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(54) Device for withdrawal and transfer of labels in a labelling machine.

(57) A device for the withdrawal and transferring of labels in labelling machines, comprising a rotating carousel (1) peripherally bearing at least one blade (12) to collect the labels (10) from a magazine (9), after first passing through a glueing device (8). The blade (12) also rotates partially about its own support shaft (18), said shaft (18) being equipped with a gearing mechanism (19) associated to a cogged sector (22) partially rotating in two opposite directions about a pivot (23). The blade (12) is solid, by means of its support shaft (18), to a mobile body (27) arranged peripherally of the carousel (1), a curved element (28) also being fixed to the mobile body (27), said curved element (28) having a similar curvature to the blade (12) and being arranged on the trajectory of the blade (12) in the rotation direction of the carousel (1). The curved element (28) receives glue when it passes through the glueing device (8) and collects the part of each single label that extends beyond the active curved surface (13) of the blade (12).

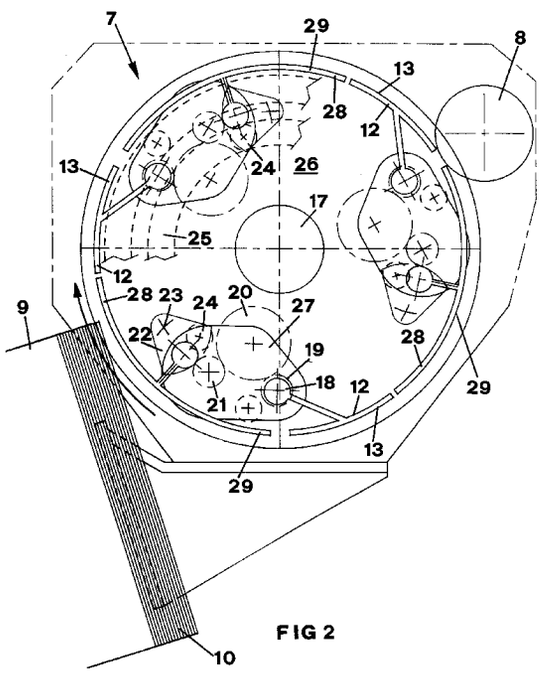

FIG 2

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The invention relates to a group for collecting labels from a magazine, in labelling machines. Usually such groups have a rotating carousel on which label collecting organs, known as blades, are mounted. The blades are provided with a curved active surface and contact with a glueing group whereat their active surfaces are coated with a thin layer of glue, before passing on to the label magazine. At the magazine, the curved active surface of each blade drags (without slippage) on a label, and thanks to the layer of glue picks up said label. In the prior art, the active surface of the blade is at least equal to the size of the label.

The length referred to above is of about 180-220 mm, with the standard size of the carousel diameter being of about 400 mm so that the whole label-collecting group can be of a contained size in order to limit the mass of the entire labelling machine. If larger labels are to be used, the collecting group has to be increased in size as well, which obviously leads to an economic/practical drawback, namely that the rest of the labelling machine has to be increased in size and therefore will cost more to make, transport, and so on.

The principal aim of the present invention is to obviate the above-mentioned drawbacks by providing a label-collecting group of standard dimensions but capable of collecting longer than standard labels, and in particular much longer labels than the lengths of traditional blade active surfaces have up to now permitted.

These and other aims besides are all attained by the label-collecting group for labelling machines, constituted by a rotating carousel peripherally bearing at least one blade to collect the labels from the magazine, after first passing through the glueing group. The blade also rotates partially about its own support shaft, said shaft being equipped with a gearing mechanism associated to a cogged sector partially rotating in two opposite directions about a pivot. The blade is solid, by means of its support shaft, to a mobile body arranged peripherally of the carousel, a curved element also being fixed to the mobile body, said curved element having a similar curvature to the blade and being arranged on the trajectory of the blade in the rotation direction of the carousel. The curved element receives the glue when it passes through the glueing groups and collects the part of each single label that extends further than the size of the active curved surface of the blade. Further, the invention comprises at least one skate wheel, slideable in a shaped track, to enable the mobile body to move externalwise with respect to the carousel such that the blade can come into contact with the label, and remove it from the magazine.

Further characteristics and advantages of the present invention will better emerge from the detailed description that follows, of an embodiment of the invention, illustrated in the form of a non-limiting example in the accompanying drawings, in which:

figure 1 schematically shows in plan view a labelling machine equipped with the label-collecting device of the invention;

figure 2 schematically shows, in enlarged plan view and minus its cover, the label collecting group of the invention with its main components clearly evidenced;

figure 3 schematically shows in plane view one of the moving bodies in the environs of the label magazine;

figures 4, 5, 6 and 7 show four consecutive phases of the collection of a label from the magazine by a blade mounted on one of the moving bodies;

figure 8 is a section view of the label collecting group in a position which is not illustrated in the preceding figures.

With reference to figure 1, 1 denotes a conveyor, (not illustrated for the sake of simplicity) feeding bottles, jars or other containers to a rotary structure 2 by means of a transfer wheel 3. The labels are applied on the bottles on the rotary structure 2 by a drum 4, after which the bottles are removed by a further transfer wheel 5 and placed on a conveyor 6. In figure 1 arrows indicate the movement direction of the bottles.

In the figures, 7 denotes the label collecting group of the invention, while 8 indicates the glueing group and 9 the label magazine: apart from the label collecting group, the other organs are of known type and will not be further described in the following description.

The label collecting group 7 comprises a rotary carousel 11 bearing blades 12 at its periphery, each of which blades 12 is provided with a curved active surface 13 removing the labels singly from the magazine 9 after having first passed through the glueing group 8. In effect, the carousel 11 comprises a cover (denoted in figure 8 by 11) driven by a shaft 14 motorised by a gear couple 15 and 16, gear 16 being keyed on a shaft 17.

Each blade 12 rotates partially about its own support shaft 18 on which a further gear 19 is keyed, which gear 19 is motorised through an idle gear 20, another gear 21, and a cogged sector 22 partially rotatable in two directions about a pivot 23 fixed to the carousel 11.

The cogged sector 22 rotates partially in two directions due to the fact that the cogged sector 22 is provided with a first skate 24 slidably inserted in a first track 25. In the illustrated embodiment, there are in fact two tracks 25, but one could be sufficient if the arrangement of the other components were modified. In any case, the track 25 is basically circular and made in the fixed base 26 of the carousel 11. As can be seen in figure 3, near to the magazine 9, the curvature of the first track 25 deviates from being circular, such that the track 25 reaches further internalwise of the fixed base 26 than before, by an extent de-

noted by L1. This change in trajectory causes a displacement of the skate 24 in a radial centripetal direction with respect to the fixed base 26, which deviation determines a partial rotation of the cogged sector 22 about the pivot 23, with a consequent rotation of the blade 12 about the shaft 18.

Through its support shaft 18 each blade 12 is solid to a mobile body 27 of approximately trapezoid shape, to which the shafts of the gears 19, 20 and 21 are fixed.

A curved element 28 is rigidly fixed to the mobile body 27 and has an active surface 29 provided with a similar curvature to that of the blade 12 surface 13, and is arranged on the circular trajectory of the blade 12 in the rotation direction of the carousel 11.

The curved element 28 receives the glue when it passes at the glueing group 8 and then receives, on its surface 29 (by now spread with glue), the part of every label 10 collected by the blade 12 which overlaps the blade 12 active surface 13. This sequence is illustrated in figures 6 and 7. In order to enable the blade 12 to contact the label 10 contained in the magazine (a rolling non-drag contact made by the rotation of the cogged sector 22), the mobile body 27 displaces radially centrifugally with respect to the carousel 11. This movement is made possible by the existence of a second skate 30, solid to the body 27, which is slidably inserted in a second circular track 31 made in the fixed base 26. As can be seen in figure 3, in the magazine area, the second track 31 is not perfectly circular but deviates such as to create a displaced tract L2 externalwise of the fixed base 26. This change in trajectory induces a displacement in the second skate 30 trajectory in a radial centrifugal direction (with respect to the base 26) and thus also of the body 27.

Just downstream of the magazine 9, in the rotation direction of the carousel 11, an idle roller 32 (see figures 4 and 7) is installed, which presses the label 10 against the surface 29 of the curved element 28, enabling it to be correctly positioned.

Studies made on the subject reveal that on collecting groups 7 having a standard diameter of 400mm., labels as long as 600mm can be used: this implies that labels long enough completely to surround a container of considerable circumference can be loaded; all of which is not possible with any prior art solution.

Claims

1. A label-collecting group for labelling machines, constituted by a rotating carousel (11) peripherally bearing at least one blade (12) to collect labels (10) from a magazine (9), after first passing through a glueing group (8) the blade (12) also rotates partially about a support shaft (18), said shaft (18) being associated to a cogged sector (22) partially rotating in two opposite directions about a pivot (23), the cogged sector (22) being provided with a skate (24) slidably inserted in a track (25), virtually circular in shape and made in a fixed base (26) of the carousel (11),
characterised in that the blade (12), through the support shaft (18), is solid to a mobile body (27) arranged peripherally to the carousel (11), which mobile body (27) also bears bi-directional motor transmission organs of the cogged sector (22) movement to the support shaft (18) of the blade (12); a curved element (28) also being solidly fixed on the mobile body (27), which curved element (28) has a similar curvature to a curvature of the blade (12), and is arranged on a trajectory of said blade (12) in a movement direction of the carousel (11), the curved element (28) receiving glue when passing at the glueing group (8) and bearing a part of each label (10) collected by the blade (12) which part of each label exceeds a length of the curved surface of the blade (12); there being provided means for enabling the mobile body (27) to move with respect to the carousel (11) in order to enable the blade (12) to come into contact with the label (10) contained in the magazine (9) in order to carry out a collecting operation.

2. A label-collecting group as in claim 1, characterised in that the means for enabling the mobile body (27) to move with respect to the carousel (11) comprise a skate (30) which is slidably inserted in a mostly circular track (31) made in the fixed base (26) of the carousel (11), the skate (30) being fixed to the mobile body (27) and the track (31) exhibiting, proximally of the magazine (9), a deviation from a perfectly circular shape.

3. A label-collecting group as in claim 2, characterised in that the deviation from a perfectly circular shape is such as to deviate the track (31) at a tract L2 externalwise of the fixed base (26) of the carousel (11).

4. A label-collecting group as in claim 1, characterised in that the track (25) exhibits, in proximity of the deviation from a perfectly circular shape, a variation in curvature which is not of a circular shape.

5. A label-collecting group as in claim 4, characterised in that the variation in curvature is such as to displace the track (25), over a tract L1, internalwise of the fixed base (26) of the carousel (11).

6. A label-collecting group as in claim 1, characterised in that downstream of the magazine (9) in the

rotation direction of the carousel (11) is a device which comes into contact with the curved element (28), which device presses a label (10) collected by the blade (12) against the curved element (28).

7. A label-collecting group as in claim 6, characterised in that the device is an idle roller (32).

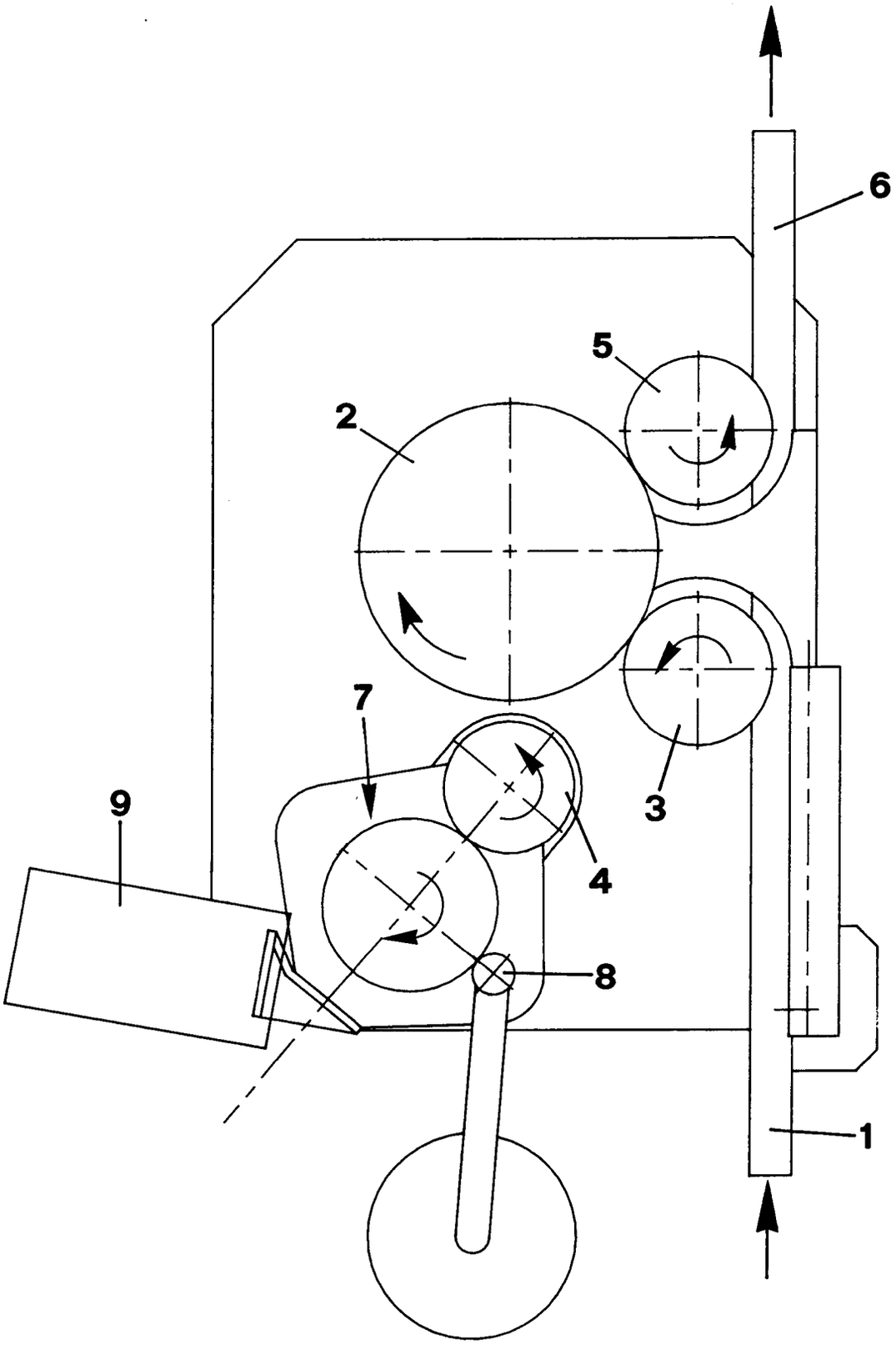

FIG 1

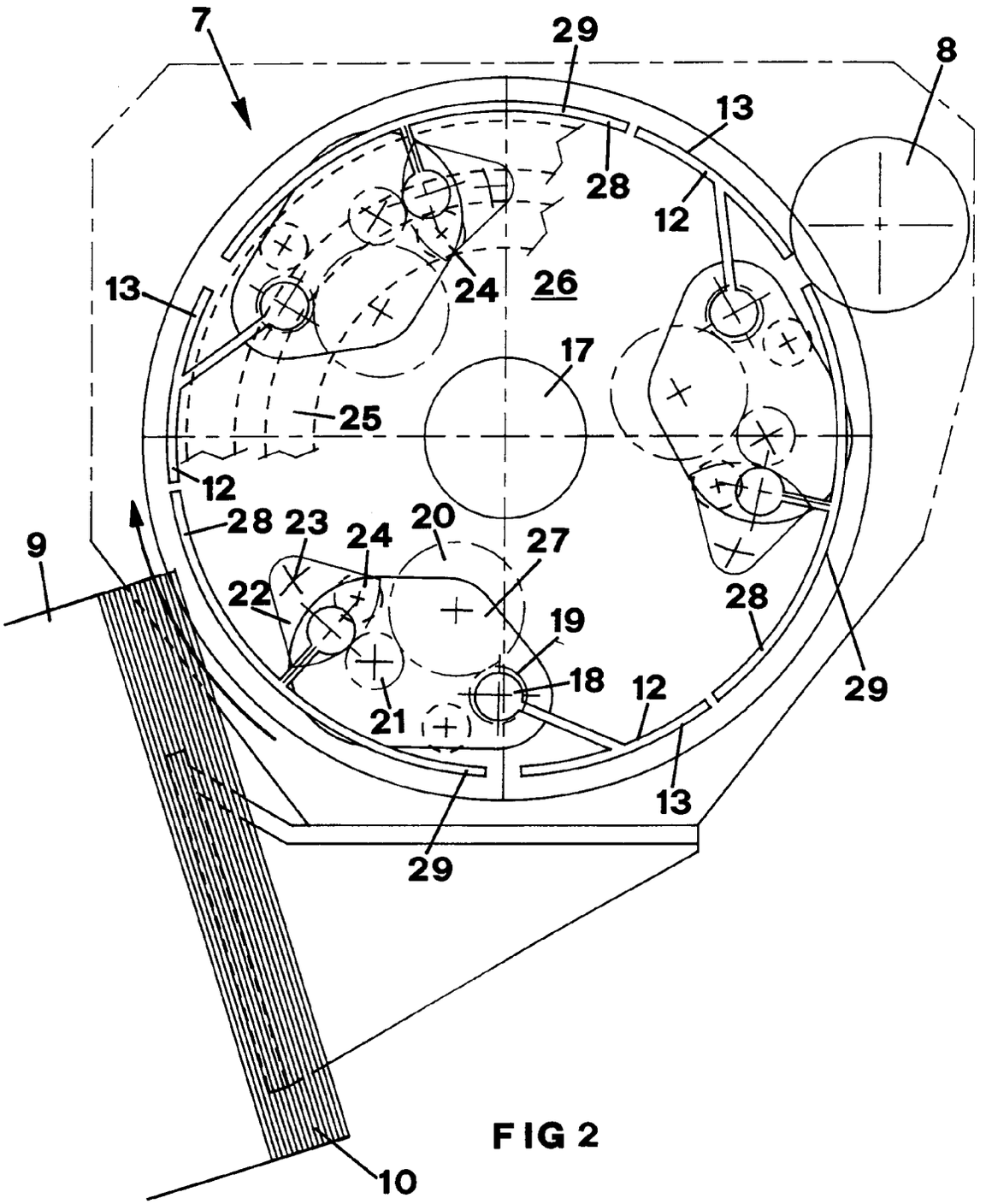
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FIG 2

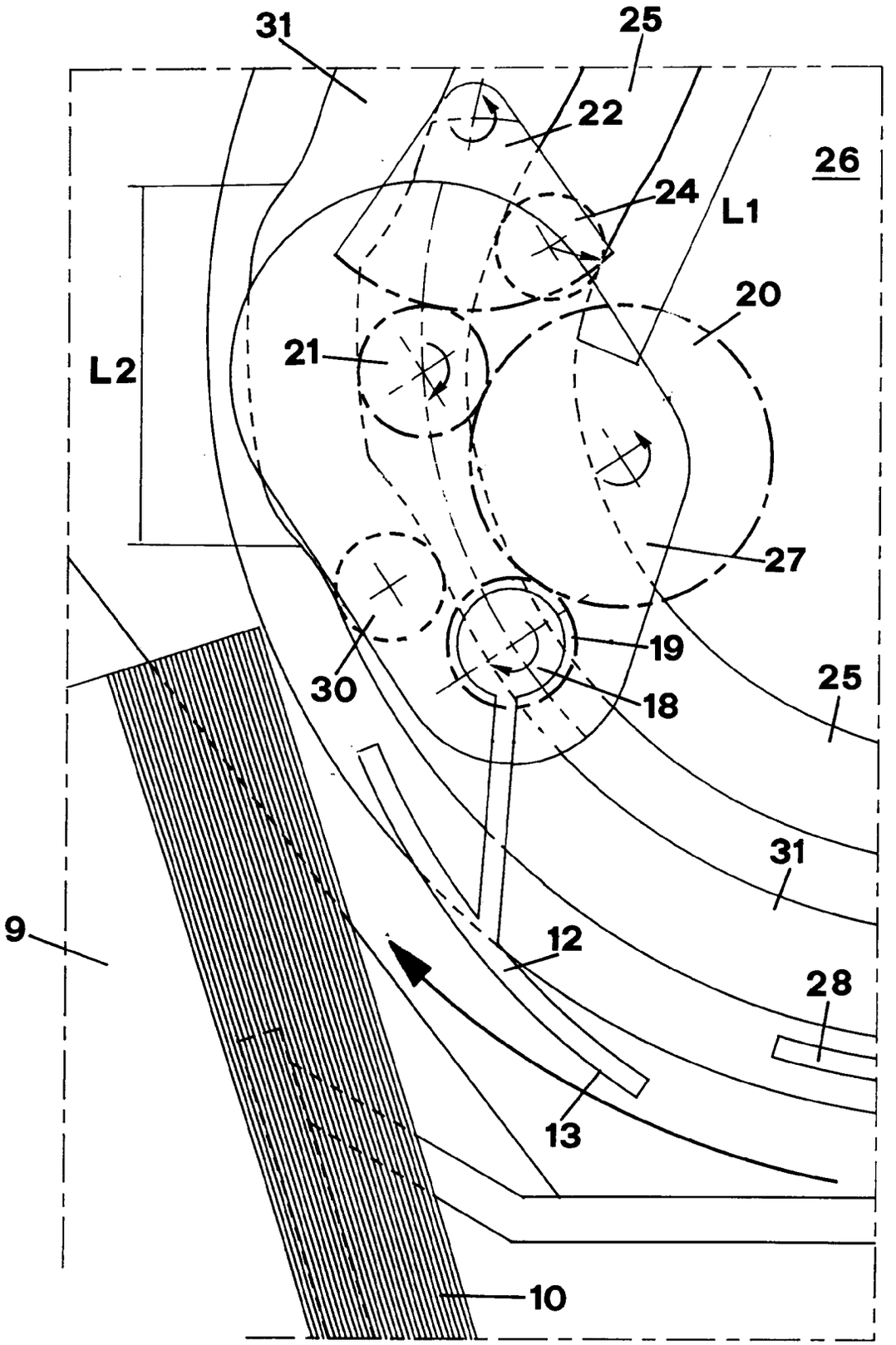

FIG 3

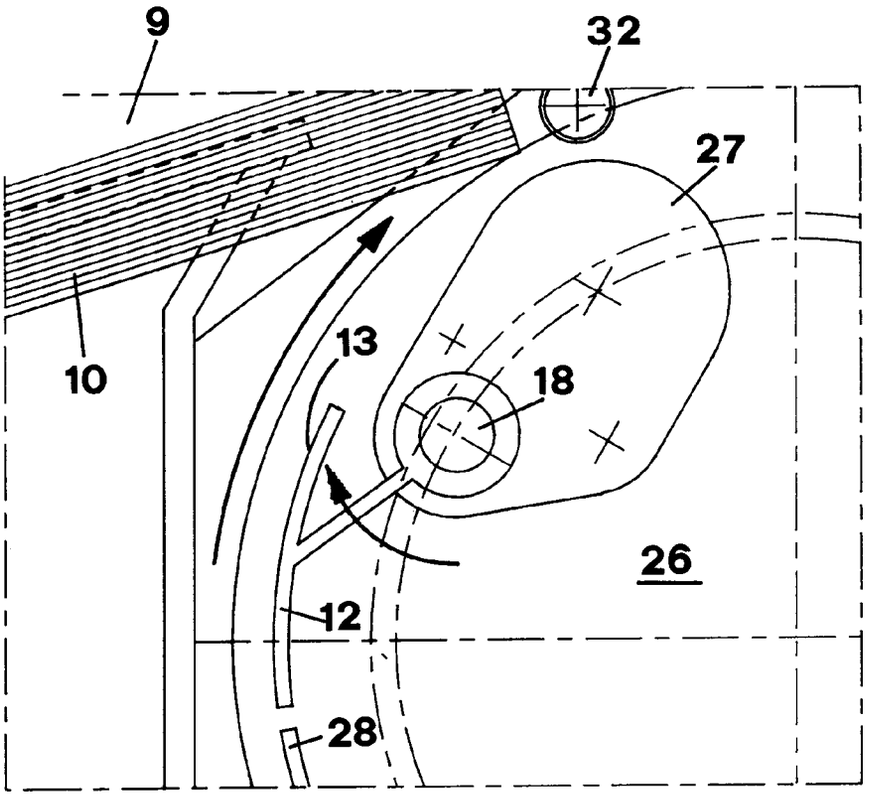

FIG 4

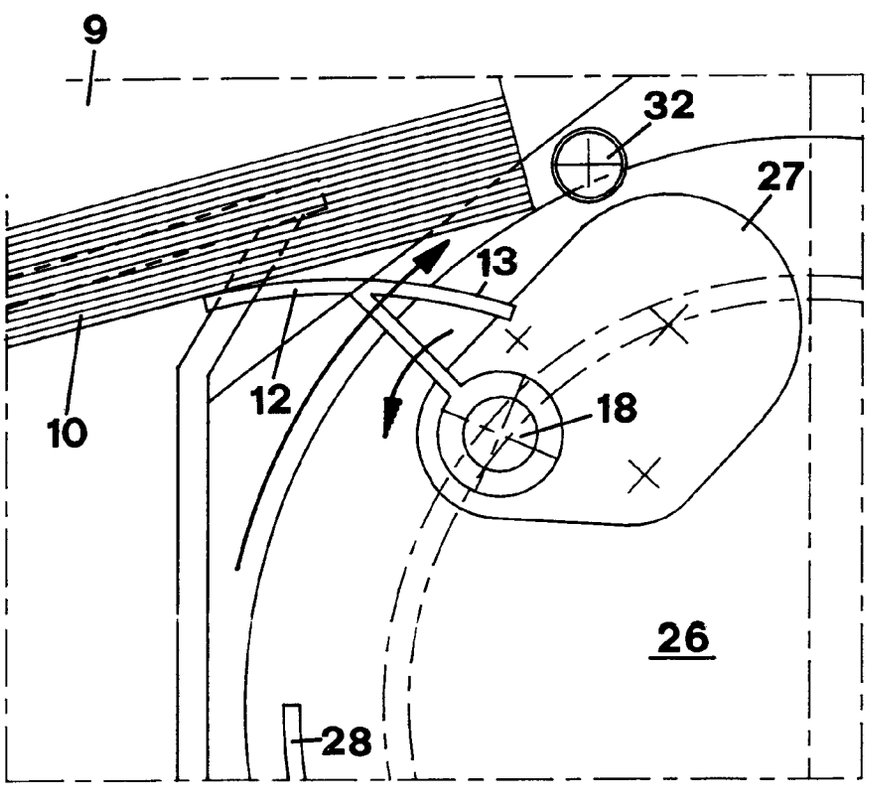

FIG 5

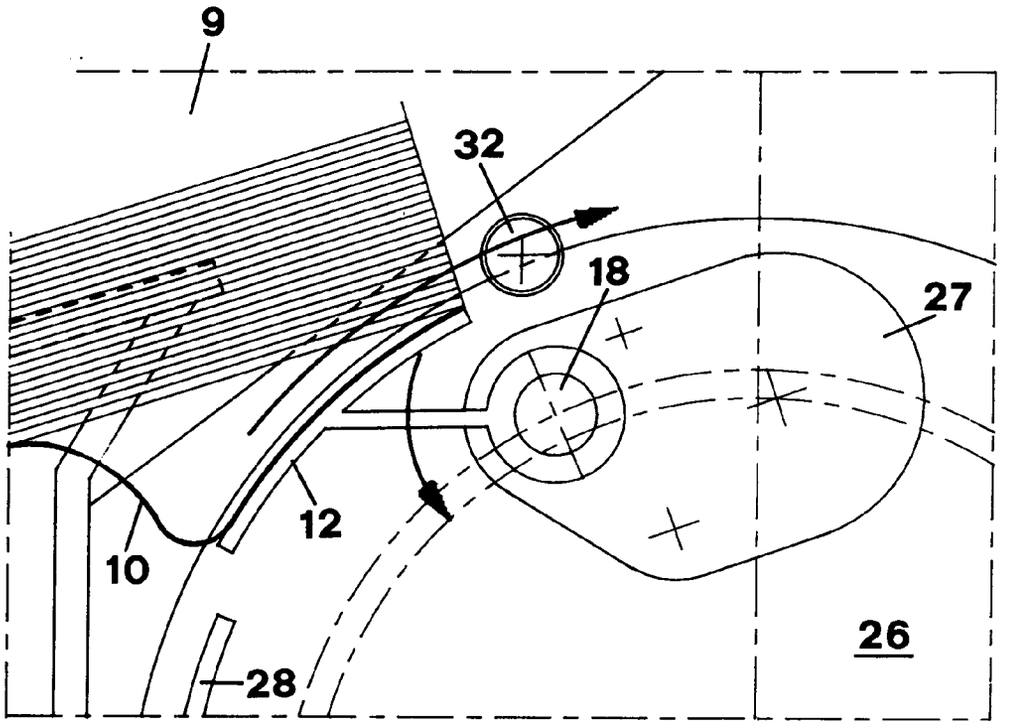

FIG 6

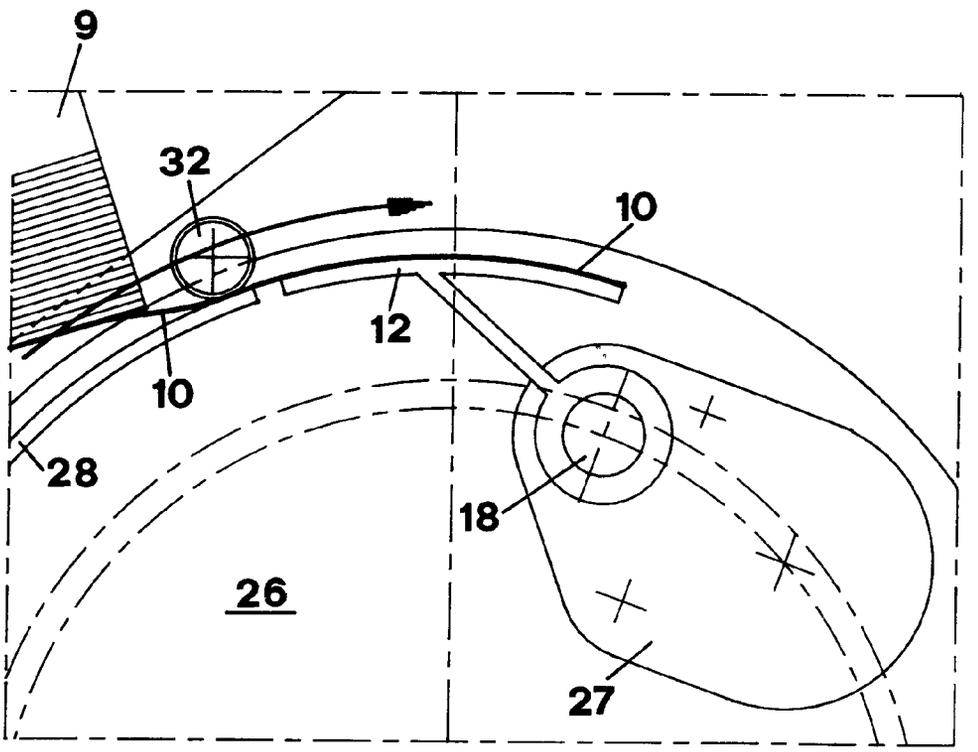

FIG 7

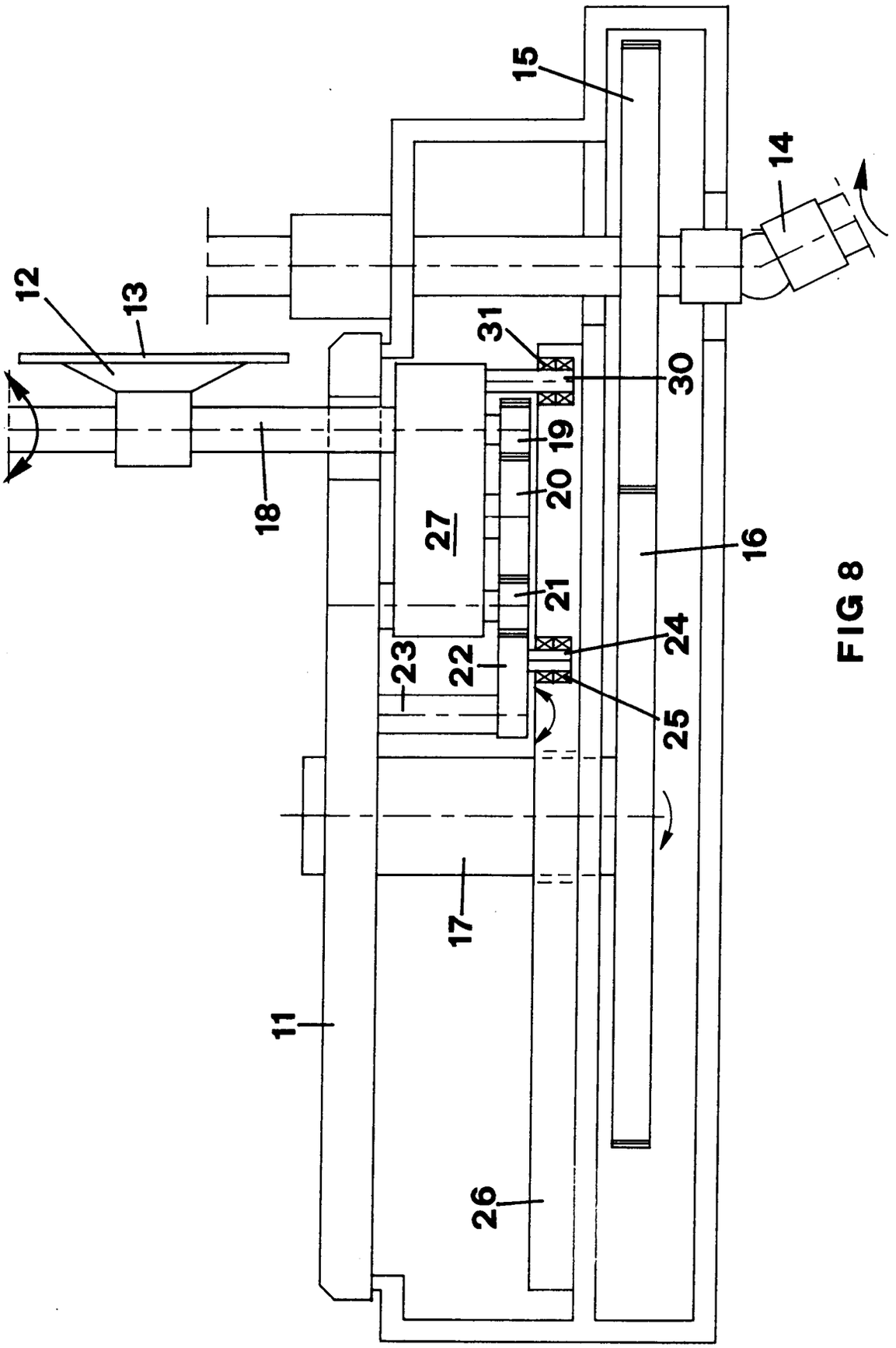

FIG 8

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EUROPEAN SEARCH REPORT

Application Number
EP 94 83 0108

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
A	DE-A-39 38 283 (ANKER-MASCHINENBAU GMBH) * column 2, line 16 - column 3, line 67 * * figures 1-6 *	1	B65C9/16
A	DE-A-38 02 135 (KRONES AG HERMANN KRONSEDER MASCHINENFABRIK) * column 3, line 52 - column 6, line 12 * * figures 1-4 *	1	
A	DE-A-19 36 839 (JAGENBERG-WERKE AG) * page 3, line 22 - page 5, line 8 * * figures 1-5 *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.5)

B65C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	20 July 1994	Smolders, R

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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E : earlier patent document, but published on, or after the filing date
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