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(54) Device for controlling the tilting of a container

(57) A device (1, 101) for controlling the tilting of a container (4, 104) seated on a fixed frame (20, 120) of a machine, comprising a motor member (2) having a first shaft (7) mechanically connected to a second shaft (9) rigidly connected to the container (4, 104), and with which the container rotates for tilting, has a first (12, 112) and a second (60, 160) mechanical check means, respectively for stopping the rotation of the second shaft (9) rigid

with the container (4, 104) both in the tilting direction and in the opposite direction, and a balance structure (30, 130), rigidly connected to the motor member (2) and rotatable therewith, which structure in turn comprises a right-angle structure (38), loading members (70, 71, 72, 170, 171) associated with it and sensitive to its movement, and means for reversing and for stopping the rotation of said motor member (2).

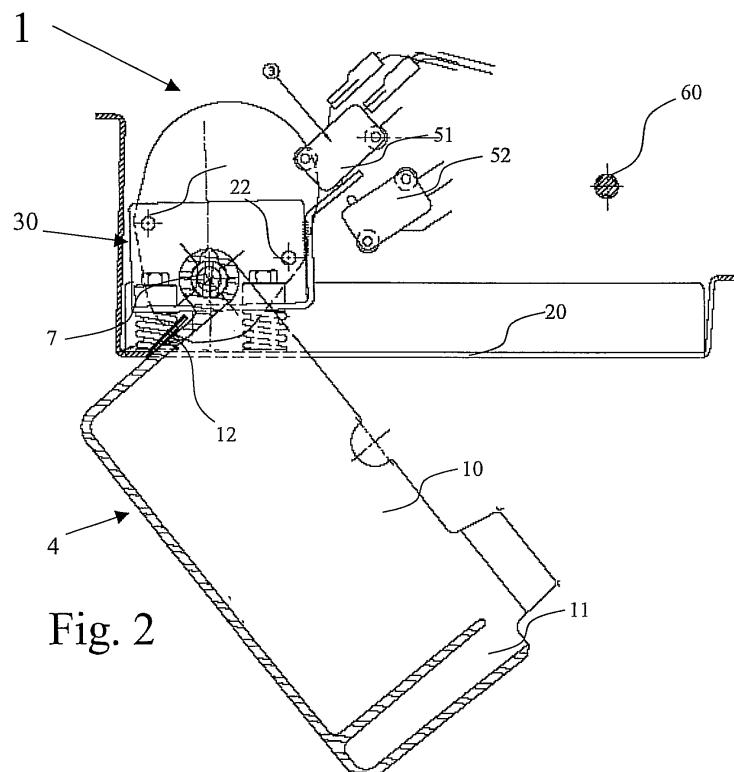


Fig. 2

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Description

Field of application

[0001] The invention relates to a device for controlling the tilting of a container usable in particular, but not exclusively, in machines for producing ice-cubes, and the following description is provided with reference to this field of application for the sole purpose of simplifying the presentation thereof.

Prior art

[0002] As is well known, there are machines for producing ice which use tilting containers designed to contain water for producing ice and, temporarily, the ice produced; the container is rotated about a shaft by a suitable motor such that it passes from a limit position for loading with water and producing ice (horizontal position) to a tilting limit position for discharging the water and the ice produced (inclined position); the control of the exact positioning of the container in the two limit positions is effected by a suitable tab which is fixed on the shaft for rotation of the container and which intercepts two limit-indicating switches.

[0003] Unfortunately, it may occur that the aforesaid tab, at the time of assembly of the machine, is not fixed in a position suitable for guaranteeing perfect functioning thereof; this results in, an incorrect alignment of the container in the loading and tilting positions; manual intervention is therefore necessary to rectify the tab, for example with pliers, in order to allow the machine to work in the correct position.

[0004] Moreover, controlling the positioning of the container by means of a tab envisages that the container, when tilting, locks itself in the event that it meets an obstacle during its movement; this locking causes a stoppage of the machine, which can be set in motion again only by manual intervention to remove the obstacle.

[0005] The problems described result in not inconsiderable costs for ordinary or extraordinary maintenance, and also in costs for lost production in the event of complete inactivity of the machine.

[0006] It is an aim of the present invention to provide a device for controlling the tilting of a container having structural and functional characteristics such as to remedy the drawbacks described above, that is, guaranteeing correct rotation of the container and correct positioning of same in the limit positions, as well as the return of the container into a horizontal position, thus avoiding the stoppage of the machine in the event that, while descending, it meets obstacles in its path.

[0007] Another aim of the present invention is to guarantee greater safety for a user who might absent-mindedly place a hand in the vicinity of the moving container.

[0008] A further aim of the present invention is to provide a device that is easier to assemble than those used in the prior art.

Summary of the invention

[0009] The aims indicated above are achieved by a device for controlling the tilting of a container, seated on a fixed frame of a machine, comprising a motor member having a first shaft connected mechanically to a second shaft, rigidly connected to the container, and with which the container rotates for said tilting, characterized in that it comprises:

- a first mechanical check means, provided on a frame, for stopping the tilting rotation of the container,
- a second mechanical check means, fixed to the frame, for stopping said container during rotation in the opposite direction to that for tilting,
- a balance structure, comprising in turn a right-angle structure, loading members associated with the right-angle structure and sensitive to the movement of the latter, the balance structure being rigidly connected to the motor member and rotatable therewith about said shaft, and
- means for reversing and blocking the rotation of said motor member, for reversing or blocking the rotation of the container, upon contact of the latter with the said first and second mechanical check means.

[0010] Therefore, when the motor member is commanded to rotate for the tilting rotation of the container, the container rotates until it meets the first mechanical check means, and the right-angle structure, continuing the rotation with the motor member, actuates the means for reversing the rotation of the motor member, bringing back the container into the normal position, until it meets the second mechanical check means. Also in this situation, the right-angle structure continues the reverse rotation with the motor member and actuates means for blocking rotation of the motor member.

[0011] The characteristic features and advantages of the invention will become clear from the following description of an exemplary embodiment thereof, provided by way of non-limiting example with reference to the appended drawings.

Brief description of the drawings

[0012]

- Figures 1 and 2 show sectional views of an assembly comprising container and device for controlling the tilting into respective loading and tilting positions, according to a first embodiment of the present invention.
- Figure 3 shows a perspective view of parts of the assembly comprising container and device for controlling the tilting shown in Figures 1 and 2, according to the present invention.
- Figures 4a and 4b shows a front view of two variants

of a balance structure, according to the first embodiment of the present invention.

- The groups of Figures 5a - 5c, 6a - 6c, 7a, 7b, 8a and 8b show details of the balance structure of Figures 1 and 2, according to the present invention.
- Figures 9 and 10 show sectional views of the assembly comprising container and device for controlling the tilting into respective loading and tilting positions, in accordance with a second embodiment of the present invention.

Detailed description

[0013] With reference to said figures, Figure 1 shows an assembly comprising container and device 1 for controlling the tilting, applied to the container 4, in a first embodiment of the present invention, in particular in a limit position for loading (horizontal position), while Figure 2 shows the same assembly comprising container 4 and device 1 in a tilting limit position (inclined position).

[0014] As is clear from both figures, the device 1 is seated on a support surface 20 which may belong to machinery for various uses, in particular for producing ice.

[0015] More generally, the device may be seated on the frame of a machine.

[0016] The device 1 comprises a motor member 2 (shown in Figure 3) connected by means of a shaft 7 to a container 4.

[0017] With reference to Figure 3, the motor member 2 comprises a small electric motor 5 coupled to a geared motor 6; the electric motor 5 is, for example, of the type produced by Saia Burgess supplied at 230 V, 50 Hz frequency with an input capacity of 0.068μF. The rotary motion of said motor 5 is transmitted to the geared motor 6; this also is produced, for example, by Saia Burgess.

[0018] Still with reference to Figure 3, a pin 8 permits the engagement between a rotation shaft 9, for rotation of the container 4, and the geared motor 6, therefore linking the rotation of the container 4 to that of the shaft 7 of said geared motor.

[0019] The container 4, shown briefly in Figure 1 and in more detail in Figure 3, is sub-divided into two troughs 10 and 11; the first trough 10 has dimensions close to those of the entire container, is located in the vicinity of the rotation shaft 9 and is intended to receive water for producing ice; the second trough 11 is of smaller dimensions than the first, is located on the opposite side of the container 4 with respect to the rotation shaft 9 and receives the water discharged from the first at the moment when the container begins to tilt.

[0020] The device 1 for controlling the tilting of a container into the tilting limit position is shown in Figure 2, together with the container 4, where the components in common with Figure 1 retain the same reference numbers.

[0021] As will be noted, the container 4, in this phase, is locked in a downwardly inclined position with respect to the support surface 20, by means of a bend 12 provided

on the same support surface; the bend 12 may be, more generally, any mechanical check means able to cause the container 4 to pass from a tilting position into a locking position.

[0022] Advantageously, according to the invention, the device 1 further comprises a balance structure 30, fixed on the support surface 20 and secured to the motor member 2, in particular to the geared motor 6, for example by means of two through screws seated in the holes 21 and 22.

[0023] The balance structure 30 is shown in Figures 1, 2, 3 and separately in greater detail in Figure 4a, in which all the parts of which it is composed are numbered.

[0024] Advantageously, according to the first embodiment of the present invention, the balance structure 30 comprises a pair of loading members 70, 71 comprising in turn two guide pins 31 and 32, which have respective support bases 33 and 34, are secured to the support surface 20 and onto which two springs 35 and 36 are fitted. The guide pins 31 and 32 and the respective springs are secured to a base 37 of a right-angle structure 38 by means of screws 45, 46, in particular hexagonal-headed screws, tightened onto special washers 39 and 40, such that the springs 35 and 36 remain interposed between the aforesaid base 37 and the bases 33 and 34 of the guide pins. The right-angle structure 38 further has a side 41 perpendicular to the base 37, in contact with the outer surface of the geared motor 6, on which there are seating holes 21 and 22 for the screws for fixing to the geared motor 6 itself and a further hole 42 in which there sits the shaft 7 equipped with the through pin 8 which permits the engagement between the rotation shaft 9, of the container 4, and the geared motor 6.

[0025] A second side 43 forming part of the right-angle structure 38 is arranged partly perpendicular to the base 37 and to the side 41, and as regards the remainder diverges from the side 43 at a predetermined angle by means of a tab 44 which fits into a position interposed between two microswitches 51 and 52, shown in Figures 1 and 2, and which control the direction of rotation of the shaft of the motor member 2 and consequently the rotation of the container 4 about the rotation shaft 9.

[0026] Figure 4b shows a constructional variant of the balance structure 30 according to Figure 4a; the two figures have the same reference numbers, in respect of the components present in both of them.

[0027] In Figure 4b, only one of the springs 35, 36 is present; the loading member 72 is devoid of the corresponding spring and the guide pin 31 is completely visible or could be covered by a resilient member of a different nature.

[0028] The right-angle structure 38 is shown in greater detail and separately in Figures 5a, 5b and 5c; in particular, Figure 5a shows a front view of the aforesaid structure, in which it will be noted that the seating holes 21 and 22 for the screws for fixing to the geared motor 6 and present on the side 41 perpendicular to the base 37, have been provided on an axis inclined with respect to the

latter and, consequently, with respect to the support surface 20; this inclination mirrors the inclination of the longitudinal axis of the geared motor 6 with respect to that of the balance structure 30.

[0029] Figure 5c shows a view from above of the right-angle structure 38 in which holes 55 and 56 occupied by the guide pins 31 and 32 are visible.

[0030] Figure 5b shows a side view of the right-angle structure 38.

[0031] The guide pins 31 and 32 are shown in greater detail in Figures 6a - 6c; in particular, Figure 6a shows a front view of the pin, in which at least one facet for coupling to the right-angle structure 38 may also be provided.

[0032] Figure 6b shows a view from above of the pin 31, 32 and Figure 6c shows a sectional view; in the latter it is possible to note the presence of a cavity 58 which is within the pin, parallel to the longitudinal axis, and which passes through the pin itself from the base 33 or 34 as far as the screw, in particular the special washer 39 or 40.

[0033] Figures 7a and 7b show in greater detail the spring 35, respectively in top view and in front view.

[0034] Figures 8a and 8b show in greater detail the special washer 39 or 40, respectively in a sectional view and in a top view.

[0035] A description will now be given of the operation of the device for controlling the tilting of a container, according to the first embodiment of the present invention.

[0036] The device 1 for controlling the tilting of a container 4 initially has the container 4 in a horizontal position parallel to the support surface 20, as shown in Figure 1.

[0037] The container 4 is preferably kept in the horizontal position by a flexion spring not shown in the drawings and by the absence of rotation of the electric motor 5 and, therefore, of the shaft 7 of the geared motor 6, which determine the absence of rotation also of the shaft 9 of the container 4. In this position, the container is in contact with a rise limit member 60. More generally, this member 60 is nothing more than a mechanical check member able to prevent the container 4 from going beyond the horizontal loading position.

[0038] During the stage of formation of the ice cubes, the container is in the position described; once the moment of the start of tilting is determined, the container 4 rotates about the shaft 9 and moves away from the limit member 60.

[0039] In practice, once tilting has begun, the electric motor 5 transmits a clockwise rotary motion to the geared motor 6 which, in turn, sets in rotation the shaft 7 engaged, via the through pin 8, with the rotation shaft 9 for rotation of the container 4; this continues its own descending rotation until it comes into abutment on the bend 12 provided on the support surface 20.

[0040] Once it is in abutment, the container 4 remains locked; consequently the shaft 9 remains locked, in turn also keeping the shaft 7 of the geared motor locked.

[0041] The electric motor 5, however, continues to transmit a clockwise rotary motion to the shaft 7 of the geared motor 6; the geared motor 6, in order to balance

the rotational force which it receives from the electric motor 5, and unable to rotate about its own shaft 7, inasmuch as it is blocked by the container 4 which is in turn in a locked position, executes a rotation of a few degrees on itself in an anticlockwise direction.

[0042] Advantageously, according to the invention, the balance structure 30 permits the geared motor 6, rotating anticlockwise on itself, to load the spring 35 and partially load the spring 36, having the effect that all the torque delivered by the electric motor 5, amplified by the reduction ratio of the geared motor 6, is not completely discharged onto the gearwheels of the motor member 2.

[0043] The slight anticlockwise rotation on itself of the geared motor 6, with the consequent loading of the spring 35 and partial loading of the spring 36, causes the right-angle structure 38 to be inclined and effects a slight raising of the tab 44 which moves into a position such as to contact the descent limit microswitch 51 which commands the reversal of rotation of the electric motor 5, consequently also reversing the direction of rotation of the shaft 7 of the geared motor and of the shaft 9 of the container. Once the direction of rotation of the shaft of the geared motor 6 is reversed, the container returns, by rotating about the shaft 9, into its horizontal working position and the springs 35 and 36 reacquire the initial prestress which they had initially.

[0044] The horizontal position of the container 4 is defined by the limit member 60; when the container 4 comes into abutment on said member, it is blocked.

[0045] The electric motor 5, however, continues to transmit an anticlockwise rotary motion to the shaft 7 of the geared motor 6; the geared motor 6, in order to balance the rotational force which it receives from the electric motor 5, and unable to rotate about its own shaft 7, inasmuch as it is blocked by the container 4 in the locked position, executes a rotation of a few degrees on itself in a clockwise direction.

[0046] Advantageously, according to the invention, the balance structure 30 permits the geared motor, rotating clockwise on itself, to load the spring 36 and partially load the spring 35, with the result that all the torque delivered by the motor, amplified by the reduction ratio of the geared motor 6, is not completely discharged onto the gearwheels of the motor member 2.

[0047] The slight clockwise rotation of the geared motor 6 on itself, with the consequent loading of the spring 36 and partial loading of the spring 35, causes the right-angle structure 38 to be inclined and effects a slight lowering of the tab 44, which moves into a position such as to contact the rise limit microswitch 52, which commands the cut-off of the power supply to the electric motor 5, stopping the rotation of the shaft 7 of the geared motor and of the shaft 9 of the container.

[0048] Advantageously, according to the invention, the initial prestress of the springs, added to the descent limit loading (tilting position of the container) or rise limit loading (horizontal position for loading) makes it possible to keep the torque delivered constantly below the maximum

torque that, can be withstood by the kinematic chain of the geared motor 6.

[0049] In addition, with the tilting device described, if during the phase of descending rotation the container 4 should meet an obstacle left erroneously or absent-mindedly in the path of its movement, it will reverse the direction of rotation in the same way as it reverses the direction of rotation when it reaches the descent limit member, without causing any damage either to the device or to the obstacle touched.

[0050] In particular, the system guarantees complete safety for a user who absent-mindedly places a hand in the gap below the container while extracting the ice previously produced by the machinery.

[0051] The same problem of interception of an obstacle could arise during the phase of ascending rotation of the container; in this case the device would suspend rotation of the geared motor 6 in the same way as it suspends rotation when it reaches the rise limit member; the device 1, however, remains in the locked position until the removal of the obstacle that has blocked the movement of the container 4.

[0052] Furthermore, if on first starting up the ice-making machine, the container should not be in a perfectly horizontal position, the device 1 for controlling the tilting of a container, with the balance structure 30 according to the present invention, would bring the container into the horizontal position for the start of the loading stage.

[0053] In addition, the balance structure 30, not being welded onto the shaft for rotation of the container, but on the contrary being capable of rectifying itself autonomously, is not subject to problems of manual readjustment that exist in the prior art; the device according to the invention is therefore simpler to assemble.

[0054] In the variation of the embodiment described above and shown in Figure 4b, only one of the loading members 71, 72 has a spring fitted on it, while the second is not fitted with a spring; the spring is preferably mounted on the loading member closest to the tab 44; in the figure, therefore, this spring is that denoted by 36 and the loading member onto which it is fitted is that denoted by 71.

[0055] In this case, the loading member 72 without spring or with resilient members of a different nature, acts as a spacer between the right-angle structure 38 and the support base 33. Only the spring 36 performs balancing of the force exerted by the right-angle structure 38 so as to change the direction of rotation of the motor 5.

[0056] In a second embodiment, on the other hand, at least one of the loading members comprises an electric transducer denoted by 150 in Figures 9 and 10, where parts corresponding to those in Figures 1 and 2 will have the same reference numbers increased by 100.

[0057] In particular, this electric transducer 150 is of the piezoelectric type; it comprises a crystal, in particular a quartz crystal, which is sensitive to the force exerted on the loading member 171 by the right-angle structure 38, when the container 4 contacts the bend 112 or the limit member 160.

[0058] The transducer emits a signal of difference in potential corresponding to the intensity of the force applied onto the member 171.

[0059] The electric transducer 150 is set to function within a permitted range of forces exerted by the right-angle structure 38 on the loading member 171; within this range continuous operation of the device during tilting or repositioning is ensured.

[0060] The value of the difference in potential generated by the transducer is transferred, after passing through any suitable amplification circuit, to the electric motor 5, in order to control the direction of rotation thereof.

[0061] When the value of the force exerted on the loading member 171 exceeds the predefined range, the transducer generates a signal which varies the power supply of the electric motor 5, which may cause either reversal or stoppage of rotation of the shaft 7 of the geared motor and, consequently, of the shaft 9 of the container 4.

[0062] In this embodiment, the transducer 150, connected directly to the electric motor 5, replaces entirely the system composed of the tab 44 and the microswitches 51, 52 of the first embodiment.

[0063] If there is contact between the container 4 and a foreign body during one of the two stages of rotation of the container, the operation is similar to that already described with reference to the first embodiment.

[0064] The variant of the first embodiment and the second embodiment described ensure less mechanical stress on the tilting device, ensuring an increase in the working life thereof.

[0065] The solutions presented so far are not limiting either with regard to the shape or the dimensions of the container, of the balance structure or of the support surface, the motor members and resistance devices being suitably interchangeable with others suitable for greater or lesser loads and the electric transducer being able to be set on the basis of varying loads applicable to the device.

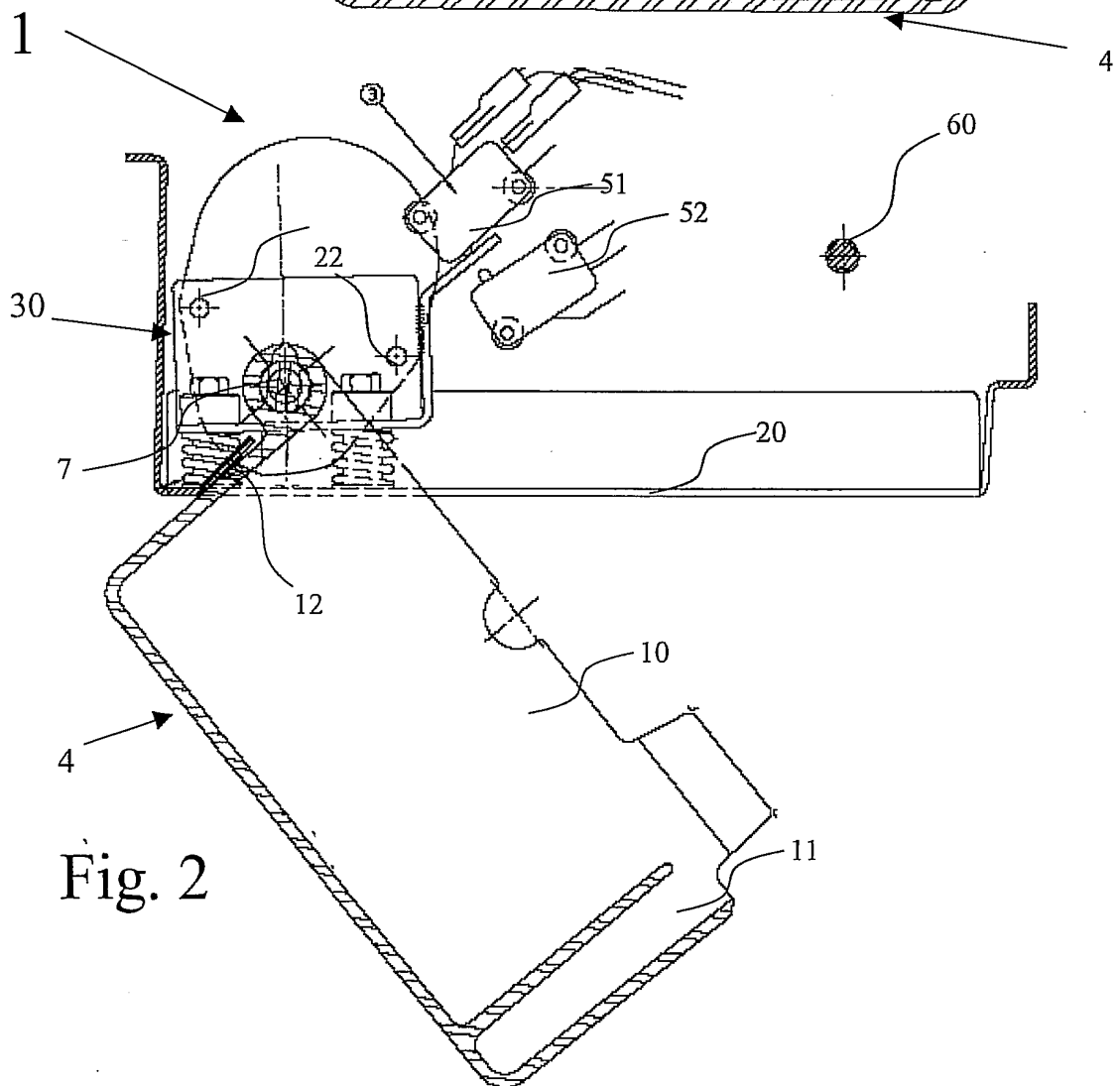
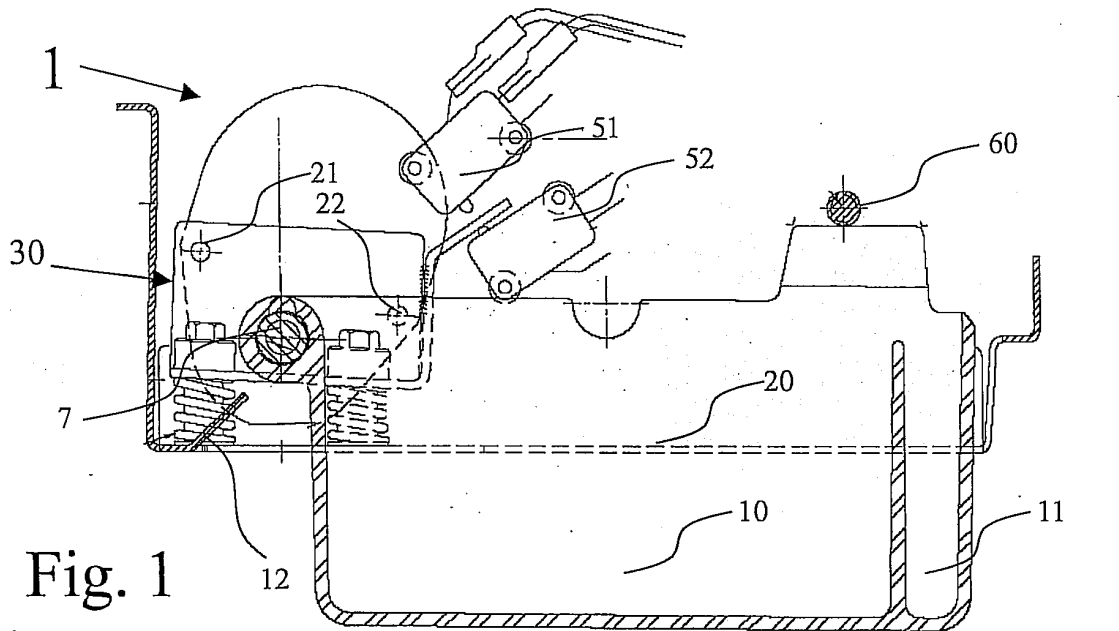
[0066] In conclusion, the present invention provides a device for controlling the tilting of a container which is reliable in terms of operation, is not dependent upon manual mechanical adjustments, and does not pose any risk during use, even for inexperienced users.

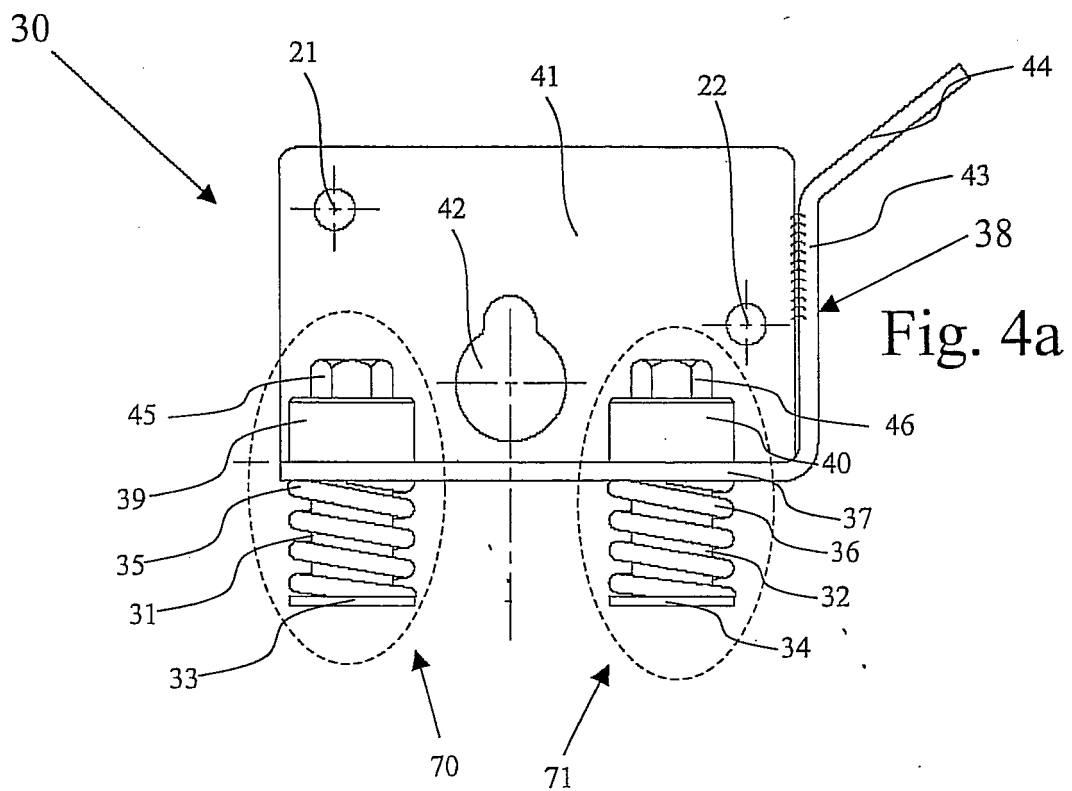
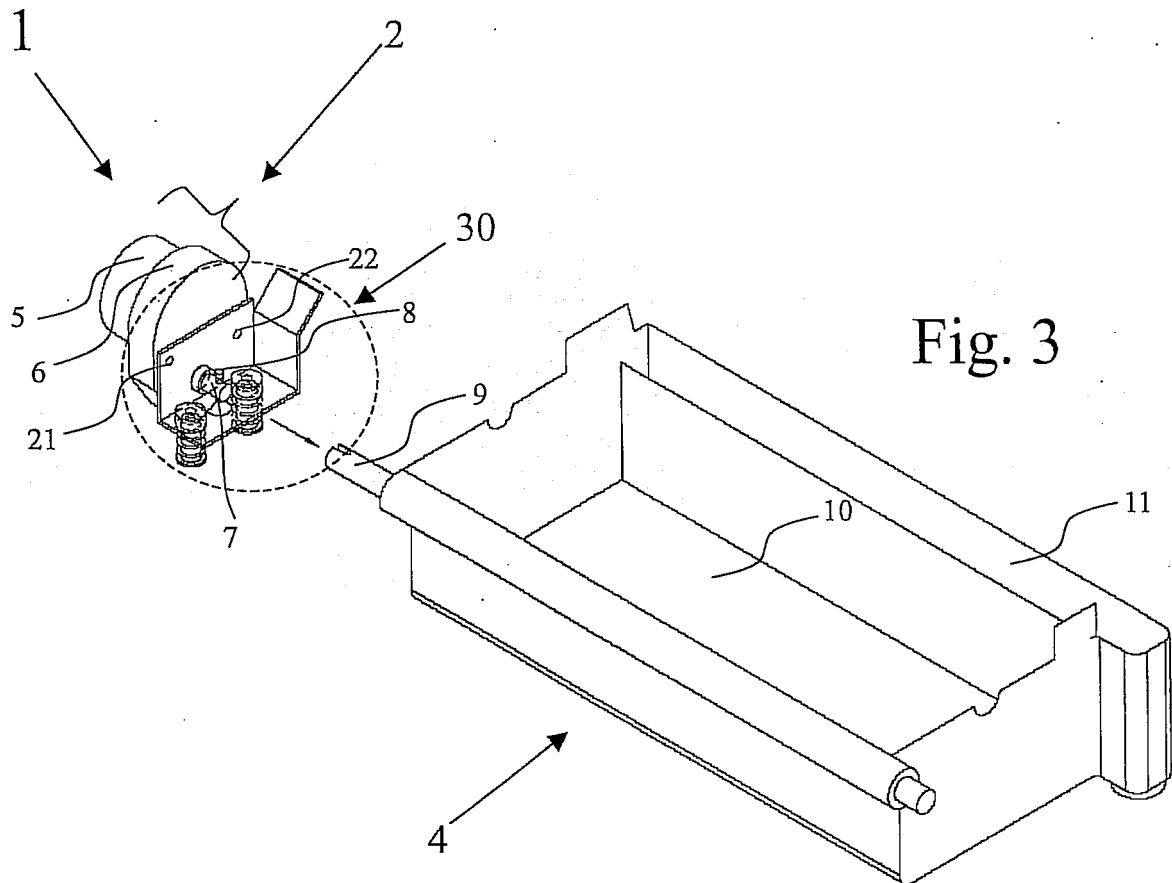
Claims

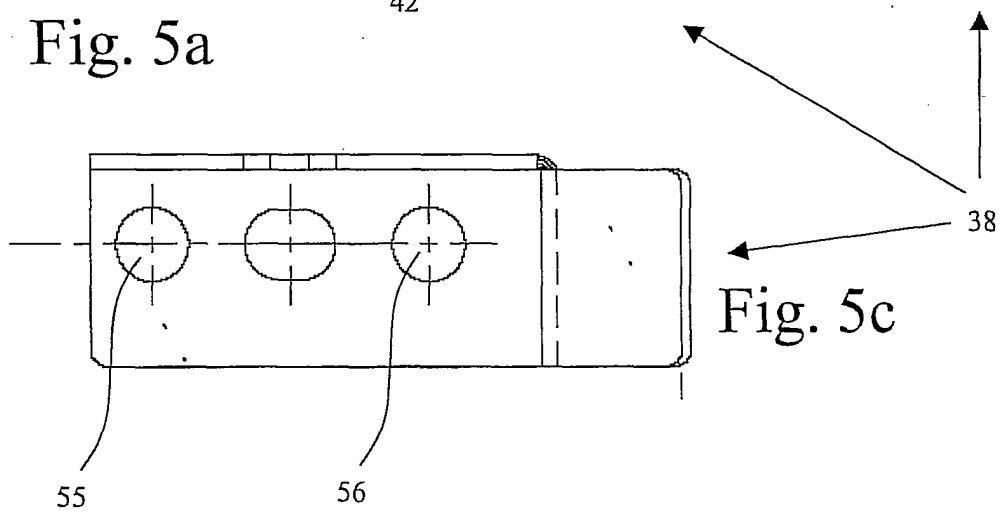
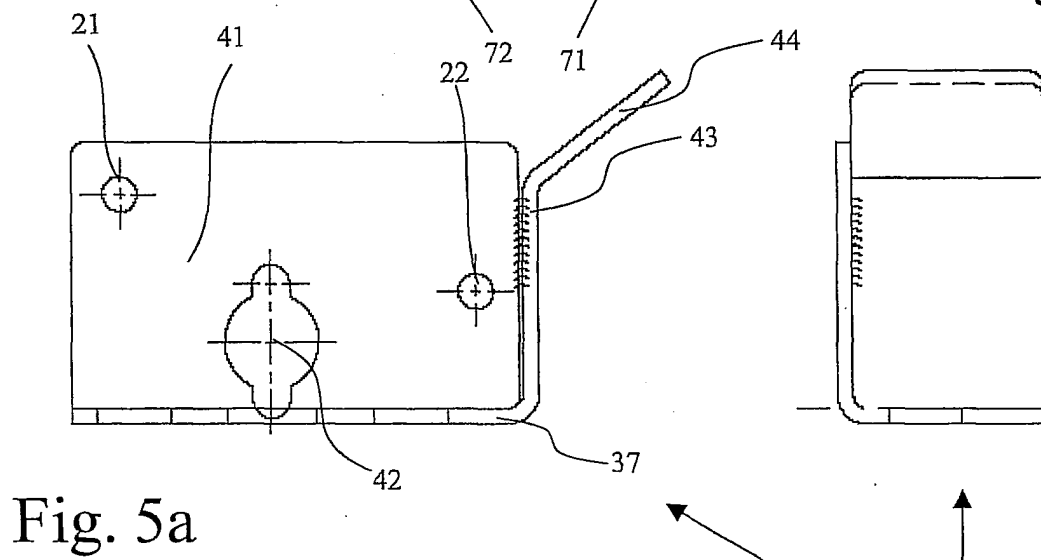
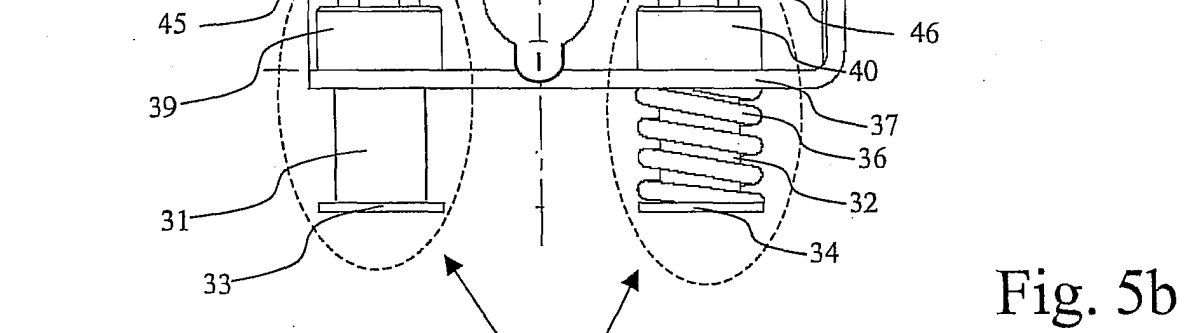
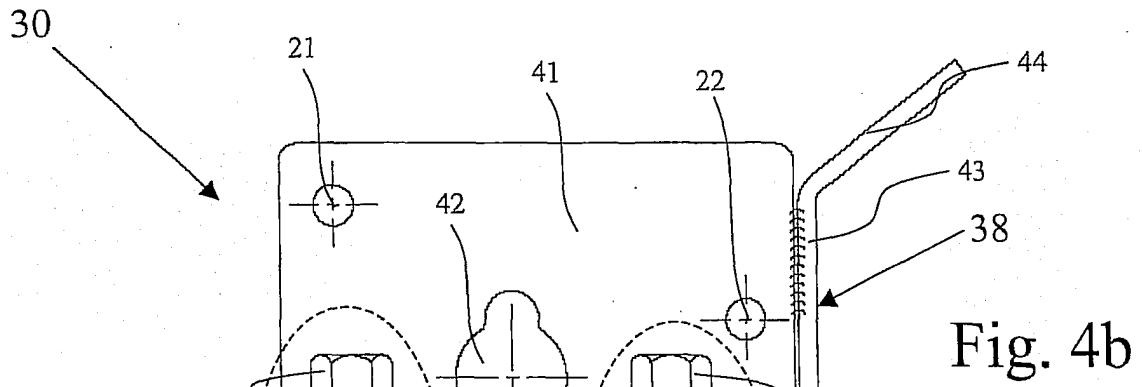
1. Device (1, 101) for controlling the tilting of a container (4), seated on a fixed frame (20, 120) of a machine, comprising a motor member (2) having a first shaft (7) mechanically connected to a second shaft (9), rigidly connected to the container (4, 104), and with which the container (4, 104) rotates for said tilting, **characterised in that** it comprises:

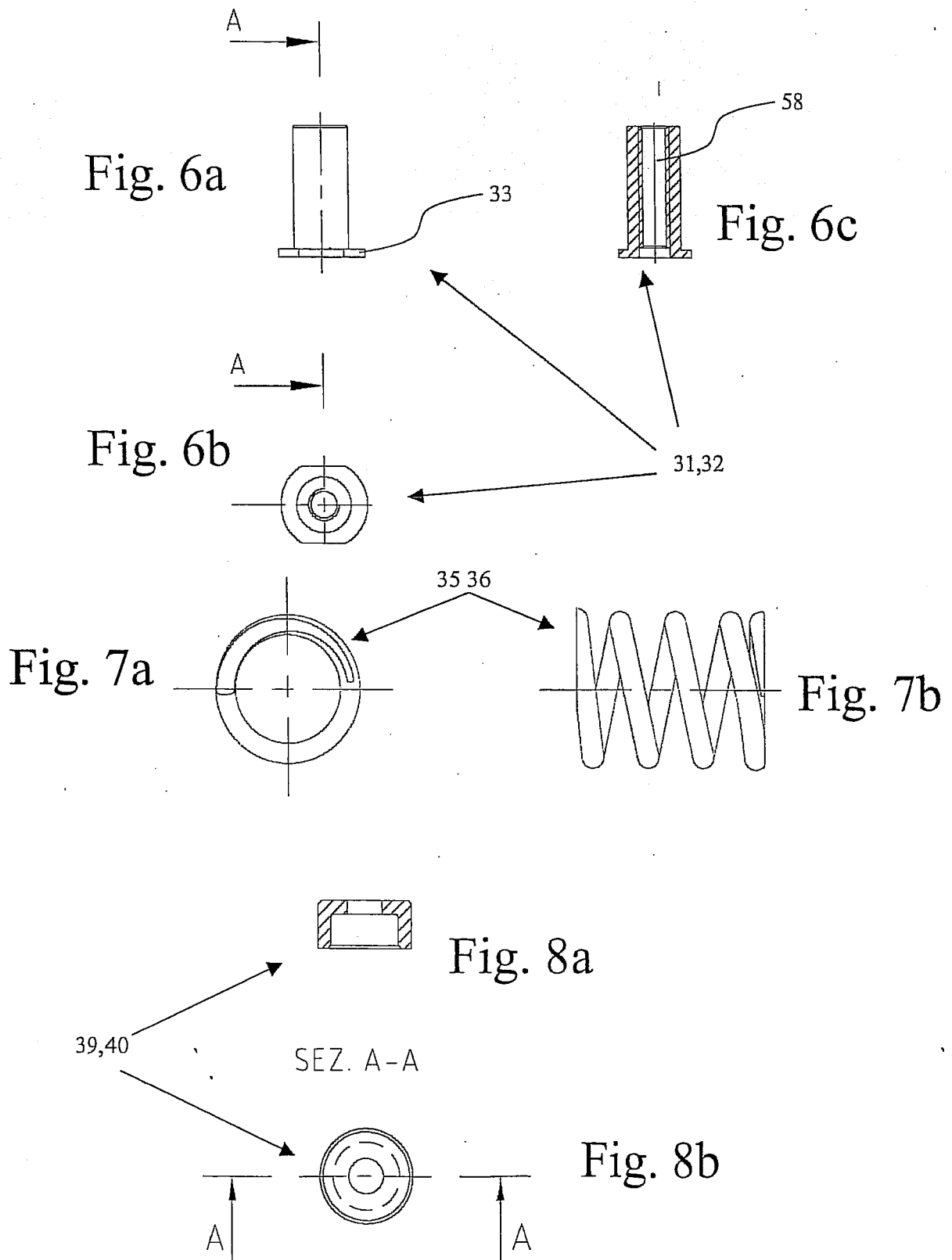
- a first mechanical check means (12, 112) provided on the frame (20, 120), for stopping the

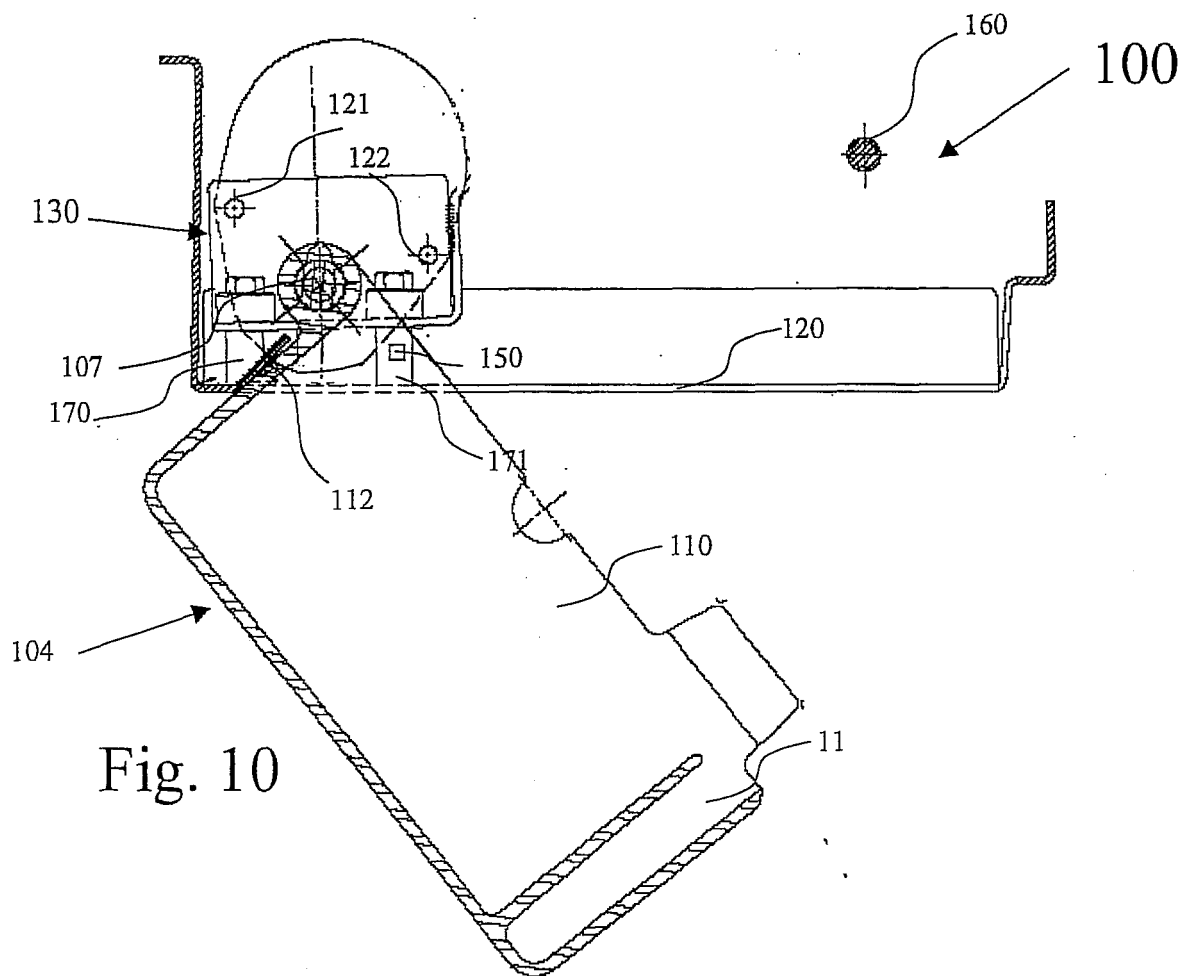
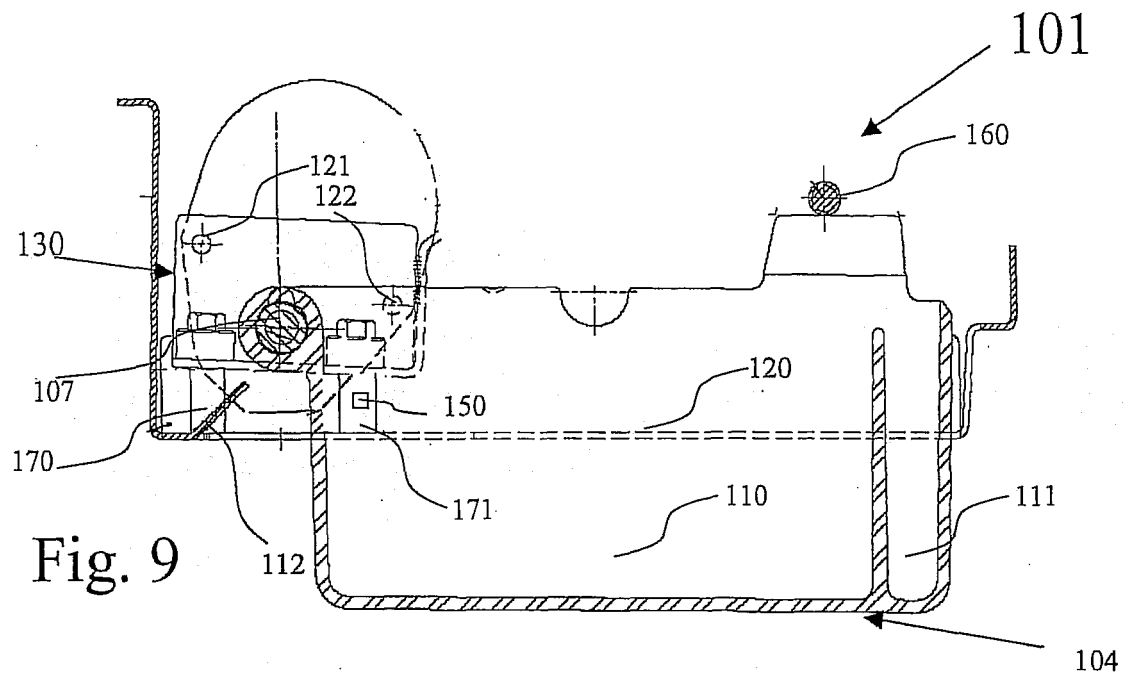
- tilting rotation of the container (4, 104),
 - a second mechanical check means (60, 160), fixed to the frame (20, 120), for stopping said container (4, 104) during rotation in the opposite direction to the tilting direction,
 - a balance structure (30, 130), comprising in turn a right-angle structure (38), loading members (70, 71, 72, 170, 171), associated with the right-angle structure (38) and sensitive to the movement of the latter, the balance structure (30) being rigidly connected to the motor member (2) and rotatable together therewith about said first shaft (7) and
 - means for reversing and blocking rotation of said motor member (2), for reversing or blocking the rotation of the container (4, 104), upon contact of the latter with said first mechanical (12, 122) and second mechanical (60, 160) check means.
2. A device according to claim 1, wherein the loading member (70, 71) comprises at least one compression spring (35, 36).
3. A device according to claims 1 or 2, wherein reversing and blocking means comprise an actuating tab (44) positioned between a first microswitch (51) for reversing rotation of said motor member (2) and a second microswitch (52) for blocking rotation of said motor member (2).
4. A device according to claim 1, wherein reversing and blocking means comprise an electric transducer (150) able to detect the force exerted on the right-angle structure (38) and convert it into an electric command signal for the motor (5), so as to control the latter during reversal of rotation or blocking.
5. A device according to claim 4, wherein the electric transducer is of the piezoelectric type.
6. A device according to one of the preceding claims, wherein the right-angle structure (38) comprises in turn a base (37), a first side (41) perpendicular to the base (37), fixed to the motor member (2), and a second side (43) in turn perpendicular to the side (41) and to the base (37), from which the actuating tab (44) diverges in order to contact the microswitches (51, 52).
7. A device according to claim 6, wherein the first side (41) is fixed to the motor member (2) by means of through screws seated in holes (21, 22).
8. A device according to claim 6 or 7, wherein the side (41) further includes a hole (42) for seating said first shaft (7).
9. A device according to any one of the preceding claims, wherein the loading member (70, 71, 72) further comprises at least one guide pin (31, 32) having a support base (33, 34) onto which the at least one compression spring (35, 36) is fitted.
10. A device according to claim 9, wherein the guide pin (31, 32) and the at least one compression spring (35, 36) are secured to the base (37) of the right-angle structure (38), via clamping means (39, 40, 45, 46) so that the at least one compression spring (35, 36) is interposed between the base (37) and the base (33, 34) of the guide pin (31, 32).
11. A device according to claim 10, wherein the clamping means (39, 40) are special washers.
12. A device according to claim 10, wherein the clamping means (44, 45) are hexagonal-headed screws.
13. A machine for producing ice, comprising the device according to claims 1 to 12.













European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 06 11 4076

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	GB 2 090 955 A (CASTEL MAC SPA) 21 July 1982 (1982-07-21) * page 1, lines 19-35,62-116; figures 1,2,6,7 *	1-13	INV. F25C1/08 F25C1/10
A	----- EP 0 662 593 A (EURFRIGOR S.R.L.) 12 July 1995 (1995-07-12) * abstract; figures 1,6 *	1-13	
A	----- US 3 027 731 A (LINDENBERG MILTON L ET AL) 3 April 1962 (1962-04-03) * column 2, line 21 - column 3, line 12; claim 8 *	1-13	
A	----- US 2 526 262 A (MUNSHOWER CLARENCE F) 17 October 1950 (1950-10-17) * column 2, lines 42-52 * * column 3, line 57 - column 4, line 28 * * figure 3 *	1-13	
A	----- EP 0 736 738 A (HOSHIZAKI DENKI KABUSHIKI KAISHA) 9 October 1996 (1996-10-09) * abstract; figures 1,3,4 *	1-13	TECHNICAL FIELDS SEARCHED (IPC)
A	----- FR 2 522 123 A (SIMKENS MARCELLUS) 26 August 1983 (1983-08-26) * page 6, line 23 - page 9, line 24; figure 1 *	1-13	F25C
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 18 January 2007	Examiner Salaün, Eric
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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 06 11 4076

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18-01-2007

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 2090955	A	21-07-1982	FR 2497932 A3	16-07-1982
EP 0662593	A	12-07-1995	DE 69500097 D1	16-01-1997
			DE 69500097 T2	12-06-1997
			ES 2096506 T3	01-03-1997
			GR 3022146 T3	31-03-1997
			IT MI940016 U1	11-07-1995
US 3027731	A	03-04-1962	NONE	
US 2526262	A	17-10-1950	NONE	
EP 0736738	A	09-10-1996	ES 2138777 T3	16-01-2000
FR 2522123	A	26-08-1983	NONE	