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(54) **Household appliance with clamping device for textile items**

(57) The present invention relates to a household appliance, in particular a clothes dryer or washing/drying machine, adapted to carry out at least one drying treatment on one or more soft goods, at least one of said one or more soft goods being prone to felting, said clothes dryer or washing/drying machine comprising a drum, said drum having substantially a shape of a hollow cylinder and being adapted to contain the soft goods during said

at least one drying treatment and to be rotated about its axis through a motor device, said household appliance being characterized by comprising at least one clamping device (10;20) adapted to clamp said at least one of said soft goods during said at least one drying treatment, so as to partially or totally prevent said at least one of said soft goods from felting during said at least one drying treatment.

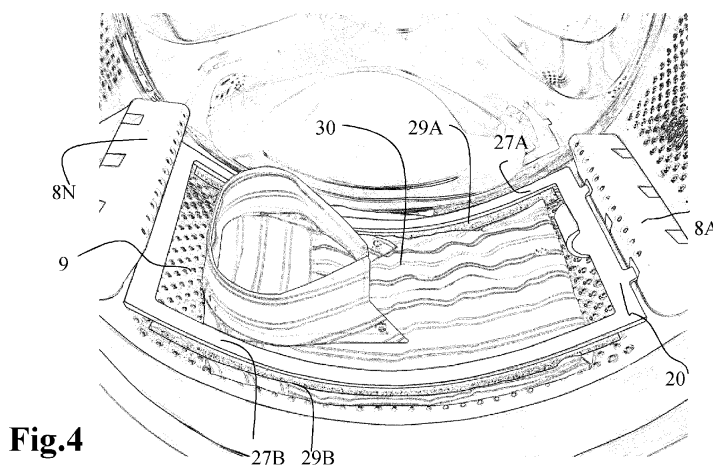


Fig.4

Description

[0001] The present invention relates to a household appliance, in particular a clothes dryer or washing/drying machine, according to the preamble of claim 1.

[0002] Some textile items or soft goods (as called in the following), especially shirts, must be subjected to frequent wash treatments because, when worn, they remain directly in contact with the grease and sweat of human skin.

[0003] In order to remove the dirt and any consequent bad smells, these soft goods can be subjected either to a handwash treatment or to a wash treatment in a suitable laundry washing machine or washing/drying machine. Hand-washing a soft goods like a shirt requires a considerable physical effort and much time. This drawback can be eliminated by carrying out the wash treatment using any laundry washing machine or washing/drying machine currently available on the market, wherein the movement of the soft goods necessary for removing dirt and bad smells occurs through a suitable motor device. However, at the end of the wash treatment the soft goods have many creases and wrinkles, so that very often it is necessary, after the laundry has dried, to perform a proper ironing treatment in order to remove the creases and/or wrinkles and to make the soft goods ready for wearing. This is particularly true for shirts, because they are made of materials such as linen, cotton or silk which are easily subject to creasing and because their fabric is generally very thin. Ironing is a tiring treatment, and is inevitably associated with a considerable waste of energy and time by the person who has to do it. Besides, ironing involves a significant consumption of electricity, since ironing apparatus are typically fitted with a heating device using a heating element.

[0004] The object of the present invention is to solve the above problems.

[0005] Said object is substantially achieved through the household appliance incorporating the features set out in the annexed claims, which represent an integral part of the present description.

[0006] The general idea at the basis of the present invention is to use, for the treatment of soft goods, in particular shirts, a household appliance adapted to carry out a treatment on soft goods which does not require any subsequent ironing.

[0007] The present invention will become apparent, together with its further advantages, from the following detailed description and from the annexed drawings, which are supplied by way of non-limiting example, wherein:

- Fig. 1 shows schematically a detail of a laundry washing machine or washing/drying machine according to the present invention;
- Fig. 2 shows schematically a first possible embodiment of a clamping device for soft goods according to the present invention;
- Fig. 3 shows schematically a second possible embodiment of a clamping device for soft goods according to the present invention and
- Fig. 4 shows schematically a detail of a laundry washing machine or washing/drying machine according to the present invention to which a clamping device for soft goods according to the present invention has been applied, a soft goods, in particular a shirt, being interposed between said clamping device for soft goods and the drum of said laundry washing machine or washing/drying machine.

[0008] The present invention relates to a household appliance, in particular a washing/drying machine or clothes dryer, capable of carrying out at least one treatment on one or more soft goods, which comprises a drum. The drum is substantially the shape of a hollow cylinder, and is adapted to contain the soft goods during the treatment and to be rotated about its axis through a motor device. According to the present invention, the household appliance comprises at least one clamping device adapted to clamp at least one soft goods, preferably a shirt, typically to the drum during the treatment, so as to partially or totally inhibit the formation of creases and/or wrinkles on the clamped soft goods during the treatment. According to a preferred embodiment of the household appliance being the subject of the present invention, the clamping device is a removable device adapted to be applied to the drum of the laundry washing machine, washing/drying machine or clothes dryer after having interposed at least one soft goods between the clamping device and the inner surface of the drum.

[0009] Fig. 1 illustrates a laundry washing machine or washing/drying machine 1 which represents (combined with at least one clamping device, such as the one shown in Fig. 2 or the one shown in Fig. 3) a particular embodiment of the present invention, as described below by way of non-limiting example. In particular, laundry washing machine or washing/drying machine 1 shown in Fig. 1 is a front-loading or substantially front-loading household appliance comprising:

- an external cabinet 3, where to a door is fastened by means of one or more hinges, said door representing the device through which the user can reach the inside of the laundry washing machine or washing/drying machine in order to load the soft goods into the household appliance before the treatment or to remove the same after the treatment;
- an oscillating assembly, comprising a tub adapted to contain the water or wash liquid used to perform the treatment, and a drum 9 adapted to contain the soft goods during the wash treatment and to move the same through a motor

device;

- a hydraulic circuit, comprising an intake device adapted to supply clean water into the tub, and a drain device adapted to discharge the wash liquid from the tub;
- electronic control means, adapted to, among other things, have the laundry washing machine or washing/drying machine carry out at least one wash treatment on soft goods and
- interface means, adapted to, among other things, allow the user to select at least one of the programmes and/or treatment parameters available in the laundry washing machine or washing/drying machine.

[0010] In particular, drum 9, which may be made either of metal or a plastic material, comprises a front flange, a casing (consisting of a hollow cylindrical element and comprising a plurality of holes for the passage of the water and/or wash liquid), a rear flange and a spider connecting the drum to the drive shaft. The drum can rotate about a horizontal or substantially horizontal axis, which essentially coincides with the casing of the axis.

[0011] In the embodiment illustrated in Fig.1 and Fig.4, which represents a possible embodiment of a laundry washing machine, washing/drying machine or clothes dryer fit for the purpose of the present invention, a plurality of lifters 8A-8N, preferably three or four, are fastened to the inner surface of the casing of the drum of the laundry washing machine or washing/drying machine, said lifters being arranged on the inner surface of drum 9 and preferably developing axially along the inner surface of drum 9. In fact, the term "lifters" indicates those elements generally developing axially along the inner surface of the casing, which are used to lift and drag the soft goods contained in drum 9 during the wash treatment.

[0012] It may be assumed that lifters 8A-8N shown in Fig.1 and Fig.4 are made of plastic and are fastened to drum 9, which is made of stainless steel, through a snap in or by means of screws. This assumption is only made by way of example, without limiting the general scope of the present invention: in fact, the inherent inventive concepts of the present description would remain unchanged even if the above-described plastic lifters 8A-8N were replaced with stainless-steel lifters 8A-8N directly obtained on the casing of drum 9 by suitably shaping the entire surface of drum 9.

[0013] Also, no limitations arise from the fact that lifters 8A-8N are illustrated in Fig.1 and Fig.4 as having a symmetric shape, with a plane of symmetry passing through the axis of the casing of drum 9, and in particular as having a shape obtained from an isosceles triangle, with a rounded end to prevent the soft goods from being damaged during the wash treatment.

[0014] Each of lifters 8A-8N secured to drum 9 of machine 1 comprises at least one pair of housing means 7A-7R which, for example, are represented in Fig.1 as a pair of slots located on each lifter along a straight line parallel to the drum axis. Said housing means 7A-7R are used as securing points for a clamping device for soft goods, i.e. for a preferably removable and external accessory device adapted to make the machine suitable for treating, in particular through a wash treatment, soft goods, in particular shirts, without requiring a subsequent ironing treatment on the treated soft goods.

[0015] The clamping device for soft goods is adapted to clamp at least one soft goods30 to drum 9 of machine 1 during the wash treatment, and comprises:

- first means, adapted to prevent clamped soft goods30 from moving with respect to drum 9 during the wash treatment;
- anchoring means, adapted to ensure that the clamping device is properly fastened to the drum 9 and
- second means, made of a soft and/or elastic material and adapted to ensure a soft contact of the clamping device on clamped soft goods30.

[0016] The anchoring means are so shaped as to ensure stable securing thereof in respective housing means 7A-7R comprised in lifters 8A-8N of machine 1, which housing means 7A-7R are as described above.

[0017] The clamping device for soft goods may be provided in different shapes. As an explanatory but non-limiting example, the clamping device for soft goods may consist of two identical pieces (in particular, each piece being equal to that shown Fig.2, which may be called "bar-shaped clamping device"), or just one piece (in particular, said one piece being the piece shown in Fig.3, which may be called "frame-shaped clamping device"). In the bar-shaped clamping device, the first means comprise a bar made of a substantially rigid but slightly flexible material, in particular plastic, and the anchoring means are located at the ends of the bar. For example, bar-shaped clamping device 10 may be according to the embodiment illustrated in Fig.2 and comprise a bar 17 made of a substantially rigid but slightly flexible material (preferably a plastic material such as ABS), possibly having a slight curvature, which represents the first means of the clamping device for soft goods. A soft and/or elastic material 19 (e.g. sponge) is glued on one face of bar 17 (which, if the bar has a slight curvature, is the one opposite to the face toward the centre of curvature of the bar), or at least on a portion thereof; although the presence of this material is not strictly necessary for the purposes of the present invention, it is useful to inhibit the formation of large creases and/or wrinkles on the soft goods touching it. Said soft and/or elastic material 19 represents the second means of the clamping device. At the opposite ends of bar-shaped clamping device 10, there are anchoring means 18A;18B, which may either be dedicated means connected to the opposite ends of the clamping device or be the opposite ends of the bar-shaped clamping system themselves, so shaped as to allow for a

stable fastening of the clamping device when they are inserted in respective housing means 7A-7R comprised in lifters 8A-8N of machine 1. In bar-shaped clamping device 10 shown in Fig.2, anchoring means 18A;18B are obtained by shaping in a suitable way the two opposite ends of bar 17, so that they are one piece with bar 17, manufactured by moulding a substantially rigid but slightly flexible plastic material.

[0018] If the clamping device consists of one piece instead of two distinct bar-shaped clamping devices, the first means comprise a first bar and a second bar made of a substantially rigid but slightly flexible material (in particular plastic), essentially parallel to each other, and one or more crossbars made of a substantially rigid but slightly flexible material (in particular plastic) connected to both the first and the second bars. The direction of the crossbars is essentially orthogonal to the bars.

[0019] The frame-shaped clamping device 20 may be according to the embodiment illustrated in Fig.3 and consist therefore of two bars 27A;27B and two crossbars 24A;24B, which are advantageously provided through one piece of a substantially rigid but slightly flexible material (preferably a plastic material like ABS). The function of first means of the clamping device for soft goods is performed by the two bars 27A;27B and possibly also by the two crossbars 24A;24B. The two bars 27A;27B may have a slight curvature. The second means consist of a soft and/or elastic material 29A;29B glued on the two bars 27A;27B or at least on a portion thereof. If bars 27A;27B have a slight curvature, said soft and/or elastic material 29A;29B is glued on the faces of bars 27A;27B opposite to the faces toward the respective centres of curvature. Anchoring means 28A-28D are secured to the two crossbars 24A;24B. According to an advantageous embodiment of frame-shaped clamping device 20 (shown in Fig.3), one piece made of a substantially rigid but slightly flexible plastic material comprising the two bars 27A;27B, the two crossbars 24A;24B and anchoring means 28A-28D is manufactured by moulding. Frame-shaped clamping device 20 may advantageously comprise grip means 21 adapted to make it easier to handle frame-shaped clamping device 20 and to secure the same into respective housing means 7A-7R comprised in lifters 8A-8N of laundry washing machine or washing/drying machine 1. In the advantageous embodiment of frame-shaped clamping device 20 consisting of one piece made of a substantially rigid but slightly flexible plastic material, grip means 21 are comprised in said one piece in the form of a profile developing on at least one crossbar 24A and so shaped as to be comfortably gripped. In addition to the two bars 27A;27B and the two crossbars 24A;24B, a plate may be provided for closing the frame opening; in this case, said plate may advantageously be fitted with a shaped hole adapted to receive, for instance, the collar of a shirt.

[0020] As an alternative to the frame shape, one may adopt an H-shaped clamping device, formed by the union of two bar-shaped clamping devices 10 connected together and kept essentially parallel by means of a crossbar made of a substantially rigid but slightly flexible plastic material (preferably forming one piece made of ABS together with the two parallel bars). Like the two bars made of a substantially rigid but slightly flexible plastic material, also the crossbar has one face on which soft and/or elastic material is glued, said material being preferably continuous with respect to the soft and/or elastic material glued under the two parallel bars. Grip means may be connected to the opposite face of the crossbar, said grip means being similar to grip means 21 described for frame-shaped clamping device 20.

[0021] The material of the bars and/or crossbars, and more in general of the first means of the clamping device, is substantially rigid in order to ensure proper clamping, but at the same time it is preferably also slightly flexible in order to facilitate securing of the anchoring means into the housing means.

[0022] By applying clamping device 10;20 for soft goods as described above (whether according to Fig.2 or according to Fig.3), machine 1 according to the present invention can be adapted to treat, through a treatment, soft goods, in particular shirts, without requiring a subsequent ironing of the treated soft goods. Clamping device 10;20 for soft goods is applied to the drum 9 of laundry washing machine or washing/drying machine 1 by securing it between two consecutive lifters 8A-8N. The following description of said application will refer to Fig.4, wherein clamping device 10;20 for soft goods consists of a frame-shaped clamping device 20 as illustrated in Fig.3 and previously described in detail.

[0023] Before applying clamping device 10;20 for soft goods to drum of the laundry washing machine or washing/drying machine, soft goods 30 (e.g. a shirt) to be subjected to e.g. a wash treatment is folded as shown in Fig.4, by hand or by using any of the specific devices currently available on the market. Soft goods 30 is then laid on the inner surface of drum 9 of laundry washing machine or washing/drying machine 1, in particular on the inner surface of the casing comprised between a lifter 8A and the subsequent one 8N. Considering its axis of symmetry as the axis of soft goods 30, it is advisable to position soft goods 30 between lifters 8A-8N so that its axis of symmetry has a direction essentially orthogonal to the axis of symmetry of the casing of drum 9 of laundry washing machine or washing/drying machine 1.

[0024] Once soft goods 30 has been located, it is clamped to drum 9 of laundry washing machine or washing/drying machine 1 by applying clamping device 10;20 for soft goods. Due to this application, during the rotation of drum 9 occurring in the course of the wash treatment, soft goods 30 will be prevented from moving with respect to the drum 9 and will therefore remain in the same condition as when it was laid on the casing of drum 9 of laundry washing machine or washing/drying machine 1.

[0025] Clamping device 10;20 for soft goods is applied to drum 9 of machine 1 by engaging the anchoring means of clamping device 10;20 for soft goods into the housing means provided in lifters 8A-8N. Of course, this is only possible if said anchoring means and said housing means are so shaped as to ensure stable securing also during the operation

of machine 1. It is also necessary that the length of each clamping device 10;20 for soft goods corresponds to the distance between two consecutive lifters 8A-8N, as well as that, if a frame-shaped clamping device 20 or an H-shaped clamping device is used, the distance between two anchoring means 28A-28B;28C-28D in the clamping device for soft goods corresponds to the distance between two housing means 7A-7C in lifter 8A. At the end of the wash treatment, clamping device 10;20 for soft goods is extracted by removing the anchoring means of the clamping device for soft goods from the housing means being present in lifters 8A-8N. Soft goods 30 is then removed from drum 9 and, if the household appliance has not performed a drying treatment, it is put on a hanger to dry. Once it has dried, soft goods 30 may advantageously be worn without having to be ironed, in that it will have no creases and/or wrinkles spoiling its appearance.

[0026] A laundry washing machine or washing/drying machine comprising a number N of lifters 8A-8N can accept up to an "N" number of soft goods clamped to drum 9 as described above, assuming that only one soft goods is placed between a lifter 8A and the next one 8N. To this end, it is necessary to use a number of frame-shaped clamping devices 20 or H-shaped clamping devices corresponding to the number of soft goods, or a number of bar-shaped clamping devices 10 corresponding to twice the number of soft goods. During a wash treatment, soft goods clamped to drum 9 through the special clamping devices 10;20 may coexist with soft goods loaded in drum 9 in the traditional way, which therefore are free to move inside of it during the treatment.

[0027] In order to increase the effectiveness of the laundry washing machine or washing/drying machine according to the present invention in inhibiting the formation of creases and/or wrinkles, it may be possible for the machine to be capable of performing an auxiliary wash cycle aimed at improving the performance of the wash treatment on soft goods 30, said soft goods 30 being clamped to drum 9 by applying a clamping device 10;20 for soft goods. Said auxiliary wash cycle comprises at least one rotation phase of drum 9 at such a speed as to exert a great centrifugal force on soft goods 30 clamped by clamping device 10;20 for soft goods. During said phase, a suitable rotation speed of drum 9 may be approx. 90 rpm, which value is particularly suited to an inner diameter of drum 9 between 450 mm and 500 mm. Since the centrifugal force exerted on soft goods 30 is proportional to the distance between said soft goods 30 and the axis of drum 9, it follows that the rotation speed of drum 9 will have to be adequately increased the smaller the inner diameter of drum 9, and will have to be adequately decreased the larger the inner diameter of drum 9. Since the laundry washing machine or washing/drying machine comprises interface means, the latter may be so provided as to comprise at least one device adapted to select the auxiliary wash cycle.

[0028] The following table shows an explanatory but non-limiting example of said auxiliary wash cycle, which indicatively lists the phases comprised in said cycle. The table lists in succession the various phases into which the entire wash treatment is subdivided according to said auxiliary wash cycle. In particular, it shows an example of the temporal succession of said phases, the consumption of water during each of said phases (indicated in the third column and expressed in litres as a total consumption value from the start of the wash cycle) and the time at which each of said phases stops (indicated in the fourth column and calculated with reference to the start of the wash cycle, to which a time value 0 is assigned).

AUXILIARY WASH CYCLE			
		Lt	End
1	Water supply + rotation at approx 90rpm, hereafter referred to as 'satellization'	up to 16	3' 26"
2	Heating + alternate rotation at 35rpm	16	14' 30"
3	Satellization	16	16' 28"
4	Alternate rotation at 25rpm	16	18' 30"
5	Satellization	16	20' 30"
6	Alternate rotation at 25rpm	16	22' 32"
7	Satellization	16	24' 34"
8	Alternate rotation at 25rpm	16	26' 37"
9	Satellization	16	28' 38"
10	Alternate rotation at 25rpm	16	30' 36"
11	Water supply + alternate rotation	up to 32	32' 50"
12	Drain		34' 50"
13	Rinse	up to 50	39' 20"

(continued)

AUXILIARY WASH CYCLE			
		Lt	End
14	Spin		43' 10"
15	Rinse	up to 69 5	47' 30"
16	Spin		51' 22"
17	Rinse	up to 88 3	55' 43"
18	Spin		59' 34"
19	Rinse	up to 107 1	64' 15"
20	Spin - 800rpm max-		66' 08"

[0029] It is apparent from the present description that the household appliance being the subject of the present invention, in particular laundry washing machine or washing/drying machine 1, overcomes (possibly in association with any of the clamping devices 10;20 for textile items described above in detail, according to the preferred embodiment with removable external clamping devices) the implicit drawbacks of all laundry washing machine or washing/drying machines currently available on the market, which compel the respective users to carry out an ironing treatment on soft goods after having performed a wash treatment. On the contrary, laundry washing machine or washing/drying machine 1 according to the present invention allows its user to avoid ironing soft goods such as shirts after having washed them, thus saving time and costs related to ironing.

[0030] The above-described clamping device 10;20 for soft goods has been conceived for use in a laundry washing machine or washing/drying machine for the purpose of preventing the formation of creases and/or wrinkles on soft goods during a wash treatment, but it may also be advantageously used for other typologies of household appliances and other treatments.

[0031] A particular application of the clamping device 10;20 for soft goods is associated with soft goods prone to felting, in particular comprising wool fibres, and may be used for both wash and drying treatments. It should be remembered that felting, which causes irreversible dimensional shrinking, is caused by the breaking of wool fibres which, being scale-type fibres, tend to get interlaced when moved in the presence of water or humidity. For washing soft goods prone to felting, in particular comprising wool fibres, one may advantageously use the above-described household appliance, in particular laundry washing machine or washing/drying machine 1, since the application of a clamping device 10;20 for soft goods allows to clamp the soft goods prone to felting to drum 9 of laundry washing machine or washing/drying machine 1, thus blocking the wool fibres, which can no longer get interlaced because they cannot move freely. In order to improve the performance of the wash treatment and to further hinder felting, also in this case it is possible to use an auxiliary wash cycle, e.g. the cycle described in EP404047.

[0032] For drying soft goods prone to felting, in particular comprising wool fibres, one may use a clothes dryer or washing/drying machine capable of carrying out at least one drying treatment on soft goods among which at least one is prone to felting. The clothes dryer or washing/drying machine comprises a drum having substantially a shape of a hollow cylinder, adapted to contain soft goods during the drying treatment and to be rotated about its axis through a motor device. According to the present invention, the household appliance comprises at least one clamping device 10;20 for soft goods, adapted to clamp at least one soft goods prone to felting to the drum during the drying treatment, so as to partially or totally inhibit felting. Preferably, clamping device 10;20 for soft goods is a removable external device adapted to be applied to the drum of the clothes dryer or washing/drying machine, the soft goods prone to felting being interposed between the clamping device and the inner surface of the drum. Since the soft goods prone to felting is clamped to the drum, its fibres, in particular its wool fibres, are prevented from moving during the drying treatment, so that they cannot break and get interlaced, thereby causing irreversible dimensional shrinking of the soft goods comprising them. The household appliance, in particular the clothes dryer or washing/drying machine having the above features and adapted to solve the felting problem of soft goods, in particular of soft goods comprising wool fibres, during a drying treatment is an invention itself.

[0033] It is also an object of the present invention to provide a method for clamping at least one soft goods to the drum of a household appliance. Said method may be used for clamping a soft goods to the drum of a household appliance (such as a laundry washing machine or washing/drying machine) capable of carrying out at least one wash treatment on soft goods, preferably for the purpose of preventing the formation of creases and/or wrinkles thereon, as well as for clamping a soft goods to the drum of a household appliance (such as a washing/drying machine or a clothes dryer) capable of carrying out at least one drying treatment soft goods, preferably for the purpose of preventing said soft goods

from felting. In particular, said method makes use of a clamping device 10;20 for soft goods , preferably a removable external device, such as any of those listed and described in detail in the present description.

[0034] The method for clamping a soft goods to the drum of a household appliance according to the present invention comprises the steps of:

- i) folding the soft goods ;
- ii) laying the soft goods on the inner surface of the drum and
- iii) applying a clamping device to the drum, so that the soft goods remains between the clamping device and the inner surface of the drum.

[0035] The present invention has been described with reference to particular embodiment examples, but it is clear that many changes may be made to the household appliance as claimed in claim 1, and to the method as claimed in claim 7 by those skilled in the art without departing from the scope defined by the annexed claims.

Claims

1. Household appliance, in particular a clothes dryer or washing/drying machine, adapted to carry out at least one drying treatment on one or more soft goods , at least one of said one or more soft goods being prone to felting, said clothes dryer or washing/drying machine comprising a drum, said drum having substantially a shape of a hollow cylinder and being adapted to contain the soft goods during said at least one drying treatment and to be rotated about its axis through a motor device, said household appliance being **characterized by** comprising at least one clamping device (10;20) adapted to clamp said at least one of said soft goods during said at least one drying treatment, so as to partially or totally prevent said at least one of said soft goods from felting during said at least one drying treatment.
2. Household appliance according to claim 18, **characterized in that** said at least one of said soft goods comprises wool fibres.
3. Household appliance according to claim 18 or 19, wherein said clamping device (10;20) is a removable device.
4. Household appliance according to claim 18 or 19 or 20, **characterized in that** said clamping device (10;20) comprises anchoring means (18A-18B;28A-28D) adapted to ensure securing of said clamping device (10;20) to said drum (9).
5. Household appliance according to claim 18 or 19 or 20 or 21, **characterized in that** said clamping device (10;20) is so shaped and/or positioned that said at least one of said soft goods (30) can be interposed between said clamping device (10;20) and the inner surface of said drum (9).
6. Accessory for household appliances, **characterized by** being a clamping device (10;20) adapted to clamp at least one soft goods (30) to the drum (9) of a household appliance, said household appliance being in particular according to any of the previous claims.
7. Method for clamping at least one soft goods (30) to the drum (9) of a household appliance, said household appliance being adapted to carry out at least one wash and/or drying treatment on soft goods, said method comprising the steps of:
 - i) folding said at least one soft goods (30);
 - ii) laying said at least one soft goods (30) on the inner surface of said drum (9) and
 - iii) applying a clamping device (10;20) to said drum (9), so that said at least one soft goods (30) remains interposed between said clamping device (10;20) and said inner surface of said drum (9).

Fig.1

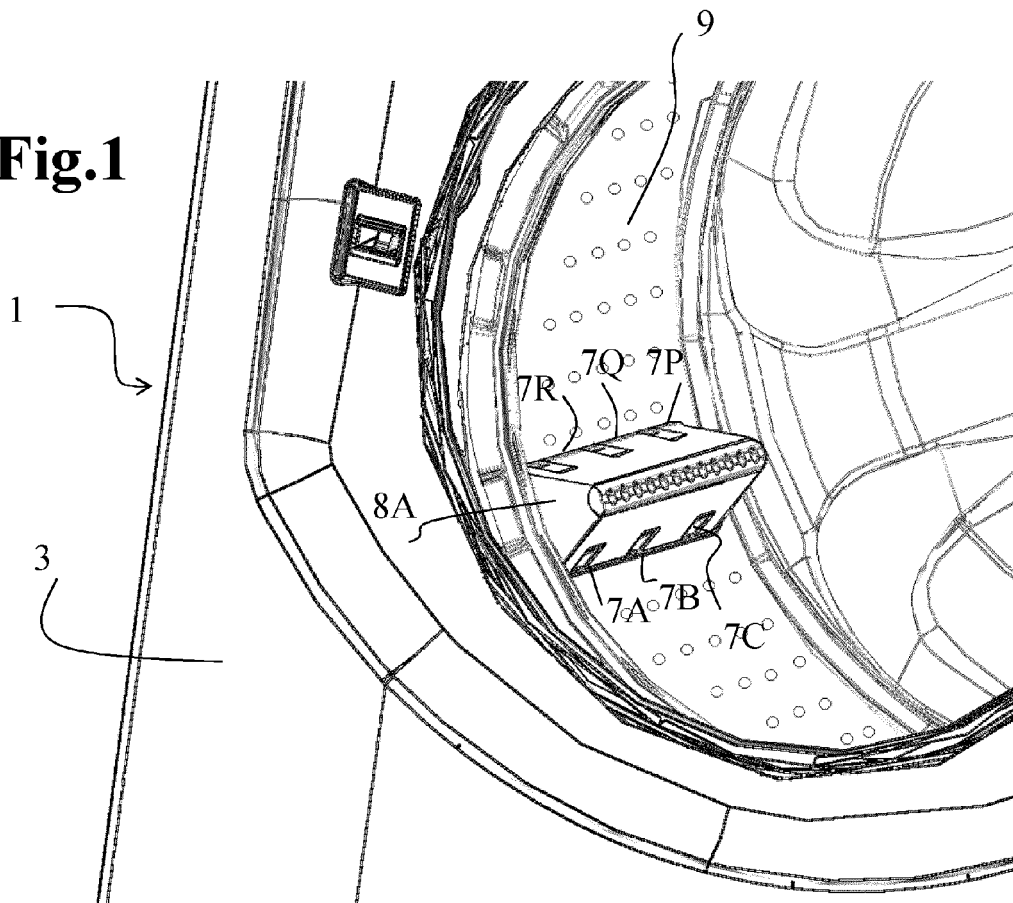
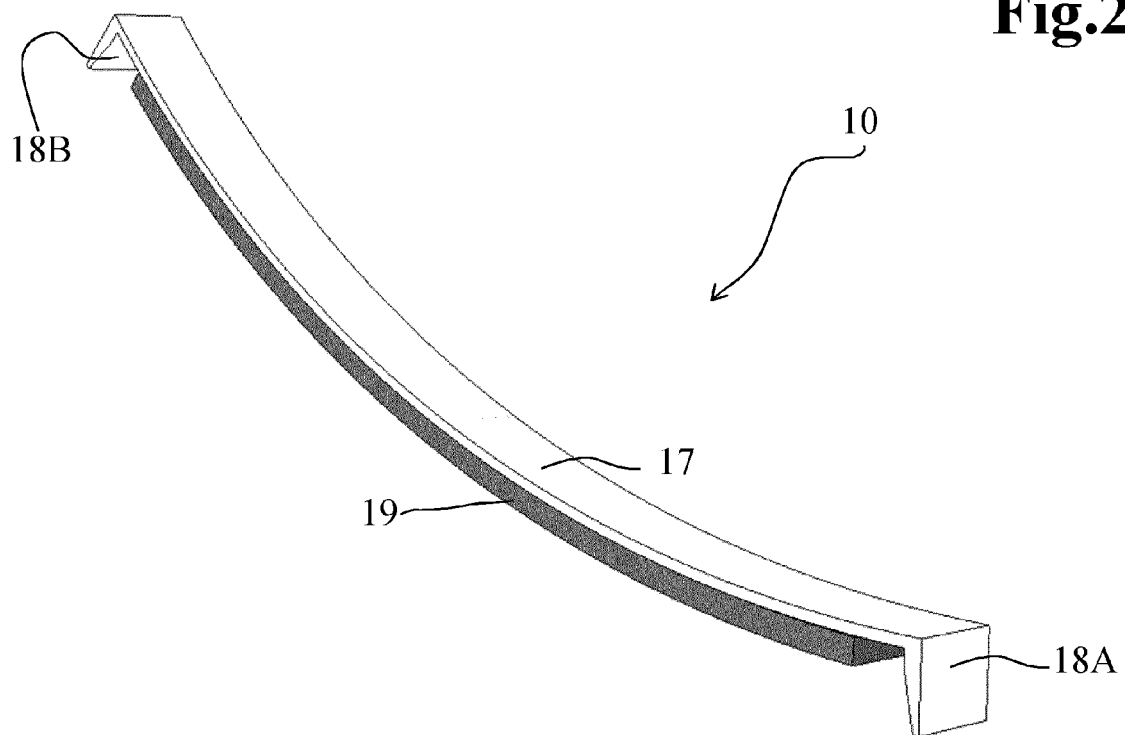


Fig.2



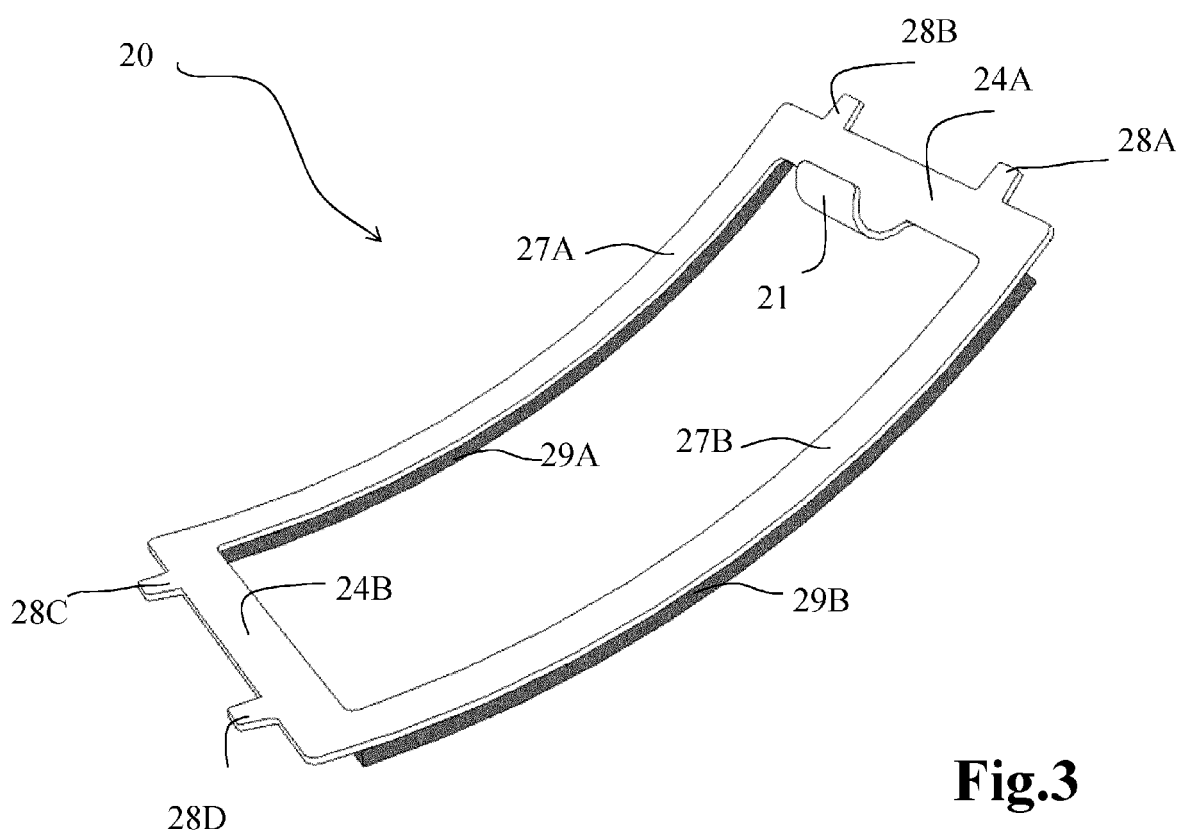
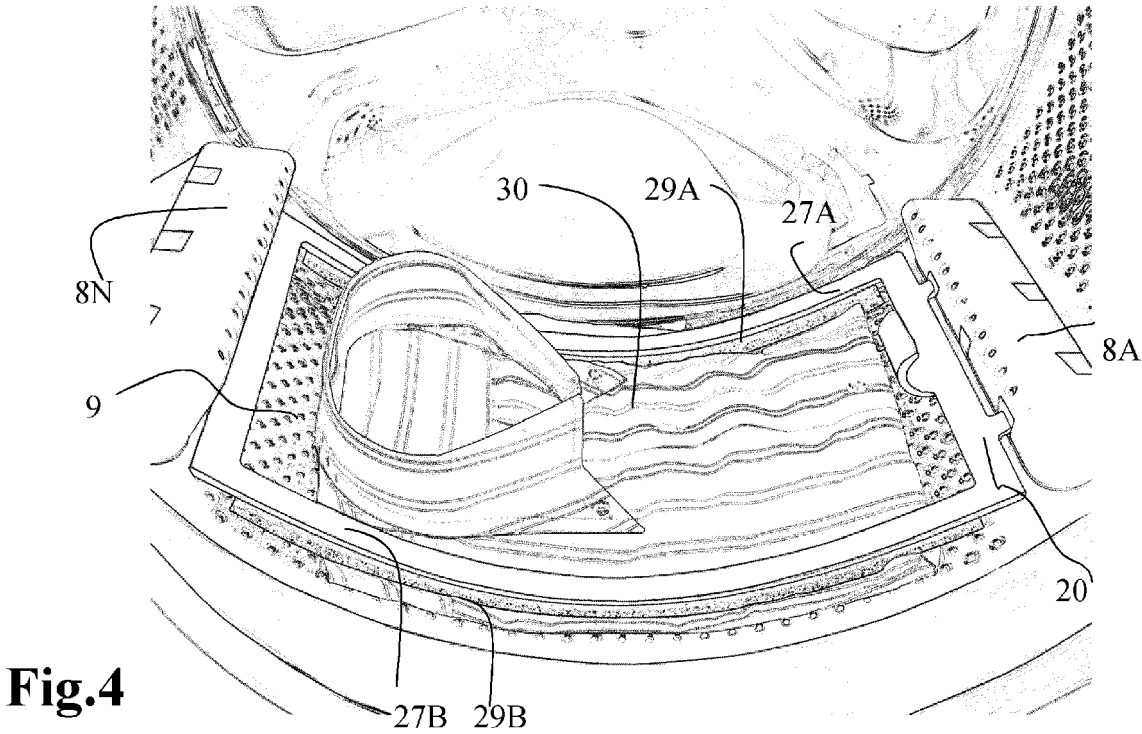


Fig.3





EUROPEAN SEARCH REPORT

Application Number
EP 11 19 0107

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 15 85 584 A1 (E. BRÜCKNER) 5 November 1970 (1970-11-05) * the whole document *	1-7	INV. D06F58/04 D06F37/06 D06F35/00
X	DE 43 42 008 A1 (HERBERTZ, HEINZ, 96049 BAMBERG, DE; HERBERTZ, HEINZ) 14 June 1995 (1995-06-14) * the whole document *	1,2,4-7	
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			TECHNICAL FIELDS SEARCHED (IPC)
			D06F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 24 January 2012	Examiner Stroppa, Giovanni
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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