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(54) Washing and/or drying machines, incorporating a light

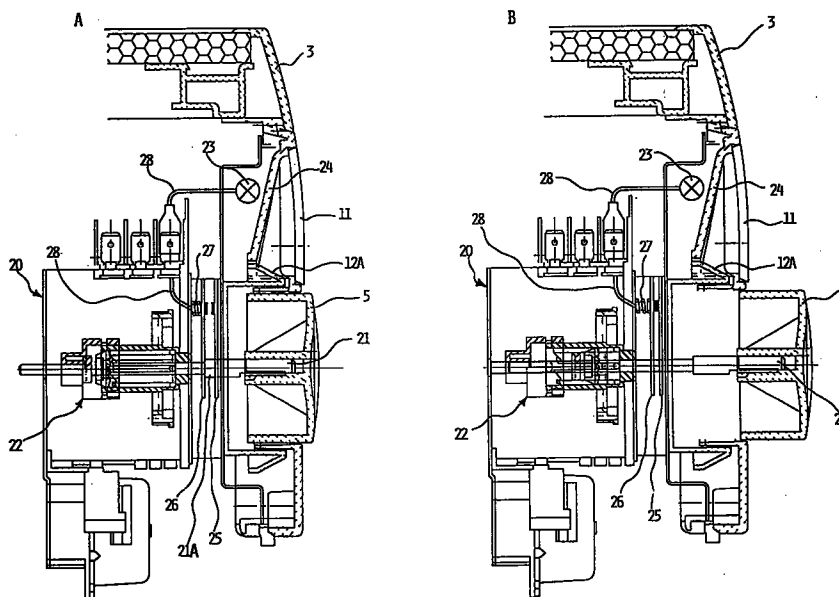
(57) A washing and/or drying machine is described, such as a laundry washing machine or a dishwashing machine, comprising all the known elements for its functioning, from among which:

- an electric control and actuation circuit (30) comprising a plurality of agent devices, for executing the functions for which the machine is proposed (washing and/or drying of laundry or dishes), and one or more command means (5-8) for the manual selection of the modes of use the machine,
- a main power switch (9) for enabling/disabling the power supply to said electric control and actuation circuit (30),

- a light (23).

The main characteristic of the described washing and/or drying machine is that the light (23) is connected to the electrical mains (L,N) before the main power switch (9), so as that it can be electrically supplied independently from the state of said main power switch (9) and that the electrical supply of the light (23) is enabled by way of switching means (25-27) activated by way of at least a first (5) of said command means (5-8), said first command means (5) being mainly produced for the selecting of other modes of use of the machine.

FIG. 2



EP 0 709 513 A1

Description

The present invention relates to a washing and/or drying machine, as described in the preamble of the enclosed first claim.

It is known that the machines of the type mentioned, such as laundry washing machines, are equipped with a control panel in the upper section of the cabinet, where the various controls are located, such as the programmer of the washing cycles, the selectors for the temperature, basket rotation speed, drying time, etc., the eventual buttons for enabling particular functions (e.g. half load, spinning suppression, etc.) and a main power switch (ON/OFF).

In particular circumstances, for instance in cases of poor light, or when the machine is situated in an unfavourable position respect a light source of the lighting system, the reading and/or selecting of functional commands of the machine, and in particular selecting the desired washing program, can result in being difficult; in light of this, therefore, it would be advantageous to supply the washing machine with at least one appropriate light, for illuminating the control panel. The same considerations made with regards illuminating the control panel are also valid for illuminating the interior of the basket of a laundry washing and/or drying machine.

In the actual laundry washing and/or drying machines the operative sequence of use of the machine in substance requires that the loading of the laundry to washed and/or dried in the basket of the machine, the addition of the washing agents in the relative dispenser and the selection of the desired washing program, by way of selection on the programmer of the machine, have to take place before turning on the machine, which takes place by way of the main power switch (ON/OFF).

The presence of a timer of the cycles in fact makes it necessary that the loading of the laundry, detergents and, above all, the selection of the washing program have to be carried out in the absence of power at the control circuit of the machine; in the machines of the known type, therefore, such fact makes the arrangement of a light for illuminating the aforementioned functions rather difficult.

The present invention is based on the acknowledgement of the aforementioned facts and its purpose is that of indicating a washing and/or drying machine equipped with a light, the switching on of which being independent from the main power switch of the machine.

Another purpose of the invention is that of indicating a machine in which the system for switching on such light takes advantage of a pre-existing command means, dedicated to controlling other functions; in light of this, therefore, the purpose of the invention is that of avoiding that the aesthetic appearance of the control panel be modified and/or burdened by the addition of an appropriate command means for switching on the light.

A further purpose of the invention is that of indicating a command method on the basis of which the switching on of a light is allowed in a manner which does not impli-

cate any additional operation for the user respect those carried out on machines of the known type.

These and other purposes are reached according to the present invention by a washing and/or drying machine incorporating the characteristics of the annexed claims.

Further characteristics and advantages of the present invention shall result in being clear from the following detailed description and annexed drawings, supplied purely as an explanatory and non limiting example, wherein:

- figure 1 schematically represents a front view of a laundry washing machine, according to the present invention;
- figure 2 schematically represents a sectioned side view of a part of the control panel of a laundry washing machine according to the present invention, in two different conditions of use;
- figure 3 represents the simplified block diagram of the power supply and command of a light provided on a laundry washing machine according to the present invention.

In figure 1 a washing and/or drying machine is schematically represented realised according to the details of the present invention, in particular a front loading laundry washing machine. In such figure, 1 indicates the cabinet of the machine as a whole, 2 indicates its front loading door, which gives access to the basket for the laundry, 3 indicates its control panel.

The control panel 3 is arranged in the upper part of the cabinet 1 and has a series of commands, from among which:

- the dial, indicated with 5, of an electromechanical cycle timer (which could also be of the electronic or hybrid type), or programmer for the selection of the washing cycles;
- the dial, indicated with 6, of a washing temperature selector;
- the dial, indicated with 7, of a spinning speed selector;
- a series of command buttons, indicated as a whole with 8, for selecting the various functions (such as, for instance, delicate treatment, half load, spinning exclusion, woollens);
- a general power switch (ON/OFF), indicated with 9, for enabling/disabling the power supply to the control system of the machine and, thus the starting (or interruption) of the washing cycle previously selected by way of the programmer 5;
- the drawer, indicated with 10, of a dispenser of the washing agents.

With 11 a transparent element of the control panel 3 is indicated, behind which three indicator disks 12 are arranged, each of which being coupled to one of the dials 5, 6 and 7; such disks 12 have appropriate printed script

that indicate the various options which can be selected: thus the user can read through the transparent part 11 such printed scripts and rotate the relative dial for selecting the desired washing cycle, the temperature and the spinning speed.

The elements described above are in themselves known and do not therefore require a detailed description.

In the illustrated case the dial 5 of the washing cycles programmer is of the type apt at assuming the two following axial functional positions (respectively visible in parts A and B of figure 2):

- a first rest position (figure 2A), in which the dial 5 results in being housed, against the action of appropriate mechanical-kinematic means (realised according to the known art), within a suitable seat being present on the control panel 3; in such position, therefore, the frontal surface of the dial results in being practically coplanar with the surface of the frontal wall of the control panel 3;
- a second position (figure 2B), in which the dial 5, in virtue of the action of said mechanical-kinematic means, exits said seat, so as that it can be rotated by the user for programming the washing cycle.

The change from one position to the other is obtained by simply pressing the frontal surface of the dial 5, that has an appropriate kinematic blocking/release system.

The other dials 6 and 7 are, on the other hand, in the case illustrated, of the traditional type and therefore protruding (but could obviously be of the same type as the dial 5).

Figure 2 (part A and part B) illustrates, by way of two schematic sectioned views, the part of the control panel 3 where the programmer of the machine is housed, with the relative dial 5; according to the invention, in such part of the control panel, a light is provided, able to facilitate the selection of the program in the aforementioned cases of poor light, supplied independently from the position of the on/off switch 9 of the machine.

In such figure 2, the actual timer or programmer is indicated as a whole with 20, that in the illustrated case is of the electro-mechanical type, in itself known, thus not requiring a detailed description; 21 indicates a shaft, which allows, by way of the dial 5, the manual rotation of the internal cam group of the programmer 20 (or the contact setting of an electronic board, in the case of an electronic timer), and thus the selection of the desired washing program; 22 indicates a bistable kinematic system, which allows the shaft 21 to take on two different axial positions, clearly visible in comparing parts A and B of figure 2; such kinematic system 22 therefore allows the dial 5 to take on the two functional positions as described above.

Such kinematic system 22, comprises a mobile element having inclined planes and a spiral spring, is of the type in itself known (generally with the name push-push)

and widely used on existing washing machines, for allowing the extraction from the control panel 3 of the command dial 5.

With 12A one of the mentioned disks 12 is indicated, which is integral to the shaft 21 and has a printed script indicating the various programs that can be selected, which the user can consult through the transparent element 11.

23 indicates a light, for instance a neon, fixed in the known way to the interior of the control panel 3, behind a shield 24; such shield 24 is realised in a transparent material, or able to refract and/or diffuse the light coming from the light 23, so as to illuminate the printed surface of the disk 12A.

With 25 a first contact element is indicated, fixed, electrically connected to the phase (L) of the electrical mains; 26 indicates a second contact element, mobile against the push of a spiral spring 27, which is electrically connected, through a conductor 28, to a pole of the light 23; the other pole of the light, not represented, can be connected in an appropriate manner, in a known way, directly to the neutral (N) of the electrical mains.

As can be seen, when the dial 5 is in the rest position (fig. 2, part A), a projection 21A of the shaft 21 maintains the switch, constituted by the contacts 25 and 26 open, in contrast to the action of the spring 27; when on the contrary the dial 5 is brought to the working position (fig. 2, part B), the movement of the shaft 21, and therefore of the projection 21A, allows for the closure of the switch 25-26, as a result of the action of the spring 27, with the consequent switching on of the light 23. As previously mentioned, according to the present invention, the switching on of the light 23 is made possible independently from the functional state of the main switch 9 of the machine (i.e. even when such machine is in the OFF position).

In figure 3 with this purpose the simplified electric diagram of the machine according to the invention is illustrated; with L and N the phase and neutral of the electrical mains are respectively indicated, while 30 globally represents the electrical control and actuation circuit of the machine, enclosing the programmer 20 and all the various electrical devices of the machine (motor, pumps, solenoid heating resistance, etc.).

As is seen from the simplified diagram, which in part uses the same numbers of the previous figures, the connection of the light 23 is such to allow its switching on even in conditions of the main power switch 9 being open, i.e. with no power supply of the circuit 30.

From the above description it results in being clear that, according to the invention, upon selecting the washing cycle, the user obtains in an automatic manner the switching on of the light 23, by way of a simple action on the dial 5 which is to be carried out in any case; it is therefore to be emphasised that the user is not required to carry out any additional operations respect those normally carried out on a machine of the type known; another fact to be emphasised is that the aesthetic appearance of the control panel 3 of the machine accord-

ing to the invention is not altered or burdened by an appropriate key for switching on the light 23.

It is also clear that, as has been indicated previously, the switching on of the light 23 can take place even in conditions of the main power switch 9 being open.

The above, with the relative considerations, can naturally be applied for the use of a light for illuminating the interior of a basket of a laundry washing and/or drying machine, without any substantial modifications, if not for the fact that the light in this case will be housed in a suitable point for obtaining the desired effect and protected from dampness.

From the given description the characteristics of the washing and/or drying machine subject of the present invention result in being clear, as do its advantages.

In particular they are represented in the fact that:

- the machine is equipped with a light, for the control panel or for the basket, the switching on of which is completely independent from the main power switch;
- the switching on of the light is controlled by way of a command means already existing on the machine, provided for controlling other functions, and therefore without any modifications and/or burden to the aesthetic appearance of the existing machines;
- the switching on of the light is carried out in an automatic manner by the user, who does not have to carry out any additional operations respect those normally carried out on known machines;
- the switching off of the light takes place according to normal use, when the user has finished programming the machine and before starting the machine;
- the proposed solution is of simple and economic realisation and can be integrated, at an electrical level, in the same command means.

It is clear that numerous variants are possible by the man of the art to the washing and/or drying machine subject of the present invention, without for this departing from the novelty principles inherent in the inventive idea.

For instance, the above described system of switching on the light 23 could be applied to a dial, similar to that indicated with 5, provided for the opening of the laundry loading door; in such case, therefore, for the machines which provide for opening the door from the control panel, with the door opening command a simultaneous switching on of a light for the inside the basket could be obtained.

Moreover a plurality of lights, or light emitters, for illuminating and/or emphasising the various command means of the machine could be provided, or the system for switching on the light or lights could be realised on all the dials (5-7) present on the machine.

Another possible variant is that of utilising the invention for obtaining the illumination of the drawer for the washing agents; it is finally clear that the present invention can be also be applied to dishwashing machines, on

laundry washing and/or drying machines, even of the top loading type.

Claims

1. Washing and/or drying machine is described, such as a laundry washing machine or a dishwashing machine, comprising all the known elements for its functioning, from among which:

- an electric control and actuation circuit (30) comprising a plurality of agent devices, for executing the functions for which the machine is proposed (washing and/or drying of laundry or dishes), and one or more command means (5-8) for the manual selection of the modes of use the machine,
- a main power switch (9) for enabling/disabling the power supply to said electric control and actuation circuit (30),
- a light (23),

characterised in that the light (23) is connected to the electrical mains (L,N) before the main power switch (9), so as that it can be electrically supplied independently from the state of said main power switch (9) and in that the electrical supply of the light (23) is enabled by way of switching means (25-27) activated by way of at least a first (5) of said command means (5-8), said first command means (5) being mainly provided for the selecting of other modes of use of the machine.

2. Washing and/or drying machine, according to claim 1, characterised in that means (22,25-27) are provided that, upon activating said first command means (5), automatically produce the switching on of the light (23).

3. Washing and/or drying machine, according to claim 1, characterised in that said first command means (5,20) is a programmer of washing cycles (5).

4. Washing and/or drying machine, according to claim 1, characterised in that said first command means is of the type comprising a dial (5) able to assume two different axial functional positions (figure 2), such as in particular :

- a first rest position, in which the dial (5) results in being at least partially housed within a suitable seat present on the control panel (3),
- a second work position, in which the dial (5) exits said seat, so as that it can be rotated by the user.

5. Washing and/or drying machine, according to claim 1, characterised in that the light (23) is provided for illuminating the various available options (washing

cycle, temperature, spinning speed, etc.) by way of one or more command means (5-8) present on the control panel (3) of the machine.

6. Washing and/or drying machine, according to claim 5, characterised in the light (23) is fixed in the control panel, in particular internally, behind a shield (24) realised in a transparent material and/or able to refract and/or diffuse the light coming from the light (23). 5
7. Washing and/or drying machine, according to claim 1, characterised in that said switching means (25-27) comprise a first fixed contact (25) and to a second contact (26) being mobile with said dial (5), the second contact (26) being in particular integral with a shaft (21) connected to the dial (5). 10
8. Washing and/or drying machine, according to claim 4 and 7, characterised in that, in the rest position (fig. 2, part A), the dial (5) and/or the relative shaft (21) maintains the second contact (26) distanced from the first contact (25), while when the dial (5) is brought to the working position (fig. 2, part B), the displacement of the dial (5) and/or the relative shaft (21) determines the closure of the second contact (26) on the first contact (25), enabling the power supply of the light (23). 15
9. Washing and/or drying machine, according to at least one of the previous claims, characterised in that the first contact (25) is electrically connected to the phase (L) of the electrical mains and the second contact (26) is connected to a pole of the light (23), the other pole of the light (23) being in particular connected to the neutral (N) of the electrical mains. 20
10. Washing and/or drying machine, according to claim 1, characterised in that the light (23) is provided for the illumination of the interior of the basket of a laundry washing and/or drying machine. 25
11. Washing and/or drying machine, according to the previous claim, characterised in that said first command means is a device for the opening of the laundry loading door (2), the opening command of the door (2) thus being able to also determine the simultaneous switching on of the light (23) of the inside of the basket. 30
12. Washing and/or drying machine, according to at least one of the previous claims, characterised in that a plurality of light (23) are provided, or light emitters, for illuminating and/or emphasising one or more command means (5-8) of the machine. 35
13. Washing and/or drying machine, according to at least one of the previous claims, characterised in 40

that each command means (5-8) is able to command the switching on of one or more lights (23).

14. Washing and/or drying machine, according to at least claim 1, characterised in that the light (23) is provided for illuminating a drawer apt at housing the washing agents (10). 45
15. Method for commanding a light in a washing and/or drying machine, characterised in that it provides the substantial integration of command means of the light (23) in a command device (5) provided for selecting at least one functional use of the machine, in a way that upon the selection of said functional use of the machine (e.g. selection of washing cycle), by way of said command device (5), the user obtains in an automatic manner also the switching on of the light (23) by way of a simple action of the dial (5) of the command device, the user not being in substance required to carry out any additional operations respect those normally provided. 50

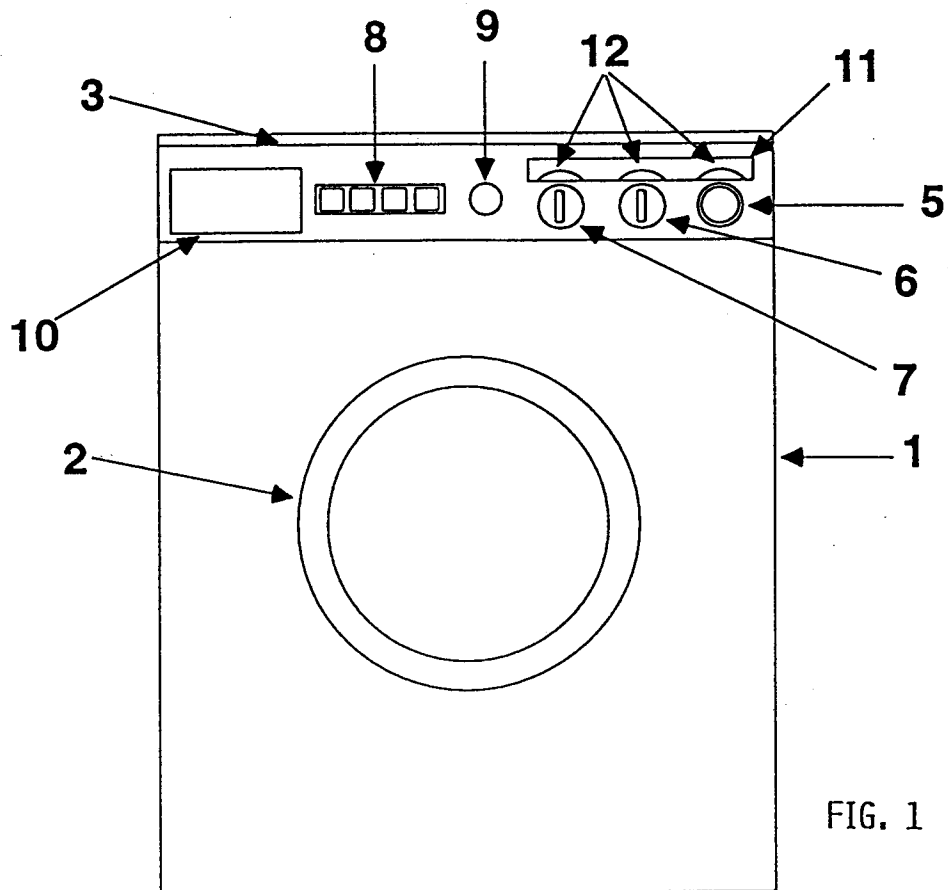


FIG. 1

FIG. 3

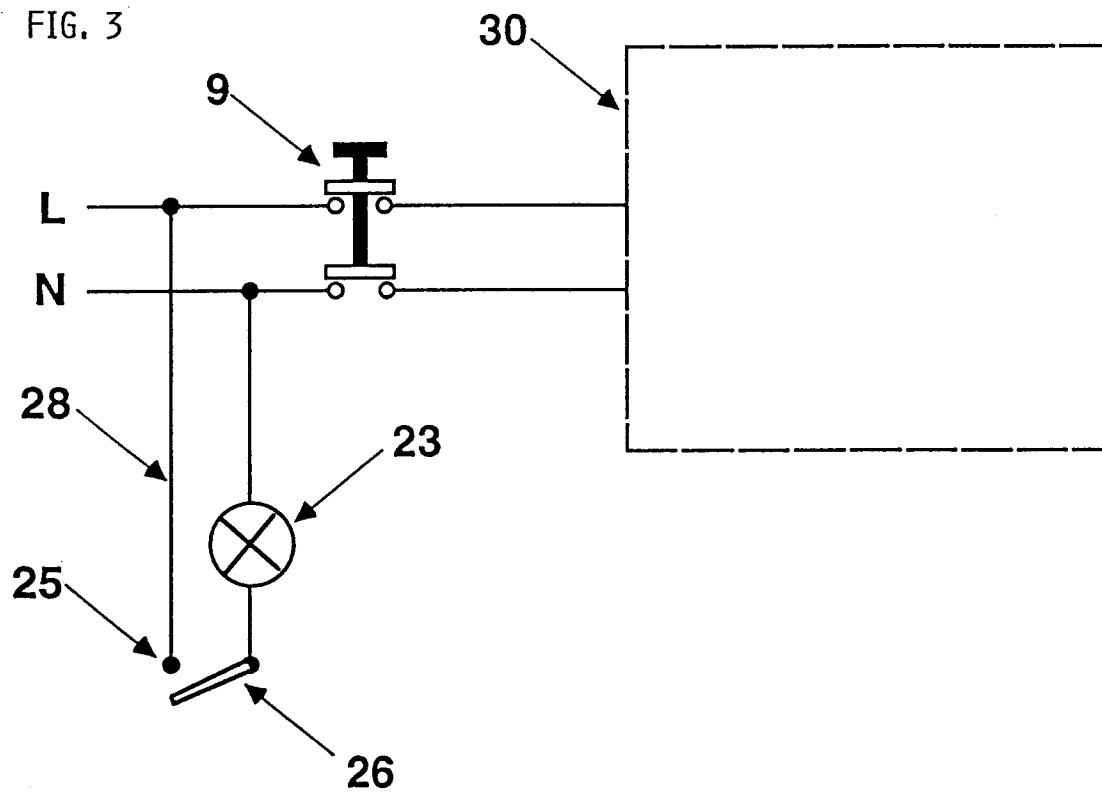
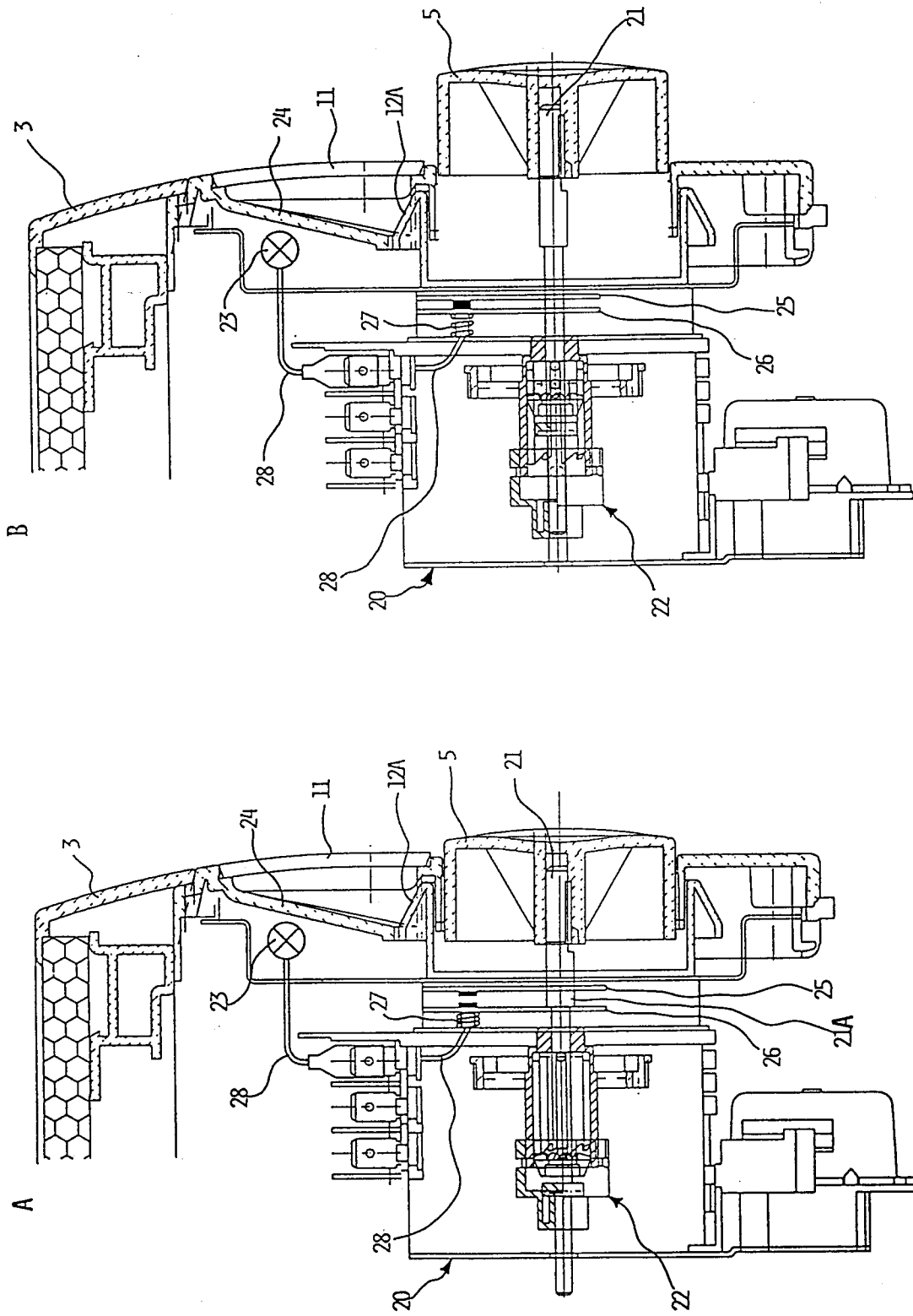


FIG. 2





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EUROPEAN SEARCH REPORT

Application Number
EP 95 11 6269

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.6)
X A	GB-A-2 265 157 (KABUSHIKI KAISHA TOSHIBA) * the whole document * ---	1,2,9-11 4,7,8,15	D06F39/00
A	US-A-2 737 573 (GENERAL ELECTRIC COMPANY) * column 2, line 45 - line 67; figures * ---	1-10,15	
A	FR-A-1 363 826 (JUNKERS & CO. GMBH) * claims; figure * -----	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			D06F A47L
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 6 February 1996	Examiner Courrier, G
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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