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(54) **Laundry washing machine with improved washing agent distribution**

Waschmaschine mit verbesserter Waschmitteleinspülung

Machine lave-linge avec distribution de détersif perfectionnée

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- **PATENT ABSTRACTS OF JAPAN vol. 2 no. 103**
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Description

[0001] The present invention relates to a laundry washing machine, of the type comprising a container of the washing agents divided into compartments and precisely a compartment for the pre-wash detergents, a compartment for the detergents of the actual wash and a compartment for the softener.

[0002] Practically all modern laundry washing machines are equipped with a dispensing device of the washing agents. Such dispensing device is usually composed of a container divided into a series of compartments, each of which destined to be loaded with a dose of detergents and/or additives to be used during the different phases of the washing program; in the working position of the dispenser, each of such compartments is placed in communication with appropriate water entry and drainage ducts, in such a way that a quantity of water can pass through conveying the washing agents to the tub. As a result of the type of laundry to be washed, the user therefore selects a washing program and provides for adding to the various compartments of the dispenser the appropriate quantity of the said washing agents; at an appropriate moment, upon a command of the control system (of the electromechanical or electronic type) of the machine, the water to be introduced to the washing tub of the machine is made to pass through each of the various compartments, so as to convey to the tub the relative washing agent; i.e. based on the selected program, and according to the phase of the wash reached, the control system provides for withdrawing at appropriate times the different washing agents from the relative compartments.

[0003] It is also known that the use of bleach is becoming more and more common, due to its considerable advantages in relation to the efficiency of the wash, above all concerning hygiene: with this aim bleach is periodically used for instance for the washing of bed linen.

[0004] In some machines of the known type the detergents drawer is provided for the use of liquid detergents; such drawers, that therefore allow for the use of bleach usually have four compartments, and are therefore of considerable encumbrance and of complicated realisation, due to the necessity of having to allow for the use of both powder agents and liquid agents (see for instance EP-A-0 169 604). Such machines are not usually equipped with an appropriate cycle for the bleach, therefore the user has to select one of the normal cycles provided by the machine, preferably a cycle of brief duration: the use of bleach does however require particular attention (as will result from the following), therefore the compromise of using an existing program of the machine does not allow for completely exploiting the characteristics of the bleach.

[0005] Other problems arise in the case in which bleach is used, in the known ways, during a washing program: in fact it has been observed that the introduction of bleach during one of the rinses following the wash

has the consequence of cancelling the optical effect of the detergents, i.e. the effect produced by some of the components present in the detergents (e.g. whitener) that have the function of giving brightness to the laundry, independently from the level of washing reached.

[0006] In some other laundry washing machines of the known type the drawer of the washing agents only has three compartments, precisely a compartment for powder detergents for the pre-wash, a compartment for powder detergents for the actual wash and a compartment for a liquid softener. It is therefore clear that with such machines the bleaching of laundry is not possible, if not using other solutions as a compromise. In particular the user has to load the laundry to be bleached in the machine, select a brief washing program and, while the machine charges the water in the tub, pour the bleach in the detergents compartment for the wash, with the dispenser open. The machine consequently carries out such brief cycle and, after the final spinning phase, the user can then add any other laundry to be washed, insert the preferred powder detergent, in the dispenser or by way of the so called "ball", and select if possible a cycle without a pre-wash phase and being of a low temperature. This sequence of operations is also that suggested by the bleach producers themselves.

[0007] It is clear that such solution used as a compromise is not the best possible, first of all because the user is forced to carry out abnormal operations, such as introducing bleach during the charging of water to the machine and with the dispenser open, with the problem of eventual splashes of bleach, which could strike the users clothes. Another problem with such bleaching operations is that the rinse provided by the brief pre-wash cycle does not allow for eliminating completely the bleach residues remaining in the laundry: such residues of bleach as previously mentioned have the effect of cancelling part of the effects of the detergents (i.e. destroying the whiteners) used in the successive wash, thereby determining an overall unsatisfactory result.

[0008] The present invention is therefore based on the recognition of some important facts:

- a first important fact is that it would be desirable to allow the use of bleach even with machines equipped with a drawer having only three compartments, but without forcing the user to carry out abnormal operations;
- a second important fact is that it would be desirable to arrange for a specific bleaching program, that assures a correct treatment of the laundry;
- a third important fact is that, as a general rule, the use of a pre-wash in modern laundry washing machines is becoming progressively less important in the habits of the users and that, in particular, the pre-wash of laundry is not indispensable together with bleaching; it is however clear that such pre-wash phase should be provided with laundry washing machines, so as to always satisfy the eventual

washing requirements of the user;

- a fourth important fact is that the use of liquid detergents are now predominately used together with the so called "ball", i.e. detergent containers that are directly introduced to the basket of the machine, among the laundry to be washed.

[0009] The aim of the present invention is therefore that of indicating a laundry washing machine with a detergents drawer having only three compartments that, without any substantial cost increases, is arranged for the use of bleach and in which an appropriate program is provided for the execution of an efficient bleaching of the laundry, without the known drawbacks. These and others aims, that will result in being clear from the following description, are reached according to the present invention by way of a laundry washing machine and a method for bleaching laundry in a washing machine incorporating the characteristics of the enclosed claims.

[0010] Further characteristics and advantages of the present invention will result in being clear from the following description and annexed drawings, supplied purely as an explanatory and non-limiting example, wherein:

- figure 1 schematically illustrates a sectioned plan view of a container making up part of the washing agents dispenser of the machine according to the present invention, and a relative accessory, in a first possible embodiment;
- figure 2 schematically illustrates a sectioned plan view of a container making up part of the washing agents dispenser of the machine according to the present invention, and a relative accessory, in a second possible embodiment;
- figure 3 schematically illustrates a plan view of the containers of figures 1 and 2, equipped with the relative accessories;
- figures 4, 5 and 6 schematically illustrate, respectively, the progress of a washing cycle of the type known, the progress of a washing cycle according to the invention and the progress of a washing cycle according to a possible variant of the invention.

[0011] In the following figures some of the elements mentioned are not represented, as they are in themselves known.

[0012] Figure 1 represents a container making up part of the washing agents dispenser of the machine according to the present invention; such container, globally indicated with reference number 1, is realised as a parallelepiped drawer and in use results in being slidably inserted, in a known way, in an appropriate cavity situated in the command console of the laundry washing machine. As in the known art, in the upper part of such cavity means are provided for the supply of the water that has to pass through the container 1, and a lower duct that places the drawer in communication with the inside

of the washing tub of the machine. As is seen, the drawer container 1 is divided in three compartments, more precisely:

- 5 - a first compartment, indicated with 2, for containing a powder detergent for the pre-wash;
- a second compartment, indicated with 3, for containing a powder detergent for the actual wash;
- 10 - a third compartment, indicated with 4, for containing a liquid softener.

[0013] According to the invention, the compartment for the pre-wash 2 is realised in such a way that a small tank can be inserted within for containing a dose of bleach, to be utilised as an alternative to the powder detergent for the pre-wash. Such small tank, which is removable, indicated with 5, has a lower downflow aperture 6, equipped with a suitable siphon 7, so as that the bleach does not exit the small tank until the programming device or timer of the machine does not command the conveyance of water in the compartment 2 necessary for the fulfilment of the bleaching phase. The small tank 5 has a vertical blade centrally arranged, indicated with 8, having the purpose of facilitating the dosage of the bleach: in practice, references are present on such blade 8 (such as notches or different colours, indicating the different levels of the bleach dosage, according to the requirements of the bleaching operation).

[0014] Figure 2 illustrates a container making up part of the washing agents dispensing device of the machine according to the present invention, in a second possible embodiment; in such figure 2 the same reference numbers of figure 1 have been maintained, for indicating technically equivalent elements.

[0015] In the case of figure 2, the container 1 is not of the drawer type, instead it is of the angular movable type, having a circular sector shaped plan, according to the technique described in the European patent application EP-A-0327.043, in the name of the same Applicant.

[0016] According to the present invention, even in the case of figure 2, the compartment 2 is destined for alternative use of powder detergents for the pre-wash or of bleach, by way of inserting in such compartment 2 the appropriate removable small tank 5.

[0017] In figure 3 the base of the containers 1 of figures 1 and 2 are illustrated, in the compartment 2 of which the small tank for the bleach is inserted. The laundry washing machine according to the invention is also equipped with an appropriate program for using bleach, as an alternative to detergents for the pre-wash: advantageously such specific program for bleaching is obtained by way of several phases provided in a main washing program controlled by the timer of the machine, appropriately modified respect the known art.

[0018] Figure 4 illustrates in a schematic manner the course of the phases making up an intense washing program of the known type. The prewash phase is indicated

with P, the actual washing phase with L, with A, B, C and D four rinses are indicated; upon termination of the final rinse D a high speed spinning phase E is provided; such spinning phase may eventually be followed by a drying phase, in the case of machines which provide for such a function. The functions carried out during the mentioned phases are in themselves known, therefore they will not be described in detail; it is convenient to mention as to how, according to the known art, during each rinse the movement of the laundry in the cold water charged to the washing tub is in the order of 4-6 minutes.

[0019] Figure 5 illustrates in a schematic manner the course of the phases making up an intense washing program of the machine according to the present invention, a program within which a specific cycle for the use of bleach, eventually charged in the compartment 2, has been advantageously obtained.

[0020] Compared to the program of figure 4, the program of figure 5 has the great difference of comprising at least one rinse (BB) of a duration being substantially longer compared to that provided by the known art; in particular during the course of the second rinse (BB) provided according to the invention a movement of the laundry in the water takes place in the order of 10-20 minutes, for instance 15 minutes.

[0021] Such modifications of the intense cycle allow for, according to the invention, obtaining from the phases BB, C, D, E of the intense washing program the cycle dedicated to bleaching.

[0022] Such dedicated cycle is characterised therefore in the absence of heating the water present in the washing tub of the machine and comprises a first actual bleaching phase, obtained in the phase BB, of a duration being comprised of 10-20 minutes, followed by at least two rinsing phases C and D, each of which being of the usual duration, comprised for example of 4-6 minutes of movement of the laundry in the clean water; and finally providing a spinning phase E of a high rotational speed of the basket, for instance in the order of 600 rpm.

[0023] Another substantial difference compared to the known cycle of figure 4 is that in the case of figure 5 the distribution of the rinses results in being altered, in such a way that, at least in the occasion of the rinse BB, the water to be introduced to the washing tub is made to pass through the compartment 2 of the drawer of figure 1 or 2, which contains, alternately, the detergents for the pre-wash or the bleach, in the appropriate small tank.

[0024] The functioning of the machine according to the invention is the following. In the case of a normal intense washing cycle, the user loads the laundry to be washed in the machine and the detergents in the container 2: in particular the detergents for the eventual pre-wash will be inserted in the compartment 2, the detergents for the wash in the compartment 3 and the liquid softener in the compartment 4. The user, by way of the dial of the programmer device or timer, selects the beginning of the intense program and starts the machine.

[0025] In the occasion of the first charging of water, during the pre-wash, the water will pass through the compartment 2, conveying to the tub the detergents eventually present for effecting the pre-wash phase P. The cycle then continues in the known way for the other phases provided, with the substantial difference, compared to the known art, of a greater rinsing time of the laundry during the phase BB, which does not however cause any particular problems.

[0026] In the case in which the user wishes to bleach the laundry, the functioning of the machine according to the invention is the following.

[0027] The user inserts the small tank 5 in the compartment 2 of the container 1, introduces the desired dose of bleach, loads the laundry to be bleached in the machine and selects by way of the dial of the timer the bleaching cycle. For such purpose it is to be noted that the display of the timer provides an appropriate indication of the point in which the dial is to be positioned, in correspondence of which the machine is arranged for initiating the second rinse BB.

[0028] The user then starts the machine and then the first charging of water takes place, with the particularity that, as said, during the phase BB the water is made to pass through the compartment 2; in this way the bleach contained in the small tank 5 is conveyed to the-washing tub.

[0029] The machine continues the movement of the laundry in the water containing the bleach for approximately 15 minutes, it then discharges the water used for the bleaching; the two rinses C and D follow with clean water and then the final spinning phase E. The dedicated bleaching cycle then terminates.

[0030] In this way the treatment of the laundry with bleach is clearly better than the solutions used as a compromise with the known art. First of all there is no heating of the liquid of the treatment, that has negative affects on the bleaching action. Secondly because the duration of the phase BB guarantees the complete exploitation of the chemical action of the bleach. Thirdly because the two rinses C and D guarantee the complete elimination of the bleach residues from the laundry, without the risk of cancelling the whitening agents present in the detergents used for the eventual successive wash.

[0031] It is finally clear that, after the bleaching treatment as provided above, the user of the machine is free to select any other washing program provided by the machine, even being different from that represented in figure 5.

[0032] From the given description the characteristics and advantages of the laundry washing machine according to the invention result in being clear.

[0033] In particular they are represented by the fact that, according to the invention use of bleach is permitted even with laundry washing machines equipped with simple and economical dispensers; moreover this takes place automatically without the user having to carry out abnormal operations, such as introducing the bleach

during the charging of the water or selecting a program not being specific for bleaching. The machine according to the invention is furthermore equipped with a specific program, dedicated to bleaching, that allows for completely exploiting the characteristics of the bleach, without influencing the efficiency of the detergents used in the eventual successive washing phase and therefore without the typical problems of the known art. Such specific bleaching program can be realised without additional costs or circuitry complications to the laundry washing machine, by way of simple modifications to a generic washing cycle (intense wash), that only implicates a modest lengthening of the treatment times of such cycle.

[0034] It is clear that other variants are possible to the laundry washing machine described as an example without for this departing from the inventive idea, as it is clear that in the practical realisation of the invention the various elements described can be substituted with technically equivalent elements.

[0035] For instance the described machine could be of the electronically controlled type and therefore have a microprocessor, in union with or in place of an electromechanical timer, which completely or partially takes care of controlling the washing programs. In view of this the user could therefore be in a position to program beforehand the combined operations of bleaching and washing by way of simple command means, such as keys, without any other interventions.

[0036] It is finally clear that the rinsing phase of the generic cycle in which the withdrawing of the bleach takes place does not necessarily have to be the second (BB), but could also be the first. In light of this, figure 6 illustrates a possible variant of the intense washing cycle according to the present invention; such cycle differs in practice from the cycle of figure 5 in that it eliminates a rinse and in that the rinse, indicated with AA, in which the withdrawal of the bleach takes place is the first of those provided, then followed by two usual rinses C and D and the final spinning phase E. With the purpose of the bleach treatment, therefore, the cycle of figure 6 on the other hand has an overall duration being less than that of figure 5 (and slightly greater than that of the known cycle of figure 4): it is however to be noted that with the purpose of the wash, the elimination of a rinse compared to the known art does not have negative effects, in that it is compensated by the lengthening of the rinse AA.

[0037] To the man of the art it is clear that the invention is, in its essence, adaptable to be it for top loading machines or front loading machines, as it is clear that in the practical realisation of the invention the various realisable details described could be substituted with technically equivalent elements.

Claims

1. Laundry washing machine of the type comprising a container (1) for the washing agents, said container (1) comprising a compartment (2) for the pre-wash detergent, a compartment (3) for the detergent of the actual wash and a compartment (4) for the softener, characterised in that
 - a first one (2) of said compartments is also provided for containing a liquid bleach, so as that said first compartment (2) can be alternatively used for containing one of said detergents or the liquid bleach;
 - a specific bleach treatment program (BB, C, D, E; AA, C, D, E) is provided, during which said liquid bleach is automatically withdrawn from said first compartment (2), said specific bleach treatment program being in particular obtained from a sequence of operative phases (BB, C, D, E; AA, C, D, E) making up part of a generic treatment program provided by the laundry washing machine.
2. Laundry washing machine, according to claim 1, characterised in that a removable tank (5) is provided, for being inserted within said first compartment (2), for when said first compartment (2) has to be used for containing the liquid bleach.
3. Laundry washing machine, according to claim 2, characterised in that said removable tank (5) has a siphon (7).
4. Laundry washing machine, according to claim 1, characterised in that said container (2) is of the slidable drawer type or of the angular movable type.
5. Laundry washing machine, according to claim 1, characterised in that said specific treatment program (BB, C, D, E; AA, C, D, E) solely provides for the use of cold water.
6. Laundry washing machine, according to claims 1, characterised in that said generic treatment program comprises at least one rinsing phase which is longer than the rinsing phases being normally provided for in a similar treatment program provided by a machine of the type known.
7. Laundry washing machine, according to claim 1, characterised in that said generic treatment program provides for two or more rinses, the overall duration of which is longer than a similar treatment program provided for by a machine of the type known, eventually followed by a spinning phase, in particular of a high speed.

8. Laundry washing machine, according to the previous claim, characterised in that at least one cold rinse (BB; AA) is provided, of a duration comprised in the range of 10-20 minutes, followed by at least a second and a third cold rinse (C, D), each being of a duration of approximately 4-6 minutes, followed by at least one high speed spinning phase (E). 5
9. Laundry washing machine, according to claims 1 and 8, characterised in that said specific bleach treatment program comprises the succession of said first cold rinse (BB; AA), said second and third cold rinse (C, D) and said spinning phase (E). 10
10. Laundry washing machine, according to claim 6, characterised in that at least in occasion of said long rinsing phase (BB; AA) the water to be charged to the washing tub of the machine is made to pass through said first compartment (2), for the eventual conveyance to the tub of the liquid bleach. 15 20
11. Laundry washing machine, according to at least one of the previous claims, characterised in that command means are provided for programming in advance the combined operations of said specific bleach treatment program with a different washing program provided by the machine. 25
12. Laundry washing machine, according claim 1, characterised in that said specific bleach treatment program (BB, C, D, E; AA, C, D, E) comprises at least one movement phase (BB; AA) of the laundry in the water with the bleach for a duration longer than a normal rinsing phase comprised in the range of 10-20 minutes, followed by at least a first and a second rinsing phase (C, D), each in particular being of a duration comprised of 4-8 minutes, followed by at least one spinning phase (E) being of a high rotational speed of a basket containing the laundry. 30 35 40
13. Method for bleaching laundry in a laundry washing machine of the domestic type, having a container for the washing agents (1), said container (1) comprising a compartment (2) for the pre-wash detergents, a compartment (3) for the detergents of the actual wash and a compartment (4) for the softener, characterised by 45
 - providing a first one (2) of said compartments for containing either a liquid bleach or one of said detergents, so as that said first compartment (2) can be alternatively used for containing one of said detergents or the liquid bleach; 50
 - providing a specific bleach treatment program (BB, C, D, E; AA, C, D, E), during which water is caused to specifically pass through compartment (2) for automatically withdrawing said liquid bleach. 55

Patentansprüche

1. Waschmaschine einer solchen Art, die einen Behälter für die Waschmittel beinhaltet, wobei der Behälter (1) ein Fach (2) für ein Vorwaschmittel, ein Fach (3) für das Waschmittel für die eigentliche Reinigung und ein Fach (4) für den Weichspüler beinhaltet, dadurch gekennzeichnet, daß
 - ein erstes (2) der Fächer überdies zur Aufnahme eines flüssigen Bleichmittels vorgesehen ist, so daß das erste Fach (2) alternativ für die Aufnahme eines der Waschmittel oder des flüssigen Bleichmittels vorgesehen ist;
 - ein spezielles Bleichbehandlungs-Programm (BB, C, D, E; AA, C, D, E) vorgesehen ist, während dem das flüssige Bleichmittel automatisch aus dem ersten Fach (2) entnommen wird, wobei das spezielle Bleichbehandlungs-Programm insbesondere aus einer Abfolge von Betriebsgängen (BB, C, D, E; AA, C, D, E) erhalten wird, die einen Bestandteil eines allgemeinen Behandlungs-Programms bilden, das bei der Waschmaschine vorgesehen ist.
2. Waschmaschine nach Anspruch 1, dadurch gekennzeichnet, daß ein abnehmbarer Tank (5) dafür vorgesehen ist, in das erste Fach (2) eingesetzt zu werden, wenn das erste Fach (2) zur Aufnahme flüssigen Bleichmittels genutzt werden muß.
3. Waschmaschine nach Anspruch 2, dadurch gekennzeichnet, daß der abnehmbare Tank (5) einen Syphon (7) aufweist.
4. Waschmaschine nach Anspruch 1, dadurch gekennzeichnet, daß der Behälter (2) nach Art von ausziehbaren Schubladen oder nach drehbar beweglicher Art ausgebildet ist.
5. Waschmaschine nach Anspruch 1, dadurch gekennzeichnet, daß bei dem speziellen Behandlungs-Programm (BB, C, D, E; AA, C, D, E) ausschließlich der Gebrauch kalten Wassers vorgesehen ist.
6. Waschmaschine nach Anspruch 1, dadurch gekennzeichnet, daß das allgemeine Behandlungs-Programm wenigstens einen Spülgang beinhaltet, der länger dauert als die Spülgänge, die üblicherweise in einem ähnlichen Behandlungs-Programm bei Maschinen bekannter Art vorgesehen sind.
7. Waschmaschine nach Anspruch 1, dadurch gekennzeichnet, daß bei dem allgemeinen Behandlungs-Programm zwei oder mehr Spülun-

gen vorgesehen sind, deren Gesamtdauer länger ist als ein ähnliches Behandlungs-Programm, das bei einer Maschine bekannter Art vorgesehen ist, schließlich gefolgt von einem Schleudergang, insbesondere mit einer hohen Geschwindigkeit.

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8. Waschmaschine nach den vorstehenden Ansprüchen,

dadurch gekennzeichnet, daß wenigstens eine Kaltspülung (BB; AA) vorgesehen ist, deren Dauer in einem Bereich von zehn bis zwanzig Minuten liegt, gefolgt von wenigstens einer zweiten und einer dritten Kaltspülung (C, D), die jede eine Dauer von etwa vier bis sechs Minuten aufweist, gefolgt von wenigstens einem Hochgeschwindigkeits-Schleudergang (E).

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9. Waschmaschine nach Anspruch 1 und 8,

dadurch gekennzeichnet, daß das spezielle Bleichbehandlungs-Programm in Folge die erste Kaltspülung (BB; AA), die zweite und dritte Kaltspülung (C, D) sowie den Schleudergang (E) beinhaltet.

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10. Waschmaschine nach Anspruch 6,

dadurch gekennzeichnet, daß wenigstens bei Gelegenheit des langen Spülgangs (BB; AA) das Wasser, das dem Waschraum der Maschine zugeführt wird, durch das erste Fach (2) geleitet wird, um schließlich zu dem Behälter für das flüssige Bleichmittel befördert zu werden.

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11. Waschmaschine nach wenigstens einem der vorstehenden Ansprüche,

dadurch gekennzeichnet, daß Befehlsmittel für eine Vorab-Programmierung der Kombinationsschritte des speziellen Bleichbehandlungs-Programms mit einem anderen Waschprogramm vorgesehen sind, das bei der Maschine vorgesehen ist.

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12. Waschmaschine nach Anspruch 1,

dadurch gekennzeichnet, daß das spezielle Bleichbehandlungs-Programm (BB, C, D, E; AA, C, D, E) wenigstens einen Bewegungsgang (BB; AA) der Wäsche in dem Wasser mit dem Bleichmittel beinhaltet, der länger als eine normale Spülphase, in einem Bereich von zehn bis zwanzig Minuten liegend, dauert, gefolgt von wenigstens einem ersten und einem zweiten Spülgang (C, D), die jeweils insbesondere eine Dauer von vier bis acht Minuten umfassen, gefolgt von wenigstens einem Schleudergang (E) eines Korbes, der die Wäsche beinhaltet, mit einer hohen Drehgeschwindigkeit.

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13. Verfahren zum Bleichen von Wäsche in einer Waschmaschine für den Haushalt, die einen Behälter (1) für das Waschmittel aufweist, wobei der Behälter (1) ein Fach (2) für die Vorwaschmittel, ein Fach (3) für die Waschmittel der eigentlichen Wä-

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sche und ein Fach (4) für den Weichspüler aufweist, dadurch gekennzeichnet, daß

- ein erstes (2) der Fächer für die Aufnahme entweder eines flüssigen Bleichmittels oder eines der Waschmittel vorgesehen ist, so daß das erste Fach (2) alternativ für die Aufnahme eines der Waschmittel oder des flüssigen Bleichmittels benutzt werden kann;
- ein spezielles Bleichbehandlungs-Programm (BB, C, D, E; AA, C, D, E), vorgesehen ist, während dem Wasser speziell durch das Fach (2) geleitet wird, um das flüssige Bleichmittel automatisch zu entziehen.

Revendications

1. Lave-linge du type qui comprend un récipient (1) d'agents de lavage, le récipient (1) comprenant un compartiment (2) de détergent de prélavage, un compartiment (3) de détergent de lavage et un compartiment (4) d'adoucissant, caractérisé en ce que

un premier (2) des compartiments est aussi incorporé afin qu'il contienne un agent liquide décolorant, si bien que le premier compartiment (2) peut être utilisé alternativement afin qu'il contienne un détergent ou un agent liquide décolorant, et

un programme spécifique de traitement de blanchiment (BB, C, D, E ; AA, C, D, E) est incorporé, et dans ce programme, l'agent liquide décolorant est retiré automatiquement du premier compartiment (2), le programme spécifique de traitement de blanchiment étant obtenu en particulier d'après une séquence de phases de fonctionnement (BB, C, D, E ; AA, C, D, E) faisant partie d'un programme de traitement générique donné par le lave-linge.

2. Lave-linge selon la revendication 1, caractérisé en ce qu'un réservoir amovible (5) est incorporé afin qu'il soit inséré dans le premier compartiment (2), lorsque le premier compartiment (2) doit être utilisé pour contenir l'agent liquide décolorant.
3. Lave-linge selon la revendication 2, caractérisé en ce que le réservoir amovible (5) possède un siphon (7).
4. Lave-linge selon la revendication 1, caractérisé en ce que le récipient (2) est du type à tiroir coulissant ou du type mobile angulairement.
5. Lave-linge selon la revendication 1, caractérisé en ce que le programme spécifique de traitement (BB, C, D, E ; AA, C, D, E) assure uniquement l'utilisation

d'eau froide.

6. Lave-linge selon la revendication 1, caractérisé en ce que le programme de traitement générique comprend au moins une phase de rinçage qui est plus longue que les phases de rinçage normalement incorporées dans un programme analogue de traitement donné par une machine du type connu. 5
7. Lave-linge selon la revendication 1, caractérisé en ce que le programme générique de traitement donne au moins deux rinçages, leur durée totale étant supérieure à celle d'un programme analogue de traitement donné par un lave-linge de type connu, suivis éventuellement d'une phase d'essorage, en particulier à grande vitesse. 10 15
8. Lave-linge selon l'une quelconque des revendications précédentes, caractérisé en ce qu'un rinçage à l'eau froide au moins (BB ; AA) est incorporé avec une durée comprise entre 10 et 20 minutes et est suivi d'au moins un second et un troisième rinçage à froid (C, D) ayant chacune une durée d'environ 4 à 6 minutes, qui sont suivis d'au moins une phase d'essorage à grande vitesse (E). 20 25
9. Lave-linge selon les revendications 1 et 8, caractérisé en ce que le programme spécifique de traitement de blanchiment comprend la succession d'un premier rinçage à froid (BB ; AA), du second et du troisième rinçage à froid (C, D) et de la phase d'essorage (E). 30
10. Lave-linge selon la revendication 6, caractérisé en ce que, au moins lors de la longue phase de rinçage (BB ; AA), l'eau à charger dans la cuve de lavage de la machine circule dans le premier compartiment (2) afin que le liquide de blanchiment soit transporté éventuellement dans la cuve. 35 40
11. Lave-linge selon l'une au moins des revendications précédentes, caractérisé en ce qu'un dispositif de commande est incorporé afin qu'il programme au préalable les opérations combinées du programme spécifique de traitement de blanchiment à un programme différent de lavage donné par le lave-linge. 45
12. Lave-linge selon la revendication 1, caractérisé en ce que le programme spécifique de traitement de blanchiment (BB, C, D, E ; AA, C, D, E) comprend au moins une phase (BB ; AA) de déplacement du linge dans l'eau avec l'agent décolorant pendant une durée supérieure à celle de la phase normale de rinçage et comprise entre 10 et 20 minutes, suivie d'au moins une première et une seconde phase de rinçage (C, D), chacune en particulier ayant une durée comprise entre 4 et 8 minutes, et suivie par au moins une phase d'essorage (E) à une vitesse 50 55

élevée de rotation d'un panier contenant le linge.

13. Procédé de blanchiment de linge dans un lave-linge de type domestique, ayant un récipient d'agents (1) de lavage, le récipient (1) comprenant un compartiment (2) de détergents de prélavage, un compartiment (3) de détergents du lavage réel, et un compartiment (4) d'adoucissant, caractérisé par

la disposition d'un premier (2) des compartiments afin qu'il contienne soit un agent liquide décolorant, soit l'un des détergents, de façon que le premier compartiment (2) puisse être utilisé en alternance pour contenir l'un des détergents ou le liquide de blanchiment, et la disposition d'un programme spécifique de traitement de blanchiment (BB, C, D, E ; AA, C, D, E) dans lequel l'eau circule spécifiquement dans le compartiment (2) pour l'extraction automatique du liquide de blanchiment.

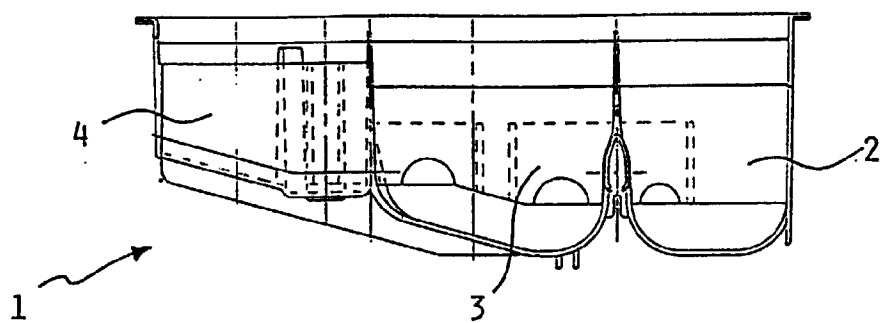
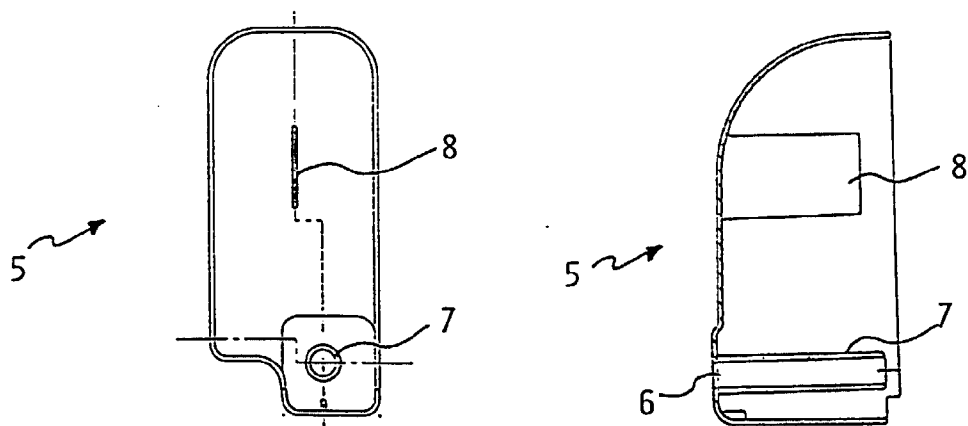
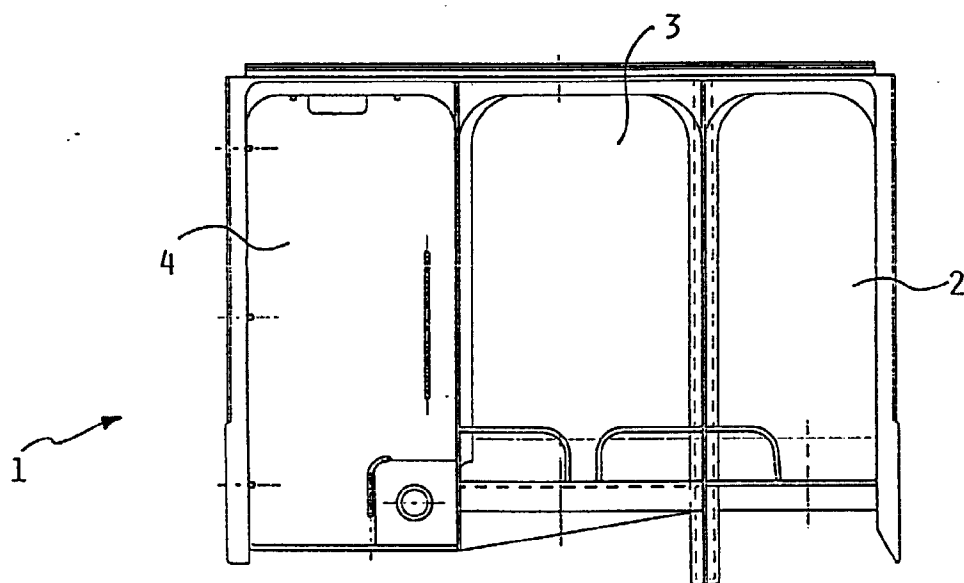


FIG. 1



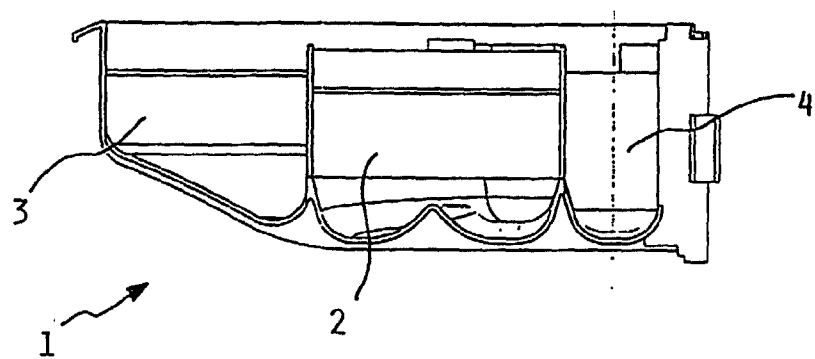
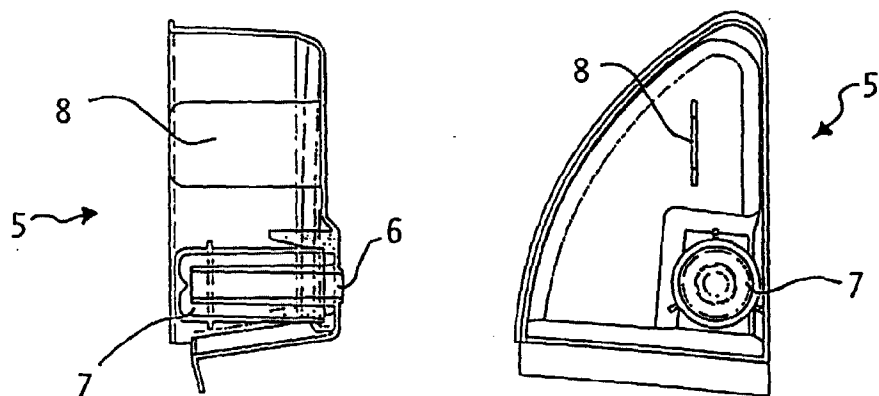
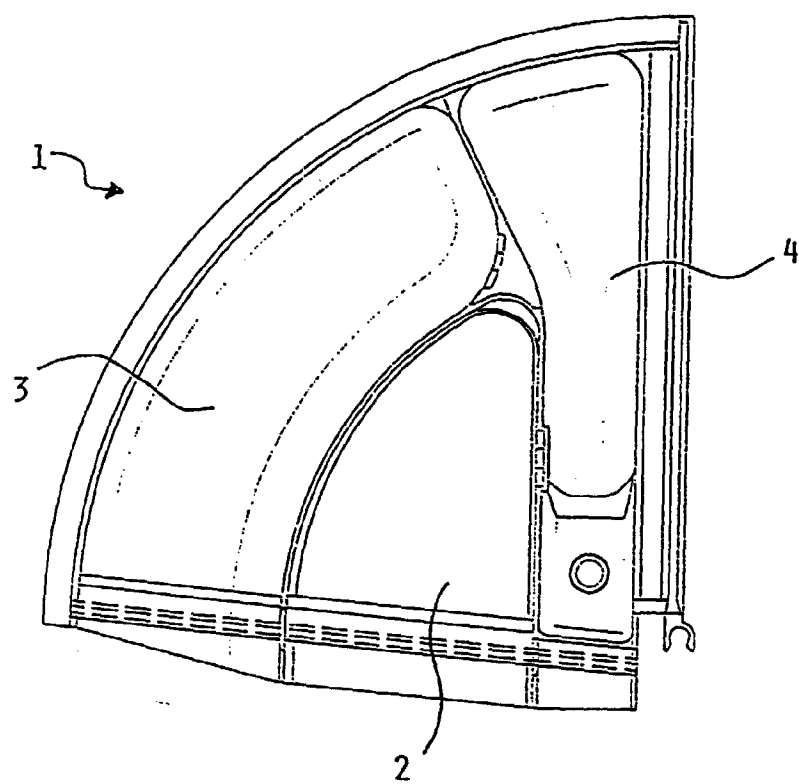


FIG. 2



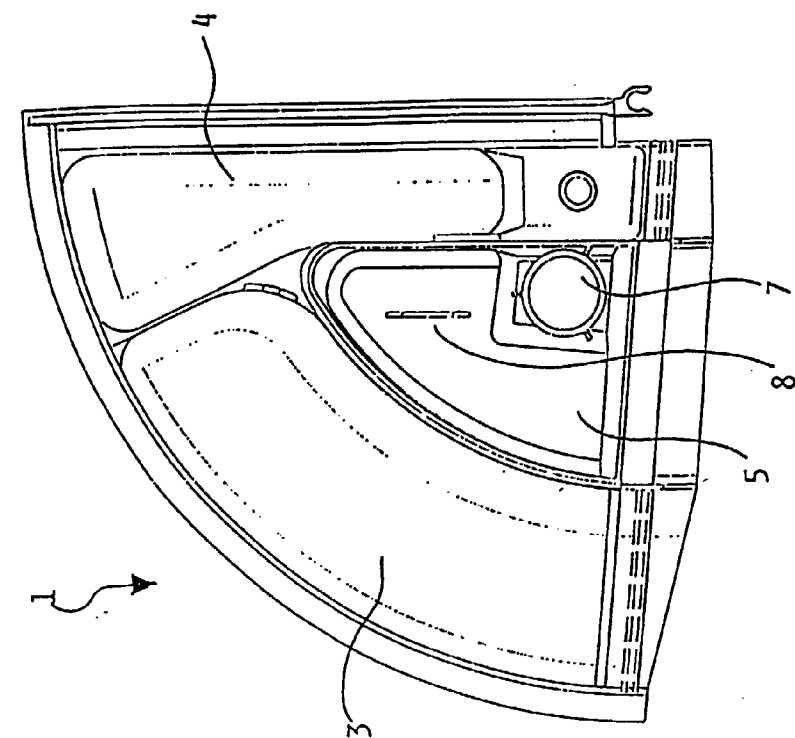
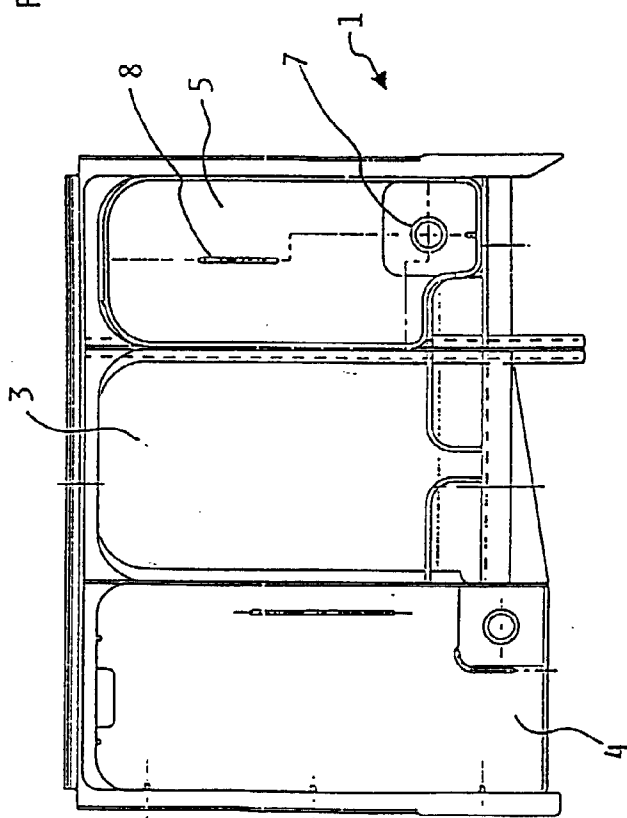


FIG. 3



P L A B C D E

FIG. 4

P L A BB C D E

FIG. 5

P L AA C D E

FIG. 6