such container 3 and pressurizes internally the container 3 by means of rotary distributor 18.

[0087] Meanwhile, the label 2 is applied by labelling module 5 and guiding structure 19 counteracts the aforementioned lateral and vertical forces acting on container 3.

[0088] If the apparatus 100 is arranged in the second operative configuration, conveyor 4 conveys, by means of planar motor 10, cart 8 first to filling machine 23, then to capping machine 24 1 and then to labelling machine.

[0089] In this case, there is no need to pressurize internally the container 3 when labelling, since it is already filled with pourable product.

[0090] The advantages of labelling machine 1, and apparatus 100, according to the present invention will be clear from the foregoing description.

[0091] Notwithstanding the advantages already mentioned above in connection with the particular embodiments, thanks to the above configuration, the architecture of labelling machine 1 is simplified, the reliability and the flexibility thereof is improved and the total number of its components and, therefore, the costs and its size, are reduced.

[0092] The same advantages apply to the apparatus 100 as described above and comprising labelling machine 1.

[0093] Clearly, changes may be made to labelling machine 1 as described herein without, however, departing from the scope of protection as defined in the accompanying claims.

Claims

1. A labelling machine (1) for labelling containers (3) adapted to contain a pourable product, the labelling machine (1) comprising:

- a conveyor (4) for conveying a plurality of containers (3) along a labelling path (L) and through a labelling station (S); and
- a labelling module (5) for sequentially applying labels (2) onto the containers (3) at said labelling station (S);

wherein the conveyor (4) comprises:

- a work platform (7) onto which the labelling path (L) extends;
- a plurality of carts (8) configured to carry at least one container (3) each and movable onto

- said work platform (7) to advance the containers (3) along the labelling path (L) and sequentially through the labelling station (S); and
- a planar motor (10) for defining a magnetic-inductive interaction between the work platform (7) and the carts (8), to move the carts (8) independently from one another and in a levitating manner relative to the work platform (7);
- and wherein each cart (8) comprises:
- a base portion (11) for magnetic-inductively interacting with the planar motor (10); and
 - a rotary member (12) movably carried by the base portion (11), configured to receive and support at least one container (3) at a time and rotatable relative to the base portion (11), for revolving the container (3) at least at said labelling station (S).
2. Labelling machine as claimed in claim 1, wherein the rotary member (2) is rotatable relative to the base portion (11) by means of interaction with a component of the labelling module (5).
 3. Labelling machine as claimed in claim 1 or 2, and comprising a plurality of gripping heads (14) each configured to grip and hold the top portion of at least one container (3) at a time at least during the label application thereon at said labelling station (S); wherein the labelling machine (1) comprises an auxiliary conveyor (15) for cyclically conveying the gripping heads (14) at the labelling station (S), kinematically independently from one another and kinematically independently from said carts (8).
 4. Labelling machine as claimed in claim 3, wherein the auxiliary conveyor (15) is configured so that, for each container (3) conveyed by one respective cart (8) through the labelling station (S), one gripping head (14) engages the top portion of such container (3) while the gripping head (14) is moving through the labelling station (S), so as to support and hold the container (3) against said respective cart (8).
 5. Labelling machine as claimed in claim 3 or 4, wherein the auxiliary conveyor (15) comprises:
 - an endless closed-loop rail (16) defining an endless conveying path for the cyclical movement of the gripping heads (14), the gripping heads (14) being movably coupled to the rail (16); and
 - a wall (17) supporting the rail (16), the wall (17) being arranged in a position transversal, preferably orthogonal, to the work platform (7).
 6. Labelling machine as claimed in any of claims 3 to 5, wherein each gripping head (14) is further configured to pressurize internally at least one container (3) at a time at least during the label application thereon; and wherein the labelling machine (1) comprises a rotary distributor (18) fluidly connected to each gripping head (14) and configured for cyclically feeding a pressurizing fluid to the gripping heads (14), independently from one another, at least when the gripping heads (14) are moving through said labelling station (S).
 7. Labelling machine as claimed in any one of the foregoing claims, and comprising a guiding structure (19) arranged at said labelling station (S) and configured to cooperate in contact with the carts (8) for guiding and supporting the carts (8) at least at the labelling station (S) by means of mechanical contact.
 8. Labelling machine as claimed in claim 7, wherein the guiding structure (19) comprises:
 - a bottom guide (20) configured to cooperate in contact with the base portion (11) of each cart (8) at the side of the cart (8) opposite to the rotary member (12); and/or
 - a lateral guide (21) configured to cooperate in contact with the base portion (11) of each cart (8) at the side of the cart (8) opposite to the labelling module (5) when the cart is at the labelling station (S).
 9. Labelling machine as claimed in claims 3 and 8, wherein the bottom guide (20) is arranged onto the work platform (7), between the work platform (7) and the auxiliary conveyor (15), so as to be arranged operatively between the work platform (7) and each gripping head (14) moving through the labelling station (S).
 10. Labelling machine as claimed in claim 8 or 9, wherein at least one of the bottom guide (20) and the lateral guide (21) defines a continuous surface; and wherein each cart (8) includes at least one wheel (8a, 8b) for sliding in contact onto the continuous surface.
 11. Labelling machine as claimed in any of claims 8 to 10, wherein at least one of the bottom guide (20) and the lateral guide (21) includes a plurality of rollers (22) for cooperating in sliding contact with the base portion (11) of each cart (8).
 12. Apparatus (100) for packaging a pourable product comprising:
 - a filling machine (23) for filling a plurality of containers (3) with the pourable product at a fill-

ing station (F); and
- a labelling machine (1) as claimed in any one of the foregoing claims for applying labels (2) onto the containers (3);

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wherein said conveyor (4) is configured to convey the containers (3), by means of said magnetic-inductive interaction between the carts (8) and the work platform (7), from the filling machine (23) to the labelling machine (1) or from the labelling machine (1) to the filling machine (23), selectively.

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13. Apparatus as claimed in claim 12, and configured to be selectively arranged by a user in:

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- a first operative configuration, in which each cart (8) is conveyed at the labelling station (S) after being conveyed at the filling station (F), so that each container (3) is labelled after being filled; and

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- a second operative configuration, in which each cart (8) is conveyed at the labelling station (S) prior to being conveyed at the filling station (F), so that each container (3) is filled after being labelled.

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14. Apparatus as claimed in claim 12 or 13, wherein the filling machine (23) is arranged on said work platform (7).

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15. Apparatus as claimed in any of claims 12 to 14, and comprising a capping machine (24) for capping the containers (3) at a capping station (C); wherein the capping machine (24) is arranged on said work platform (7); and wherein the conveyor (4) is configured to convey, by means of said magnetic-inductive interaction, the carts (8) at the capping station (C) prior to or after having conveyed them at the labelling station (S).

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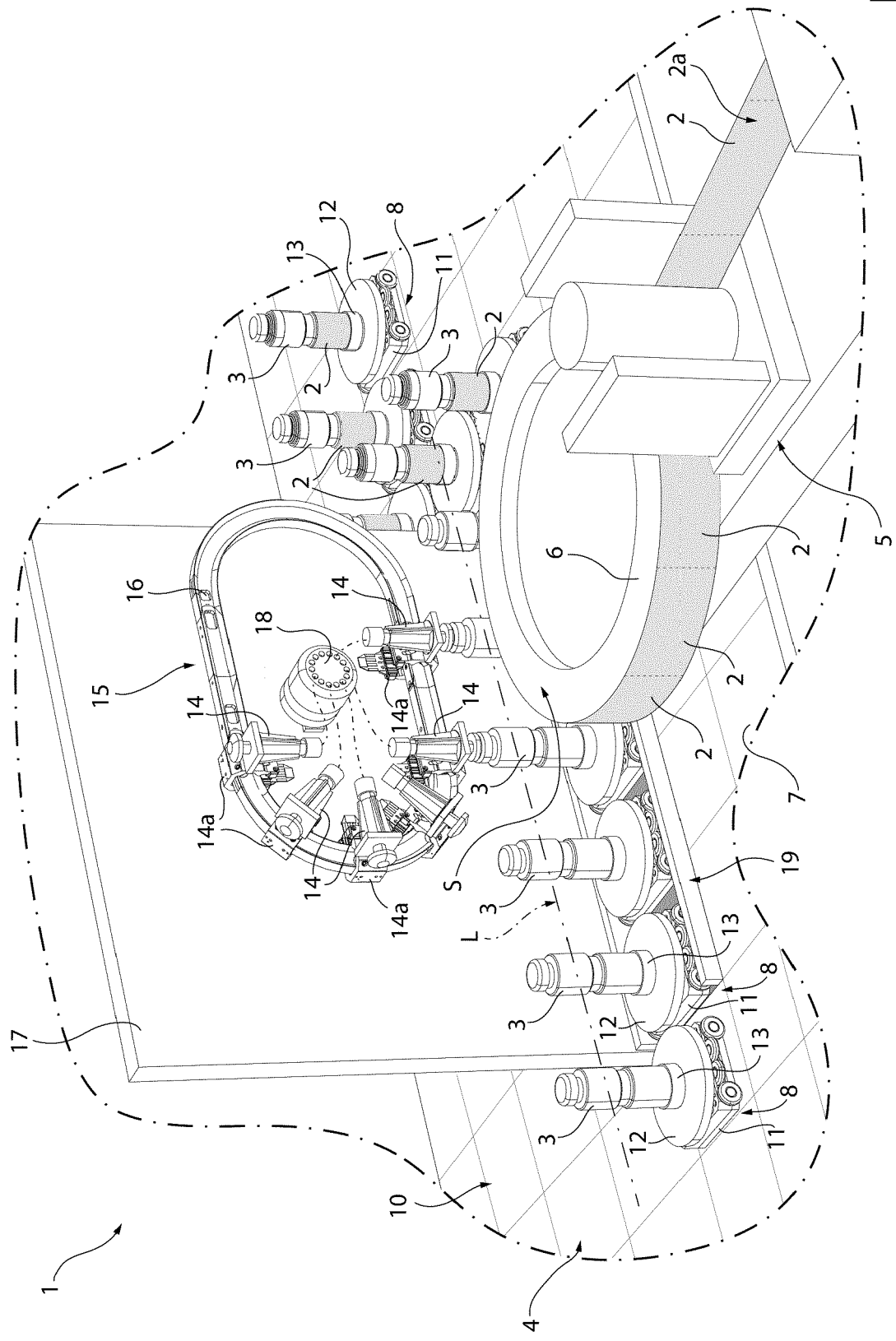


FIG. 1

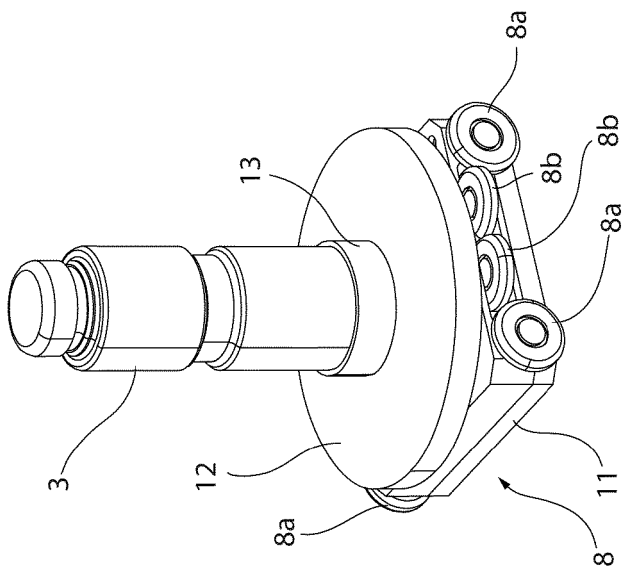


FIG. 2

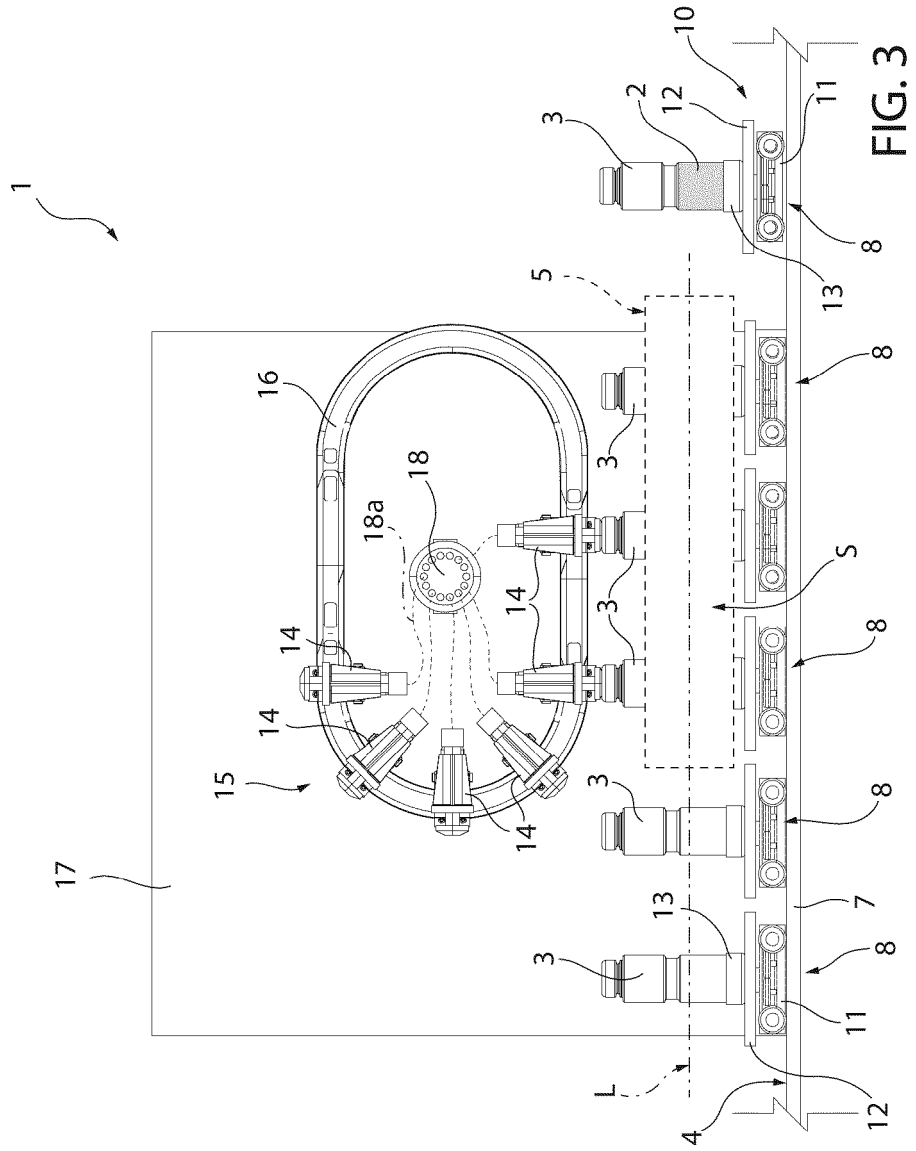


FIG. 3

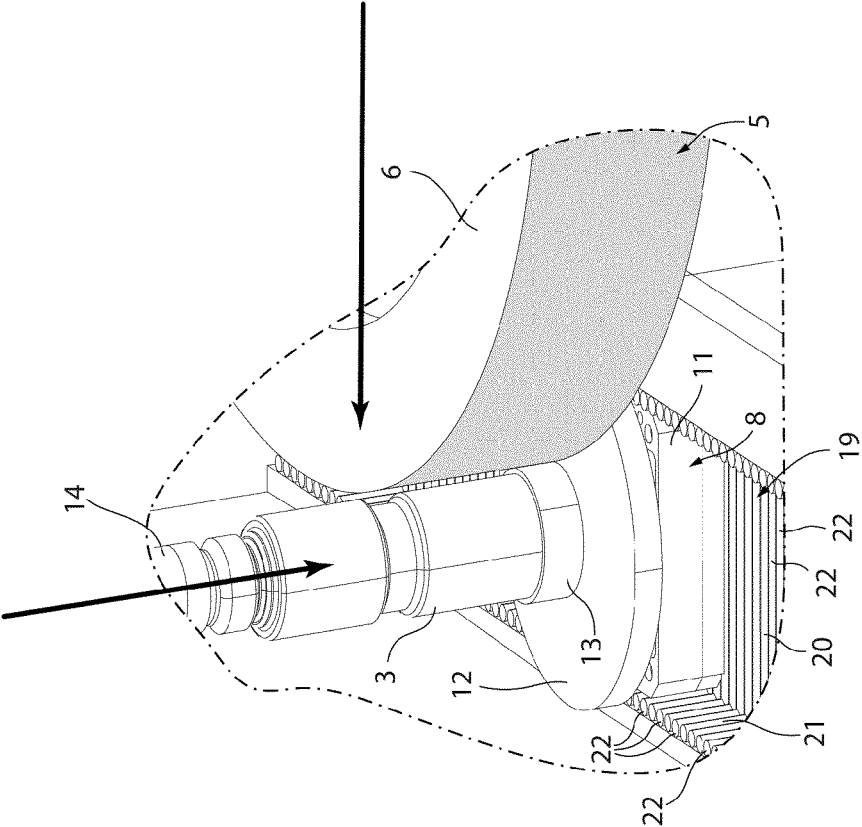


FIG. 4B

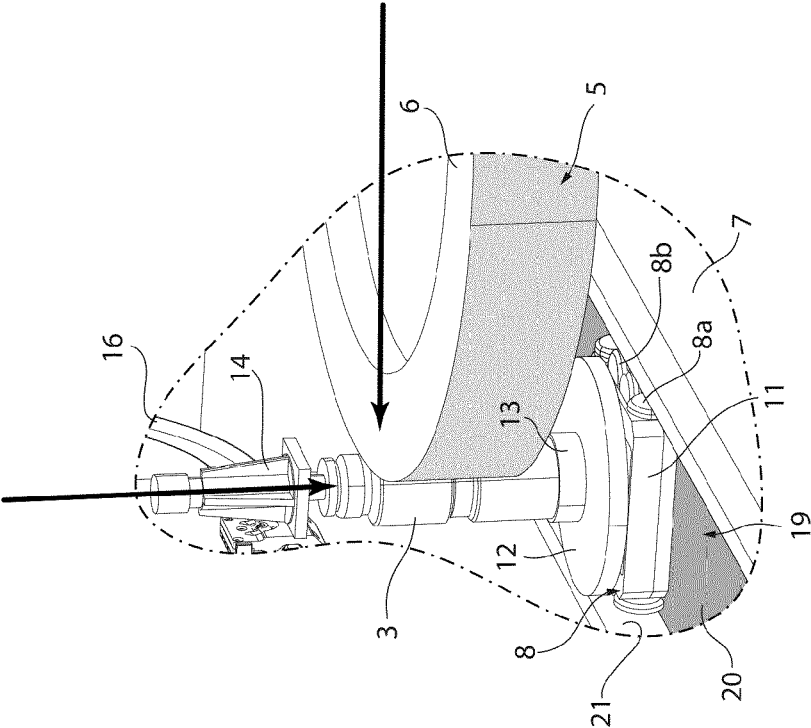


FIG. 4A

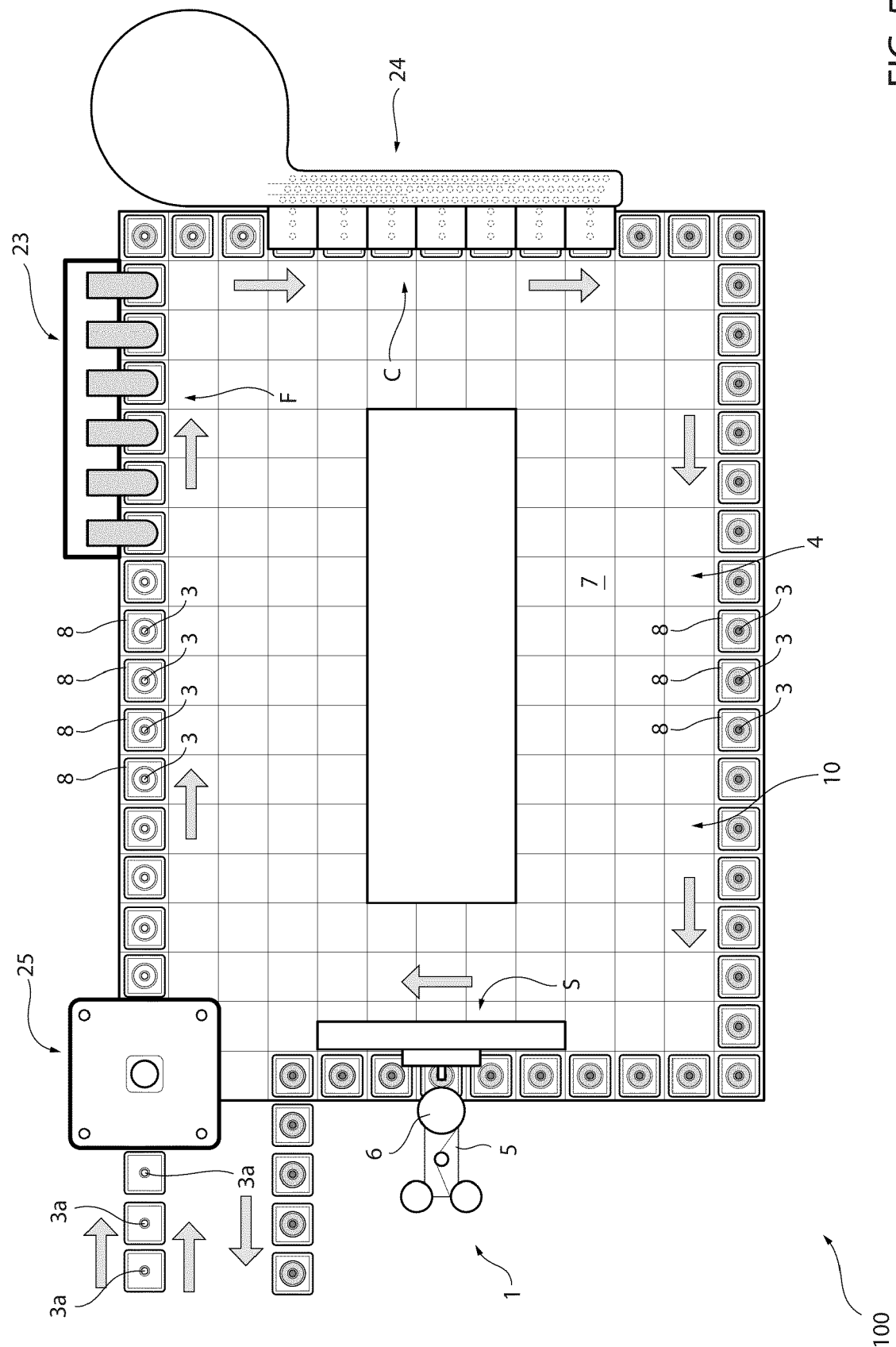
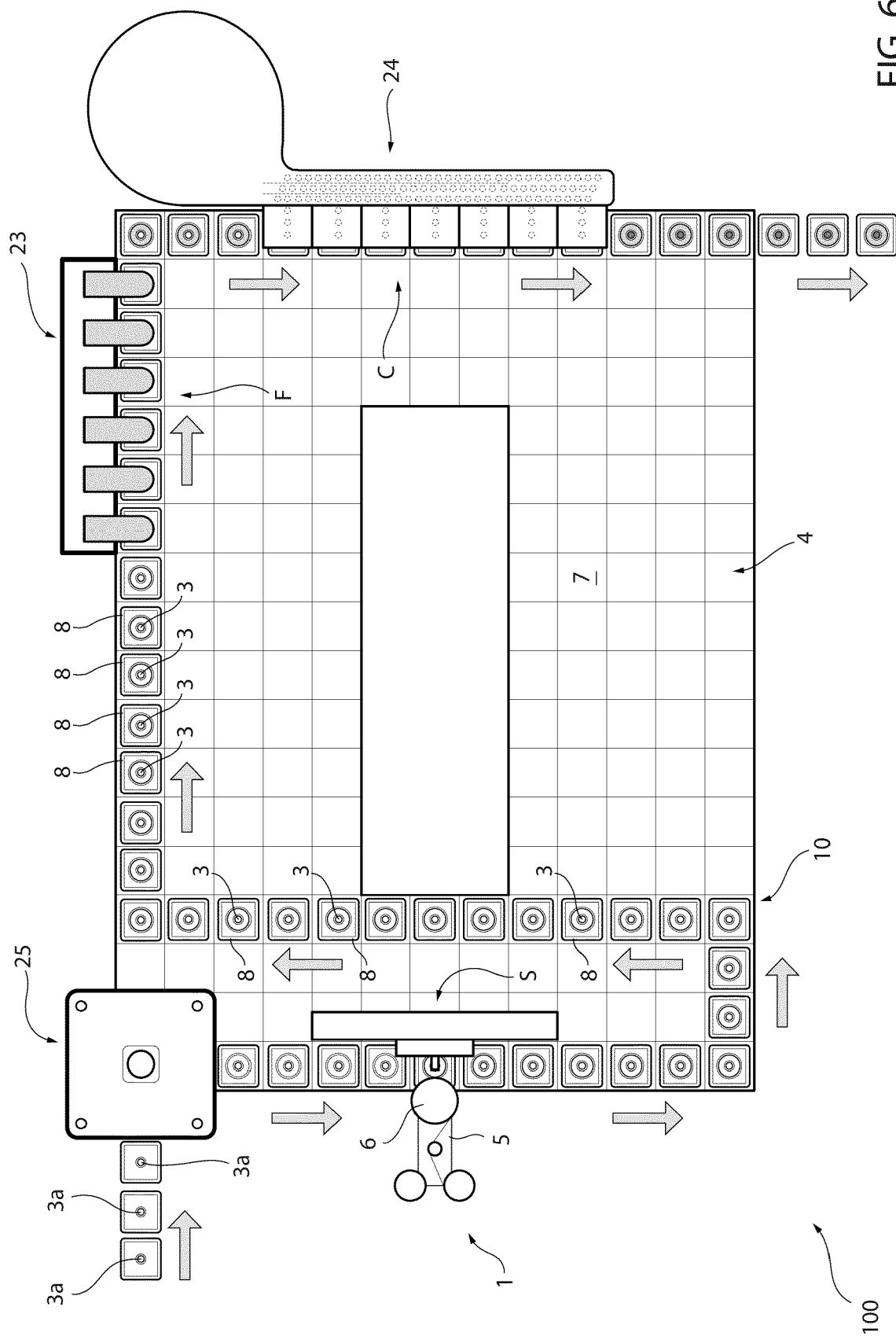


FIG. 5



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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 2 February 2022	Examiner Luepke, Erik
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