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(54) Automatic magazine for feeding labels to labelling machines

(57) Automatic magazine for feeding labels (2) to labelling machines, comprising a frame (3) whereon are mounted a fixed magazine (5) able to be associated to a device for picking up labels (2) of the labelling machine, a plurality of removable magazines (10) for containing each a stack (11) of labels (2), and means (20) for moving each removable magazine (10) from at least a non operative position to an operative position in which the labels (2) can be fed to the fixed magazine (5). To the frame are also associated means (40) for advancing the labels (2) positioned in the removable magazine (10) towards the fixed magazine (5), which are operatively active on the removable magazine (10) situated in correspondence with the operative position. The moving means (20) comprise a drum (21) with substantially cylindrical development, fastened in rotary fashion to the frame (3) according to a first horizontal axis of rotation and means (27) for supporting the removable magazines (10), associated to the periphery of the drum (21), to maintain the removable magazines (10) with their main axis of development parallel to the axis of rotation of the drum (21).

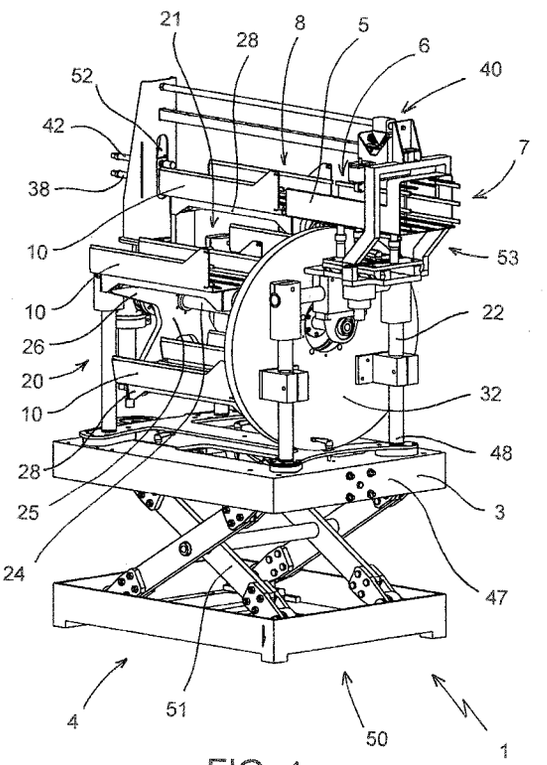

FIG. 1

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Description

[0001] The present invention relates to an automatic magazine for feeding labels to labelling machines comprising the characteristics expressed in the preamble to claim 1.

[0002] The present invention is destined in particular to labelling machines for applying labels to bottles, cans and other containers, but it can advantageously be used for labelling machines of any kind.

[0003] In labelling machines the products to be labelled slide along a path of advance through a labelling station in correspondence with which applying paddles apply one (or more) label on each product.

[0004] The labels are picked up by the paddles in correspondence with an end of a fixed magazine containing a stack of labels.

[0005] Said fixed magazine has, at an opposite end from the pick-up end, an inlet section through new labels can be inserted to replace those already picked up.

[0006] In the first labelling machines the labels were fed manually by an operator who had been assigned that task.

[0007] Subsequently, magazines were developed in which the labels were fed by means of a removable magazine which is positioned in alignment with the inlet section of the fixed magazine, and by means of thrust means that thrust the labels along the removable magazine until emptying it. At this point, an operator replaces the empty magazine with a full one and brings the thruster means back to the start of the magazine. An example of this type of magazine is described in Germane Patent DE 35 34 664.

[0008] Another archaic type of magazine is described in US Patent 3,929,326, which discloses a magazine constituted by a cylinder rotating about a vertical axis and having along its periphery a plurality of vertical grooves for the containment of stacks of labels. Said cylinder rotates in steps in such a way as to bring in sequence each groove into alignment with an outlet hole through which the labels are fed to the labelling machine. The magazine is also provided with complicated means for retaining the labels in the grooves, able to prevent their accidental escape until the associated groove is in correspondence with the outlet hole.

[0009] The main disadvantage of this magazine is constituted in the fact that it must be reloaded by an operator who has to fill the various grooves with labels.

[0010] A solution to this drawback is disclosed in Italian patent application No. BO99A000592, which describes a magazine similar to the previous with the characteristic that the magazine itself globally constitutes an interchangeable cartridge.

[0011] Even this solution, however, is not wholly free from drawbacks.

[0012] The replacement of the magazine, in effect, entails in the first place a forced stop of the machine with a consequent loss in terms of productivity.

[0013] Moreover, the replacement of the magazine is very difficult in the case of a certain size that can reach a considerable weight. Performing this operation, which entails lifting the magazine, requires a high number of operators or the aid of appropriate mechanical means.

[0014] A different solution of automatic magazine is described in United States Patent US 4,799,605 and European Patent 0 836 999.

[0015] These are automatic magazine constituted by a horizontal support plate positioned behind the fixed magazine, whereon is positioned a plurality of removable magazines, each containing a stack of labels.

[0016] The plate moves in steps horizontally and transversely with respect to the fixed magazine, in such a way as to bring in sequence each removable magazine in correspondence with the fixed magazine. The movement of the plate occurs first in one direction, then in the opposite one.

[0017] The labels are supplied by replacing the exhausted magazines with other, full ones.

[0018] This solution, too, however, has some drawbacks.

[0019] In the first place, replacing the magazines is not easy, because the magazines located in intermediate positions are difficult to access by the operator who has been assigned this task.

[0020] In the second place, in this machine it is not possible to adapt the magazine to different label formats, except for a few cases.

[0021] Moreover, between the removable magazine positioned behind the fixed magazine, and the fixed magazine itself, there is always a segment where the labels slide, in which the labels are not supported either by the removable magazine or by the fixed one.

[0022] Consequently, it can happen that the labels, while traversing this segment, fall outside the machine, or become crooked.

[0023] An additional solution of automatic magazine is disclosed in US Patent 5,569,353. The magazine of that invention is characterised in that it has a plurality of movable magazines that can be brought in succession in correspondence with the fixed magazine, whereupon they are rotated from a rest position in which they are positioned with their own axis vertical, to an operative position in which the related axis is horizontal and in which they are coupled with the fixed magazine.

[0024] In addition to the constructive complication of such a device, it also has the drawback that the labels must be supplied by filling the individual magazines when they are in the rest position.

[0025] Moreover, each magazine must be provided with particular means for blocking the labels to prevent them from egressing during the rotation between the rest position and the operative position, but which at the same time allow the labels to egress once the magazine is in the operative position.

[0026] Additionally, a drawback present in all solutions of the prior art, is that the automatic magazines

currently used are integral parts of the labelling machine, and cannot be used for different machines.

[0027] For this reason the automatic magazines used today must be designed anew for each labelling machine whereto they are to be associated and, once the machine is replaced, the magazine must be replaced as well.

[0028] In this situation, the technical task constituting the basis for the present invention is to obtain an automatic magazine for feeding labels to labelling machines that overcomes the aforementioned drawbacks.

[0029] In particular, a technical task of the present invention is to obtain an automatic magazine for feeding labels to labelling machines that allows easily to feed the labels.

[0030] Another technical task of the present invention is to obtain an automatic magazine for feeding labels to labelling machines that can be used in conjunction with labelling machines of different kinds.

[0031] A further technical task of the present invention is to obtain an automatic magazine for feeding labels to labelling machines that can easily be adapted to different label formats.

[0032] The specified technical task and the indicated aims are substantially achieved by an automatic magazine for feeding labels to labelling machines, as described in the accompanying claims.

[0033] Further characteristics and advantages of the present invention shall become more readily apparent from the detailed description of some preferred, but not exclusive, embodiments of an automatic magazine for feeding labels to labelling machines, illustrated in the accompanying drawings, in which:

- Figure 1 shows a three-quarter front axonometric view of an automatic magazine according to the present invention with some parts removed the better to highlight others;
- Figure 2 shows a three-quarter rear axonometric view of an automatic magazine with some parts removed the better to highlight others, with some variations with respect to the automatic magazine of Figure 1;
- Figure 3 shows a three-quarter rear axonometric view of the automatic magazine of Figure 1 with some parts removed the better to highlight others;
- Figure 4 shows an enlarged detail of the automatic magazine of Figure 2;
- Figure 5 shows a rear view of the automatic magazine of Figure 1 with some parts removed and others highlighted;
- Figure 6 shows a detail of the automatic magazine of Figure 3 with some parts removed the better to highlight others;
- Figure 7 shows a top view of the magazine of Figure 1 in a first operative position;
- Figure 8 shows a top view of the magazine of Figure 1 in a second operative position;
- Figure 9 shows a plan view of the magazine of Figure 1 with a removable magazine in a first position;
- Figure 10 shows a plan view of the magazine of Figure 1 with a removable magazine in a second position;
- Figure 11 shows a lateral elevation view of the upper part of the magazine of Figure 10 without the labels;
- Figure 12 shows a lateral elevation view of the upper part of the magazine of Figure 9 without the labels.

[0034] With reference to the aforementioned figures, the reference number 1 globally indicates an automatic magazine for feeding labels 2 to labelling machines, according to the present invention.

[0035] The magazine 1 comprises a frame 3 which inferiorly identifies a support base 4 of the automatic magazine 1. Said frame 3 can be set down on the ground or, in other embodiments, associated to the labelling machine (at the limit, the frame 3 can coincide with the frame of the labelling machine).

[0036] On the frame 3 is mounted a fixed magazine for containing labels 2, constituted by a rectilinear sliding channel 6, shaped counter to the lower part of the labels 2, which has a first and a second open ends 7, 8.

[0037] The first end 7 of the fixed magazine 5 can be associated, in use, to a device for picking up labels 2 of the labelling machine, usually constituted by a plurality of movable paddles (not shown because it is known). Said first end 7 defines the pick-up point 9 of the labels 2 from the magazine 1.

[0038] The feeding of the labels 2 to the fixed magazine 5 is assured by a plurality of removable magazines 10, each of which can be filled with a stack 11 of labels 2.

[0039] Advantageously, the removable magazines 10 are also shaped counter to the lower part of the labels 2 whereto they are destined, and in each of them can be identified a lower side and a main axis of development.

[0040] In the illustrated embodiment, each removable magazine 10 is constituted by a base 10 with elongated rectangular plan, contoured on the greater sides by an edge 13 for containing the labels 2.

[0041] A first lesser rear side 14 has blocking appendages 15, whilst the second lesser front side 16 is open, and constitutes an opening 17 for feeding the labels 2 to the fixed magazine 5, in the ways described below.

[0042] Each removable magazine 10 is also provided with elastic means 18 for holding the labels 2 associated to the opening 17, to prevent the accidental egress of the labels 2. Said elastic means 18 can be constituted by two elastic doors positioned to close the opening 17, by two appropriately shaped blade springs 19 (Figure 4), each associated to one of the two lateral edges, or by yet other devices.

[0043] On the frame 3 are also mounted means 20 for moving each removable magazine 10 from at least a non operative position to an operative position in which

the labels 2 can be fed to the fixed magazine 5.

[0044] In particular, in the embodiment illustrated in the accompanying figures, the magazine 1 is provided with at least five removable magazines 10, and four non operative position are provided, as well as an operative position in correspondence with which the opening 17 for the egress of the labels 2 faces the fixed magazine 5.

[0045] The moving means 20 comprise a drum 21 with substantially cylindrical development, engaged in rotary fashion according to a first horizontal axis of rotation, to two vertical supports 22 fastened to the frame 3.

[0046] Advantageously, the drum 21 is actuated by an appropriate motor 23 which allows its stepped actuation.

[0047] In particular, in the illustrated embodiment, the drum 21 is constituted by a central body 24 with axial development pivotally engaged to the vertical supports 22, and by two terminal elements 25 integrally associated to the end of the central body 24. Said terminal elements 25 have five uniformly distributed support arms 26, which extend radially relative to the first axis of rotation.

[0048] The two terminal elements 25 are positioned in such a way that the arms 26 of the one face the arms 26 of the other, and that a plurality of pairs of opposite arms 26 is thus defined.

[0049] Between the external ends of each pair of arms 26 are associated means 27 for supporting the removable magazines 10. Said means allow, at the same time, to support the removable magazines 10, and to maintain them, during the rotation of the drum 21, with their main axis of development parallel to the first axis of rotation and with their lower side oriented downwards.

[0050] In the illustrated embodiment, the support means 27 comprise a support bracket 28 (Figure 2) pivotally fastened between the external ends of each pair of opposite support arms 26, which defines superiorly a planar bearing surface 29 for the removable magazines 10.

[0051] Each support bracket 28 is pivotally engaged about a second axis of rotation parallel to the axis of rotation of the drum 21, and it is provided with means 30 for orienting the removable magazines 10 positioned thereon, to oriented, by means of rotation about its second axis, the removable magazines 10 during the rotation of the drum 21.

[0052] In particular, the means of orientation 30 are such as to maintain the bearing surface 29 of each support means 28 (and hence the magazines 10 set down thereon), horizontal in correspondence with the operative position, and partially rotated outwards when they are positioned laterally to the drum 21. As shown in Figure 5, the magazines 10 oriented outwards are the lower ones, i.e. those farther away from the magazine 10 in use. This orientation allows an easier replacement of the empty magazines 10 with full ones.

[0053] As shown in Figures 5 and 6, the orientation means 30 comprise a cam guide 31 (not shown for the sake of clarity in Figures 1 through 3) obtained on a disk 32 developing in a plane that is perpendicular to the first axis of rotation, and positioned in proximity to one of the ends of the drum 21. The cam guide 31 comprises two grooves 33a, 33b with appropriately calculated curvilinear trajectory, translated horizontally relative to each other, and which cross in an upper crossing point 34 and in a lower crossing point 35 lying in a vertical plane passing through the first axis of rotation. The cam guide 31, moreover, is symmetrical relative to said vertical plane, whereas it is positioned eccentrically relative to the first axis of rotation.

[0054] The orientation means 30 also comprise two engagement elements 36 associated to each support bracket 28, and inserted able to slide in the cam guide 31.

[0055] In the illustrated embodiment the engagement elements 36 are positioned in mirror-like fashion relative to a plane of symmetry passing through the second axis of rotation and perpendicular to the support surface.

[0056] Each engagement element 36 is inserted able to slide in one of the grooves 33a, 33b.

[0057] During the design phase, acting on the mutual position of the engagement elements 36, on the dimensions of the grooves 33a, 33b, and on the horizontal translation between the grooves 33a, 33b, the movements of the support brackets 28 and hence of the magazines 10 can be optimised.

[0058] Obviously, in other embodiments, the structural conformation of the drum 21, of the support means 27 and of the orientation means 30, may also be different without thereby departing from the scope of protection of the present invention.

[0059] The automatic magazine 1 of the present invention is also provided with means 37 for horizontally translating towards the fixed magazine 5 the removable magazine 10 positioned on the support bracket 28 which is in correspondence with the operative position (Figures 9-12).

[0060] The translation means 37 allow to bring the opening 17 of the removable magazine 10 to bear against the second end 8 of the fixed magazine 5.

[0061] In the illustrated embodiment, the translation means 37 comprise a actuator 38 of the pneumatic kind, which could however be replaced, for instance, by an electric motor or by any other device suited to the purpose.

[0062] The return to the starting position of the removable magazine 10 is assured by return springs housed inside the support bracket 28 (and not shown herein), whereto each removable magazine 10 is engaged through appropriate passages 39 obtained in the upper surface of each support bracket 28 (Figures 2, 11 and 12).

[0063] Additionally, the magazine 1 is provided with means 40 for advancing the labels 2 located in the removable magazine 10 which is in operative position, towards the fixed magazine 5.

[0064] In particular, the means 40 for advancing the labels 2 comprise a primary thruster 41 and a secondary thruster 42. The primary thruster 41 is mounted able to slide on the frame 3 above the operative position, and covers the whole length of the removable magazine 10 positioned therein, and most of the length of the fixed magazine 5.

[0065] The primary thruster 41 is in particular constituted by a cross member 43 mounted able to slide underneath a guide 44, and actuated by a pneumatic cylinder 45.

[0066] To the cross member 43 are pivotally engaged two thrust elements 46 extending downwards until they are inserted at least in part in the path of the labels 2, against which they thrust (shown in Figure 4 but not in Figures 11 and 12).

[0067] In Figure 4, the two thrust elements 46 are shown one inserted in the path of advance of the labels (the right one), and one outside said path (the left one).

[0068] The thrust elements 46 can rotate at least by about a fourth of a turn about two vertical axes of rotation positioned at the two sides of the removable magazine 10, from a first position in which they lie below the cross member 43 and they thrust the labels 2 (right-side thrust element 46 in Figure 4), to a second position in which they are at the two sides of the path of advance of the labels 2 (left-side thrust element 46 in Figure 4). The rotation of the thrust elements 46 from the first to the second position is, moreover, allowed only in a direction consistent with the direction of advance of the labels 2, and it is hindered by the return springs (not shown) which tend to maintain the thrust elements 46 in the first position.

[0069] In this way when the primary thruster 41 is made to advance towards the pick-up point 9 with the thrust elements 46 in the first position, the thrust elements can thrust again the labels 2, whilst if the primary thruster 41 is made to move back in the presence of labels 2 behind the thrust elements 46, said thrust elements rotate and move outside the path of advance of the labels 2.

[0070] Moreover, the frame 3 of the automatic magazine 1 is subdivided in a lower portion 47, and an upper portion 48. The upper portion 48 is able to rotate, relative to the lower portion 47, about a vertical axis of rotation passing through the pick-up point 9 of the labels 2 (Figures 7 and 8) (preferably it is the vertical axis passing through the centre of the label 2 which is located in correspondence of the pick-up point 9).

[0071] Said rotation allows to position the labels 2 in the pick-up point 9 in optimal fashion relative to the pick-up paddles of the labelling machine. The adjustment of the position of the upper portion 48 relative to the lower one 47 is performed, if necessary, when the magazine 1 is associated to a different labelling machine, or when the format of the labels 2 is changed.

[0072] The amplitude of the rotation is determined by circle arc shaped slots (not shown) obtained in the lower portion 47 in which slide connecting elements 49 between the upper portion 48 and the lower one.

[0073] The automatic magazine 1 further comprises raising means 50, associated to the frame 3, which allow to adjust the vertical position of the drum 21, of the fixed magazine 5 and means of advance 40 relative to the support base 4 of the frame 3. In this way it is possible to adapt the height of the pick-up point 9 to different labelling machines.

[0074] In the embodiment illustrated purely by way of example, the raising means 50 are constituted by a pantograph structure 51 actuated by a motor by means of a worm screw (not shown herein).

[0075] In other embodiment, however, the raising means 50 can be obtained also with different solutions such as a hydraulic or pneumatic system.

[0076] For an easy adaptability of the automatic magazine to different formats of labels 2, means 51 are provided for adjusting the vertical position of the means 40 for advancing the labels 2, and translation means 37. In particular, the accompanying figures clearly show that the secondary thruster 42 and the first actuator 38 are mounted on the frame 3 in correspondence with a housing 52 constituted by a through hole of elongated shape, relative whereto they can be blocked in the required position.

[0077] In the preferred embodiment the automatic magazine further comprises an actuator organ 53 (Figures 11 and 12), wholly known, associated to the frame 3 and operatively active on the fixed magazine 5 and on the removable magazine 10 which is in the operative position. The actuator organ 53 allows the backwards motion, and the subsequent return in position, of the fixed magazine 5 and of the removable magazine 10, in response to a command signal.

[0078] The installation of the automatic magazine 1 of the present invention is performed positioning the magazine 1 in proximity to the pick-up paddles of the labelling machine, and placing the pick-up point 9 in the optimal position.

[0079] The placement of the pick-up point 9 is performed acting on the raising means 50, and appropriately rotating the upper portion 48 relative to the lower portion 47.

[0080] During the positioning of the labelling machine the primary thruster 41 causes the labels 2 to advance in the fixed magazine 5 towards the pick-up point 9, and in the removable magazine 10, which is in the operative position, towards the fixed magazine 5.

[0081] To feed the labels 2 to the fixed magazine 5, the drum 21 is made to rotate until it brings a first removable magazine 10 full of labels 2 to the operative position.

[0082] The first actuator 38 then causes the removable magazine 10, overcoming the antagonist force exerted by the return spring, until bringing it in contact with the fixed magazine 5.

[0083] The primary thruster 41 then causes the labels

2 to advance from the removable magazine 10 towards the pick-up point 9, through the fixed magazine 5, thereby feeding the labelling machine.

[0084] If appropriate signalling devices of the labelling machine signal the absence of one or more products to label, the actuator organ 53 intervenes, causing the fixed magazine 5 and the removable magazine 10 associated thereto to move backwards.

[0085] In this situation, the first actuator 38 acts as an air spring, elastically yielding.

[0086] A soon as the labels 2 are all transferred into the fixed magazine 5, the first actuator 38 is brought back, and the return spring brings the removable magazine 10 completely bearing on the support bracket 28.

[0087] The drum 21 is then made to rotate by one step in such a way as to bring a second removable magazine 10 to the operative position, and the first removable magazine 10 to a non operative position.

[0088] At this point the second magazine is translated towards the fixed magazine 5, whereupon the secondary thruster 42 is operated which, after overcoming the force exerted by the elastic holding means 18, makes the stack 11 of labels 2 to advance until bringing it in contact with the thrust elements 46 of the primary thruster 41.

[0089] The primary thruster 41 is then made to move back until it is brought behind the removable magazine 10. During this operation the thrust elements 46 rotate outside the stacks 11 of labels 2, slide along the outer edge of the removable magazine 10, and, once it ends, they return to the first position. In the meantime the secondary thruster 42 exerts the necessary pressure to assure a correct pick-up of the labels 2 by the pick-up device of the labelling machine.

[0090] The primary thruster 41 is then again made to advance against the stack 11 of labels 2, and the secondary thruster 42 is brought back to the rest position.

[0091] The operation then goes on in this way in continuous fashion.

[0092] The labels 2 are reloaded replacing the empty removable magazines 10 which are located on the outwardly rotated brackets with other, full magazines.

[0093] When it should become necessary to change the format of the labels 2, it is sufficient to replace the removable magazines 10 and the fixed one with others having appropriate shape, and adjust the height of the advance means 40 and of the translation means 37.

[0094] All described motions can easily be automated and controlled by a programmable control unit.

[0095] The present invention achieves important advantages.

[0096] In the first place, the automatic magazine 1 of the present invention allows an easy refill of the labels 2 by an operator who only has to replace an easily accessed empty magazine with a full one, and who can refill the individual magazines safely away from the machine which can continue to operate.

[0097] In the second place, an automatic magazine 1 according to the present invention can be used for any type of labelling machine, simply adjusting its height and the format of the labels 2.

[0098] The magazine 1 can also be retained when the labelling machine is replaced, with considerable cost savings.

[0099] The invention thus conceived can be subject to numerous modifications and variations, without thereby departing from the scope of the inventive concept that characterises it.

[0100] All components can be replaced with technically equivalent elements and in practice all materials employed, as well as the shapes and sizes of the various components, may be any depending on requirements.

Claims

1. Automatic magazine for feeding labels (2) to labelling machines, comprising:

a fixed magazine (5) for containing labels (2), able to be associated to a device for picking up labels (2) of the labelling machine, in correspondence with its own first end (7) defining a pick-up point (9) of the labels (2);
a plurality of removable magazines (10) for the containment each of a stack (11) of labels (2), having a lower side and a main axis of development;
means (20) for moving each removable magazine (10) from at least a non operative position to an operative position in which the labels (2) can be fed to the fixed magazine (5); and
means (40) for advancing the labels (2) located in the removable magazine (10) towards said fixed magazine (5), operatively active on the removable magazine (10) situated in correspondence with the operative position;

characterised in that it comprises a frame (3) defining inferiorly a support base (4) of the automatic magazine (1), said fixed magazine (5), said moving means and said advancing means being associated to the frame (3), and **in that** said moving means (20) comprise:

a drum (21) with substantially cylindrical development, fastened in rotary fashion to said frame (3) according to a first horizontal axis of rotation;
means (27) for supporting said removable magazines (10), associated to the periphery of said drum (21), to maintain said removable magazines (10) with their main axis of development parallel to said axis of rotation of the drum (21), and said lower side oriented downwards during the rotation of the drum (21);

said drum (21) with said support means (27) moving each removable magazine (10) from said at least one non operative position, to the operative position, in correspondence with which each removable magazine (10) is aligned with the fixed magazine (5) for containing the labels (2).

2. Automatic magazine as claimed in claim 1 **characterised in that** said support means (27) comprise, for each removable magazine (10), a support bracket (28) fastened in rotary fashion to the periphery of said drum (21) according to a second axis of rotation parallel to the axis of rotation of the drum (21) itself, said brackets being uniformly distributed along the periphery of said support.

3. Automatic magazine as claimed in claim 1 or 2 **characterised in that** it further comprises means (30) for orienting said removable magazines (10) positioned on said drum (21), to orient, by means of a rotation about the second axis, the removable magazines (10) during the rotation of the drum (21).

4. Automatic magazine as claimed in claim 3 **characterised in that** said orienting means (30) maintain said removable magazines (10) horizontal in correspondence with said operative position, and partially rotated outwards when they are positioned laterally to the drum (21) to ease its replacement.

5. Automatic magazine as claimed in claim 3 or 4 **characterised in that** said orienting means (30) comprise a cam guide (31) developing in a plane perpendicular to the first axis of rotation, and two engagement elements (36) associated to each support bracket (28), and inserted able to slide in said cam guide (31), said cam guide (31) comprising two grooves (33)a, (33)b with curvilinear trajectory mutually translated according to a horizontal direction, said trajectories crossing in an upper crossing point and in a lower crossing point, and said engagement elements (36) being associated each to one of said grooves (33)a, (33)b.

6. Automatic magazine as claimed in any of the previous claims **characterised in that** it further comprises means (37) for horizontally translating the removable magazine (10) positioned in the operative position towards said fixed magazine (5), until making said removable magazine (10) bear against said fixed magazine (5) in said operative position.

7. Automatic magazine as claimed in claim 6 **characterised in that** said translating means (37) comprise a first actuator (38).

8. Automatic magazine as claimed in any of the previous claims **characterised in that** said means (40) for advancing the labels (2) comprise a primary thruster (41) and a secondary thruster (42), and exert a regulated pressure on the label 2 positioned in correspondence with the pick-up point 9.

9. Automatic magazine as claimed in any of the previous claims **characterised in that** said frame (3) comprises a lower portion (47), and an upper portion (48) able to rotate, relative to said lower portion (47), about a vertical axis of rotation passing through the pick-up point (9) of the labels (2).

10. Automatic magazine as claimed in any of the previous claims **characterised in that** it further comprises raising means (50), associated to said frame (3), to adjust the vertical position of said drum (21), of said fixed magazine (5) and of said advancement means (40) relative to the support base (4) of the frame (3), and to adapt the height of the pick-up point (9) to different labelling machines.

11. Automatic magazine as claimed in any of the previous claims **characterised in that** it further comprises means (51) to adjust the vertical position of the means (40) for advancing the labels (2) to adapt their position to different format of labels (2).

12. Automatic magazine as claimed in any of the previous claims **characterised in that** each removable magazine (10) has an opening (17) for the egress of the labels (2) which, in said operative position is oriented towards the fixed magazine (5), and comprises elastic means (18) for holding the labels (2) associated to said opening (17), to prevent the accidental egress of the labels (2) in each non operative position.

13. Automatic magazine as claimed in any of the previous claims **characterised in that** it further comprises an actuator organ (53) associated to said frame (3) and operatively active on said fixed magazine (5) and said removable magazine (10) in the operative position, to allow the backwards motion of the fixed magazine (5) and of said removable magazine (10), and the subsequent return in position, in response to a command signal.

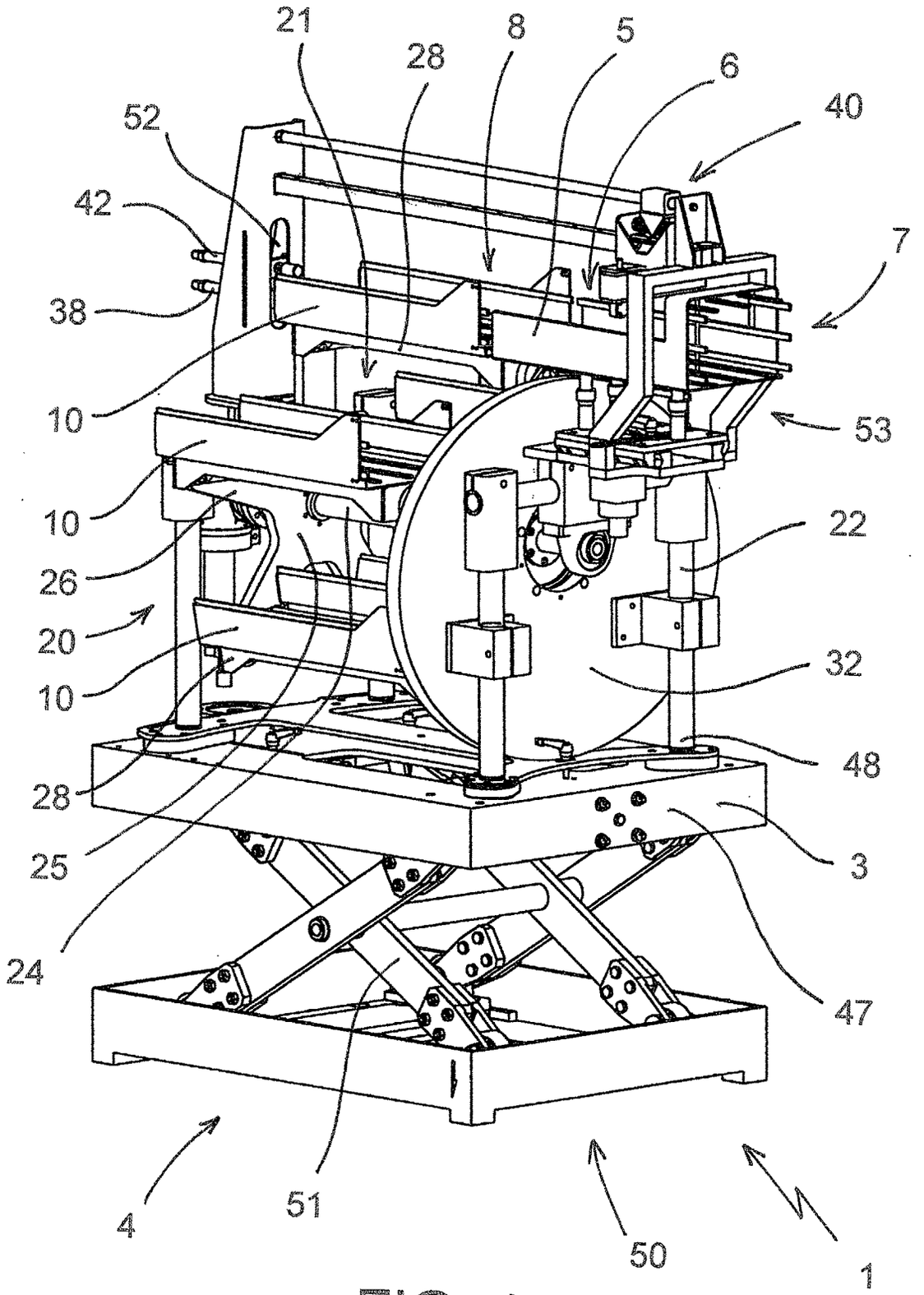

FIG. 1

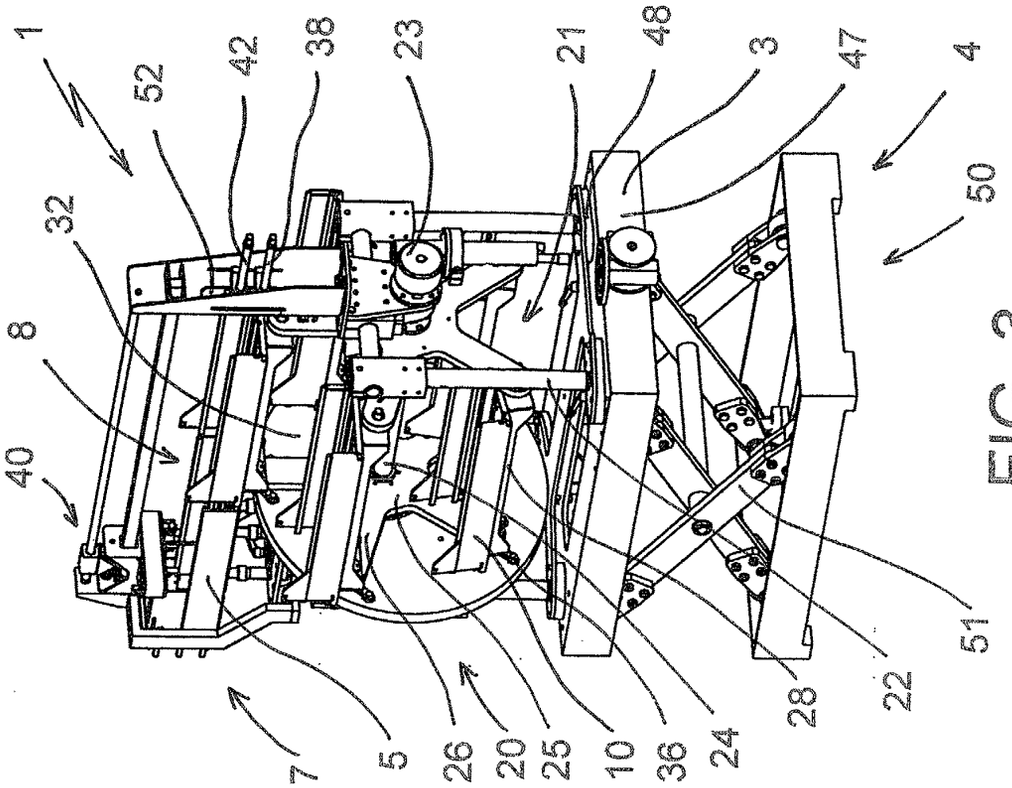
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FIG. 3

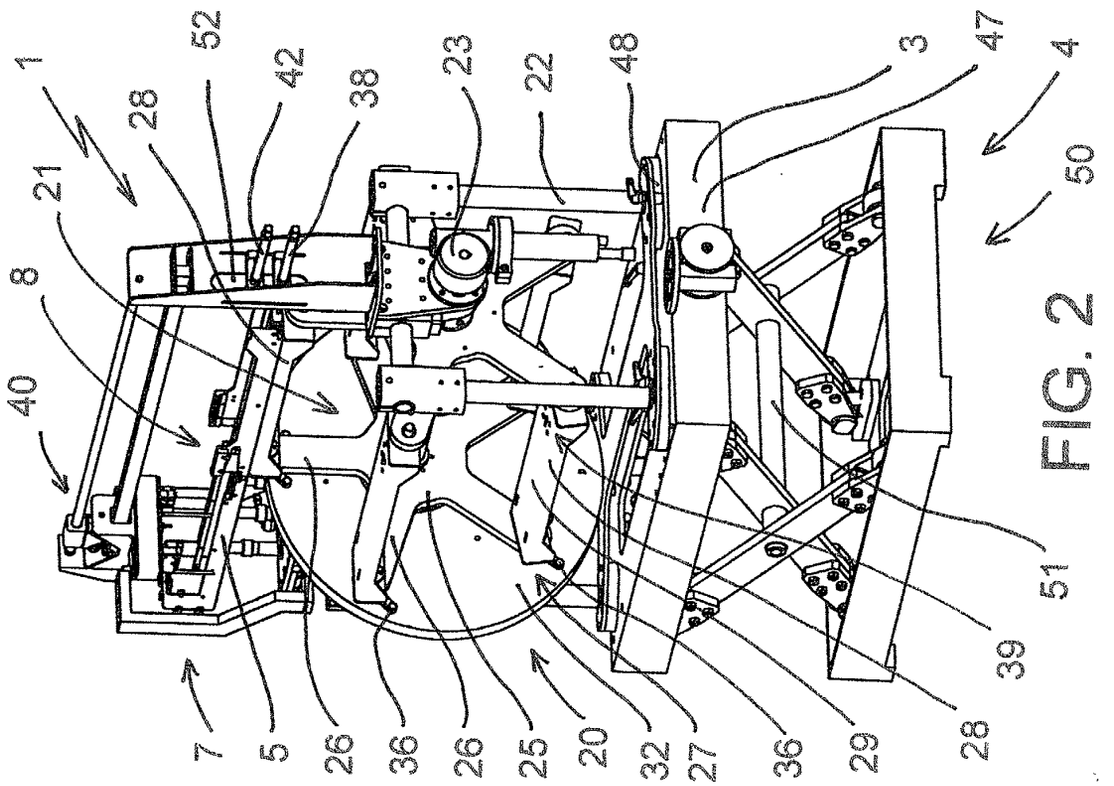
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FIG. 2

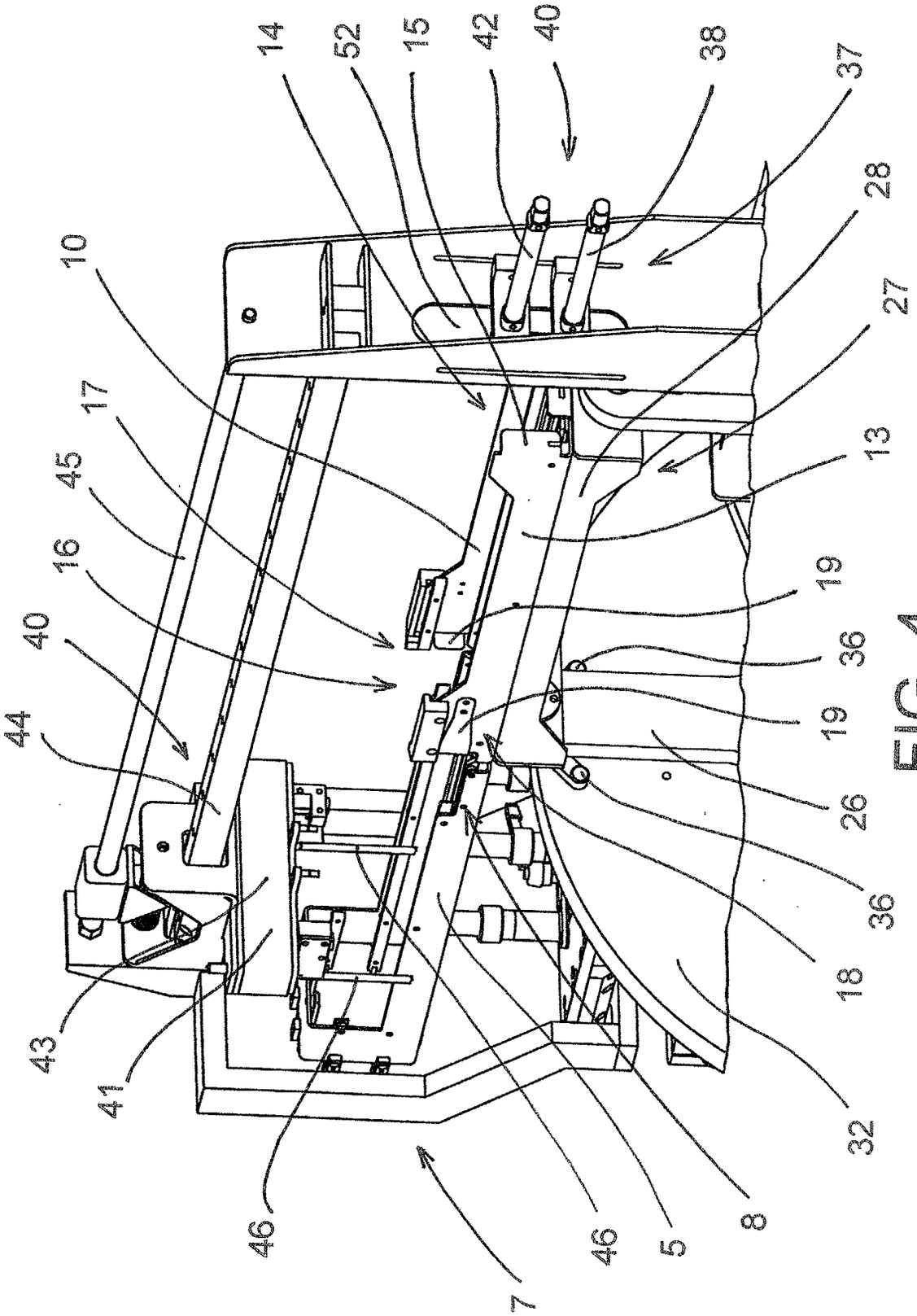
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FIG. 4

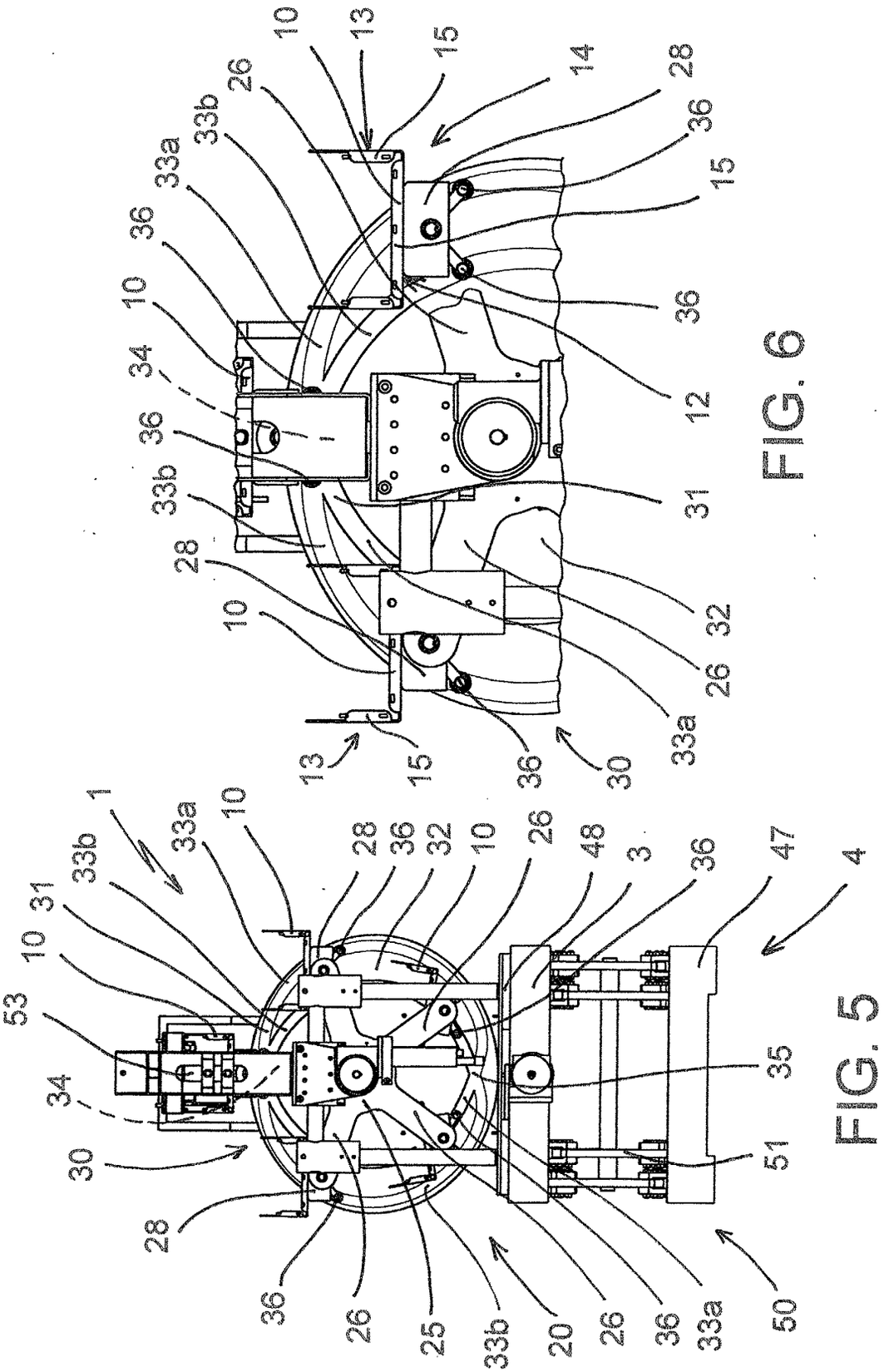
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FIG. 5

FIG. 6

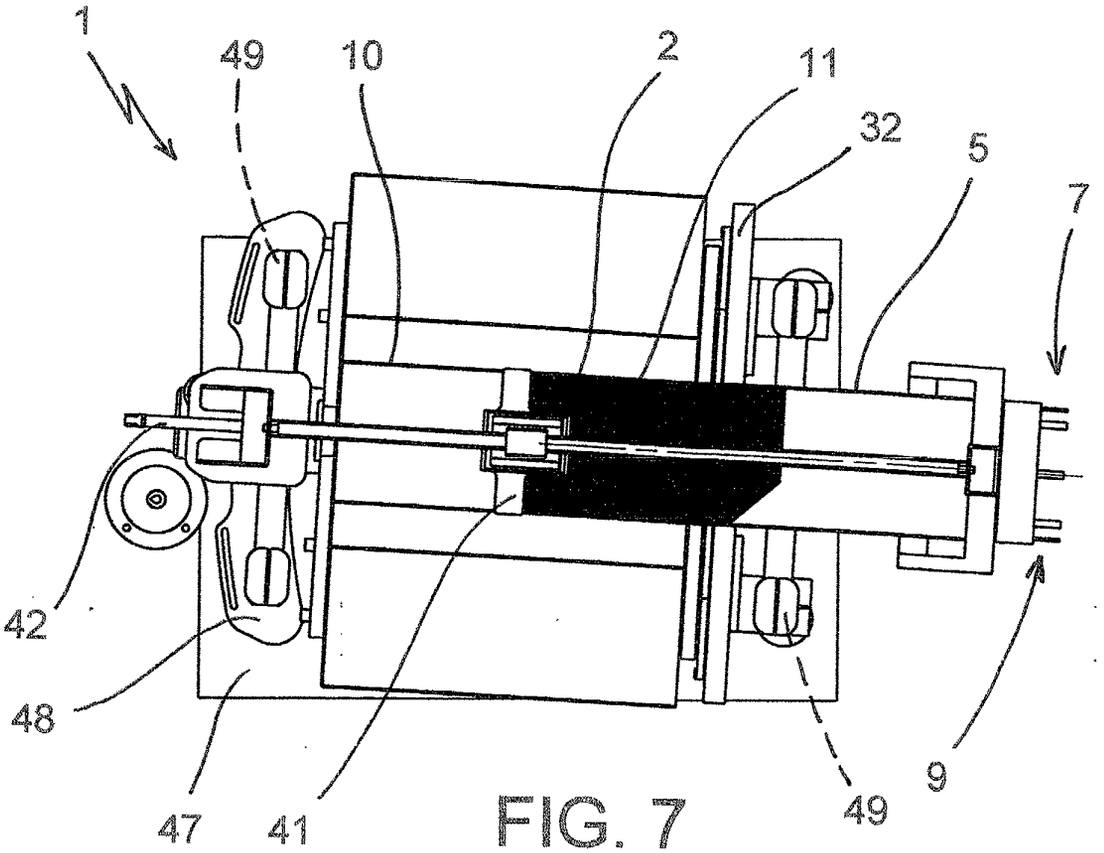

FIG. 7

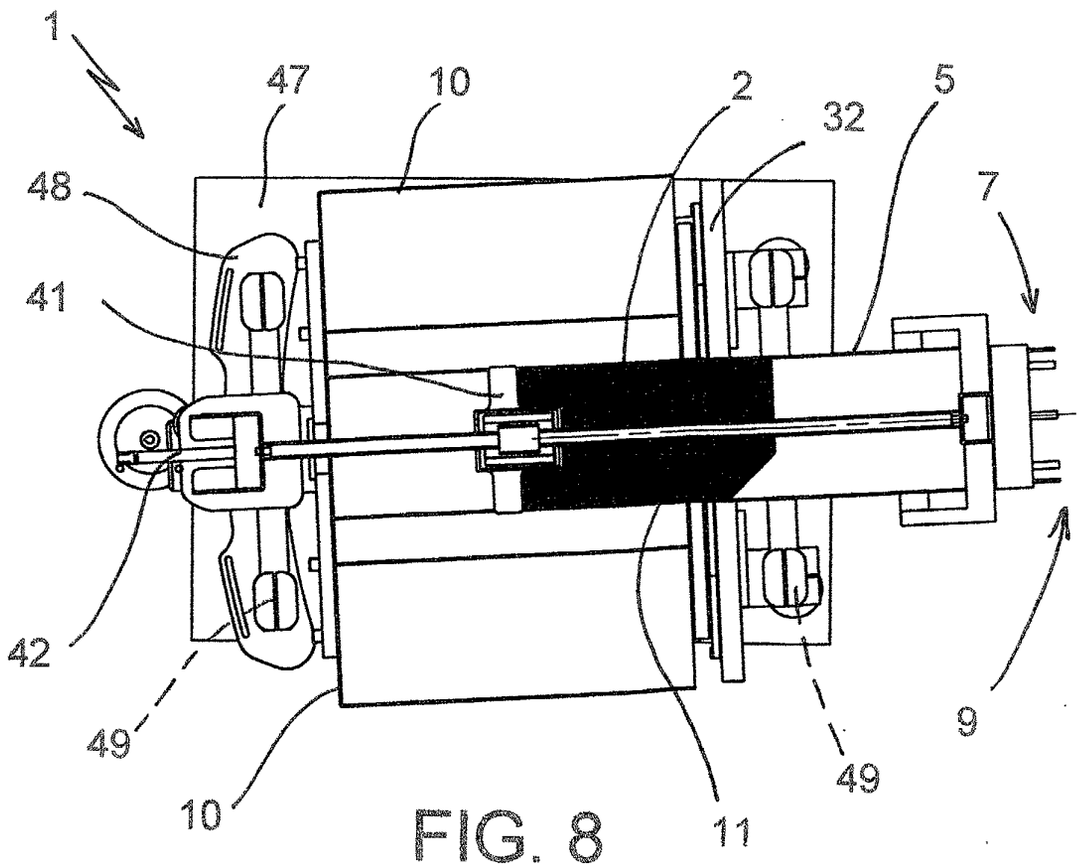

FIG. 8

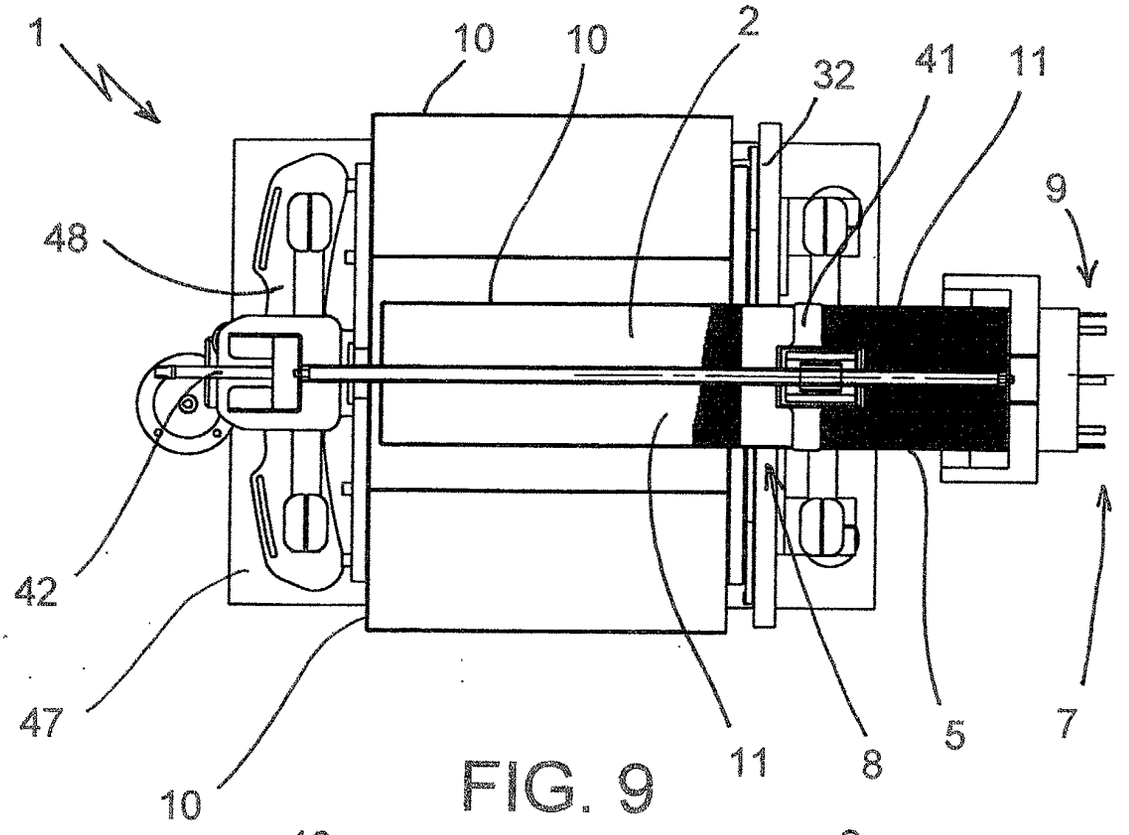
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FIG. 9

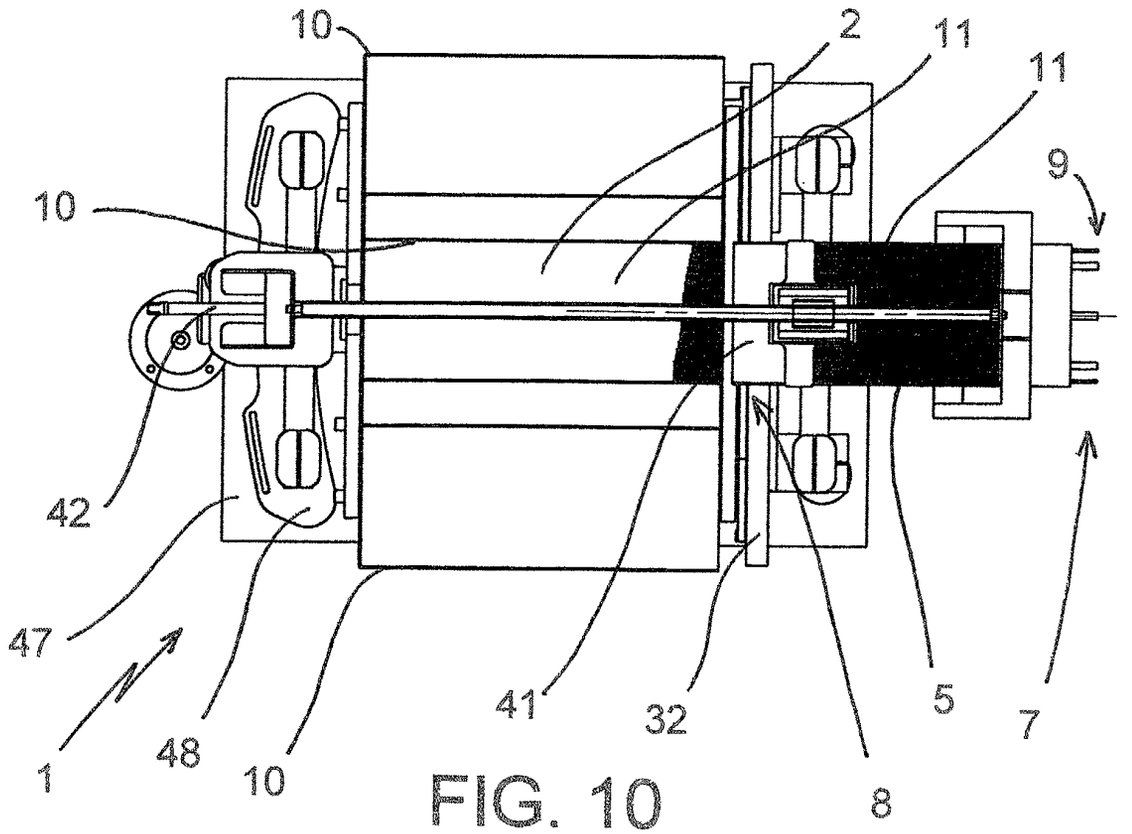
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FIG. 10

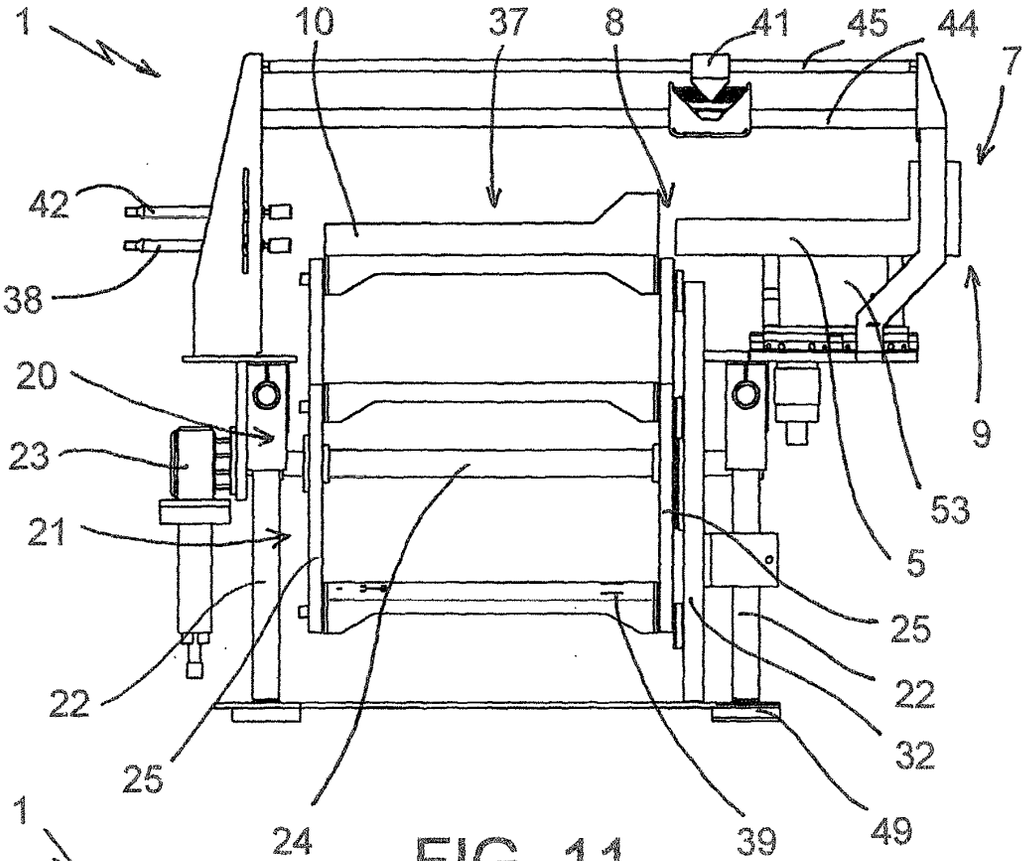
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FIG. 11

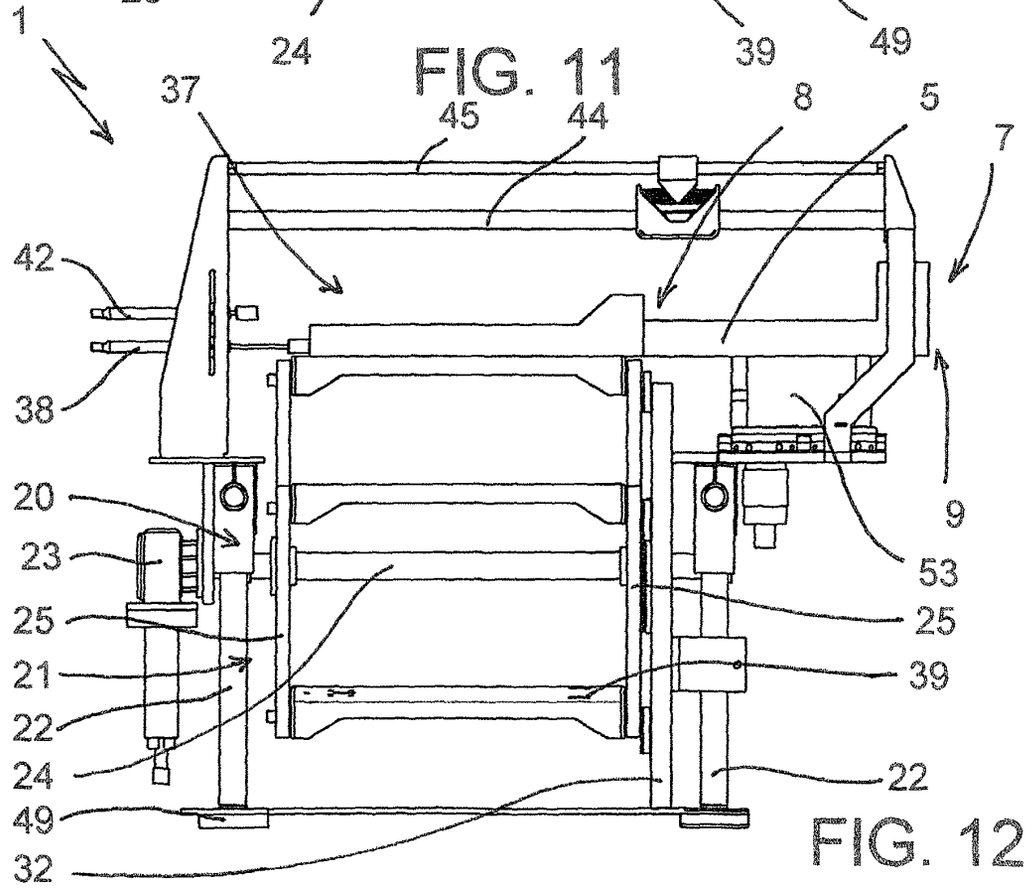
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FIG. 12

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 83 0692

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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B65C
B65H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	11 April 2002	Schneider, M

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11-04-2002

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