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(54) Improvement in washing machine baskets.

(57) A basket (3) for washing machines which comprises dragging members (5) provided along the perimeter of the inside surface of said basket (3) and which is characterized in that some mechanical means (9, 11) are provided at points corresponding to each one of said dragging members (5) outside the surface of said basket (2), said mechanical means (9, 11) being designed for the collection of water from the tub of said washing machine as well as for containing said water within the space formed by said dragging member (5) and by the mechanical means (9, 11) themselves, said basket (2) being also characterized in that each one of said dragging members (5) is provided internally with at least one set of openings (13) for allowing the collected water to fall.

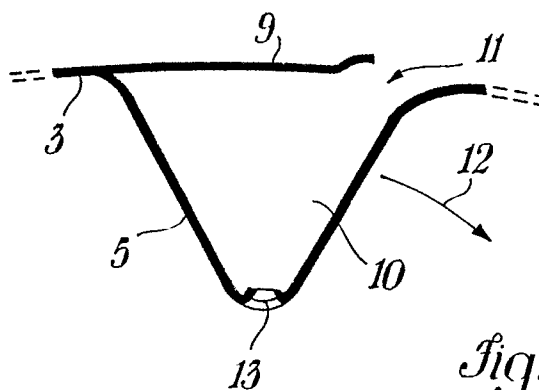


Fig. 2

IMPROVEMENT IN WASHING MACHINE BASKETS

The present invention relates to an improvement in the basket of washing machines. More particularly, this invention relates to a basket of the type mentioned above, which provides a system for re-use of water present on the bottom of the tub so as to obtain, by employing lowered amounts of water, a remarkable reduction both in electric power and in detergent consumption.

At the present time there is a tendency to the realization of washing machines which are programmed so as to work through washing cycles that can be adapted to various conditions, more particularly as functions of the fabric to be washed and of the dirt degree, in an attempt at limiting as much as possible the consumption of electrical power.

Some programs are prepared for example to allow strong and not too dirty fabrics to be washed. Such programs provide the employment of not too high washing temperatures (lower than 60°C) in order to save electrical power, as mentioned above.

The major drawback affecting such program type consists in the fact that, in that way, no sterilization of the fabrics washed is obtained.

In some cases, programs are prepared that make use of lower amounts of water, more particularly in the case of loads which are not complete, so that power is saved.

A further solution provides the employment of a water amount which is just sufficient to soak the fabrics so that, as a counterpart of the saving in electrical power and detergent, a wear of said fabrics occurs which is much higher than the wear occurring when washing oper-

ations are carried out employing higher amounts of water.

5 As can be clearly observed, each one of the solutions suggested shows some drawbacks stemming particularly from the high consumption required for heating the remarkable amounts of water present, or from the effects of the mechanical action exerted by the washing machine on the fabrics.

10 Accordingly, it is the main object of the present invention that of providing a fundamental technical teaching for the realization of a washing machine which removes the drawbacks mentioned above and allows washing operations to be performed on any type of fabric as well as with any dirt degree, which operations, though employ reduced amounts of water so that power consumptions are kept within limited values, keep the fabrics wet at a higher degree with respect to the mere soaking.

15 The Applicant has surprisingly found that the objects mentioned above are obtained exploiting the mechanical energy of the basket of the washing machine, and such exploitation is now suggested according to the present invention.

20 Indeed, according to the present invention, it is suggested to provide some mechanical means outside said basket, and at points corresponding to the typical recesses of the dragging members which are realized inside the basket itself, said mechanical means collecting during the rotation water present on the bottom of the tub, said water being next introduced again into said basket by the action of gravity by means of holes or apertures obtained in said
25 dragging members.

Accordingly, it is a specific object of the present invention a basket for washing machines, said basket comprising dragging mem-

bers provided on the perimeter of the inside surface of said basket and being characterized in that mechanical means are provided at points corresponding to each one of said dragging members, outside the surface of the basket, said means being designed for collecting water from the washing machine tub and for containing said water inside the space formed by said dragging member and by the mechanical means themselves, said basket being also characterized in that each one of said dragging members is provided in its inside part with at least one series of holes for allowing the collected water to fall.

According to a particularly preferred embodiment of the basket according to the present invention, said mechanical means are made up of a dam provided outside said dragging member, said dam being realized so as to leave an inlet port for water in said space, said port being arranged in a forward position with respect to the sense of rotation of the washing machine basket.

Again according to the present invention, said dragging members can be so shaped as to obtain at least one step on the bottom surface of said dragging member in order to increase the volume of water carried by the same.

According to a further embodiment of the basket of the present invention, said mechanical means can also consist of extension of the outside surface of the basket itself, a number of apertures being provided on the transverse lateral outside surfaces of said dragging members, said apertures being designed for the collection of water itself.

In that case also, the inside shape of each dragging member can be changed in order to increase the collecting and containing

possibility of the same.

5 The present invention is disclosed in the following for illustrative but not for limitative purposes according to some preferred embodiments of the same which are illustrated in the enclosed drawings, wherein:

Figure 1 shows a vertical cross section view of a washing machine in which the basket of the present invention is provided;

Figure 2 shows a schematic view of a detail of a first embodiment of the basket according to the present invention;

10 Figures 3a, 3b and 3c show schematically the working principle of the basket according to the present invention;

Figure 4 shows a schematic view of a detail of a second embodiment of the basket according to the present invention; and

15 Figure 5 shows a schematic view of a detail of a third embodiment of the basket according to the invention.

With reference now to Figure 1, the washing machine 1 comprises a tub 2 in which the rotating basket 3 is provided, said basket bearing holes on its surface 4.

20 Said rotating basket 3 is provided with the dragging members 5 which are of aid in making the motion of the fabrics to be washed contained inside the same easier.

The rotation motion of the basket 3 is obtained by means of an electric motor 6 and through the belts 7 and pulleys 8.

25 As can be seen from the enclosed drawing, the solution suggested according to the present invention can be provided on any type of the washing machines commercially available, the basic operation of the washing machine being kept unchanged.

According to the present invention a dam 9 (see Figure 2) is provided outside the rotating basket 3 at points corresponding to each one of the dragging members 5, said dam defining the space 10 formed just as a consequence of the realization of said dragging members 5.

Said dam 9 is so realized as to provide an opening 11 in a forward position with respect to said space 10 and to the rotation sense of the basket 3 (according to arrow 12 in Figure 2).

Holes 13 are provided longitudinally on said dragging members 5 below said space 10.

Looking now at Figures 3a, 3b and 3c, the working principle on which the basket of the present invention is based can be understood more clearly.

In said Figures, one only dragging member 5 is shown for the sake of simplicity but it is clearly evident that the number of members 5 actually provided will be that usually employed in all washing machines.

When the member 5 passes through the volume of water 14 present within the tub 2 of the washing machine 1, water 14 goes through the opening 11 into the space 10 (Figure 3a, the collecting phase).

Next (Figure 3b, the carrying phase), water is dragged upwards and then (Figure 3c, the falling phase) it falls through the holes 13 onto the fabrics contained inside the rotating basket 3 so that the same are further soaked.

Figure 4 shows an embodiment of the basket 3 according to the present invention wherein, by modifying the shape of said dragging member 5 so as to form the step 15, an increase is obtained in the volume of the space 10 and consequently an increase is obtained in

the volume of water dragged by each single dragging member 5 as well as an increase in the angle at which the falling of water occurs.

Obviously, according to that embodiment, two lines of holes 13 will be provided.

5 The embodiment shown in Figure 5 is particularly suitable to obtain the effect disclosed above with washing machines in which the rotation of the basket 3 is provided in both senses.

10 In that case, the space 10 is completely closed at the top by the extension of the surface 4 of the rotating basket 3. Obviously, the surface 4 will bear no holes at points corresponding to the closure of the space 10.

15 In order to allow the collecting phase to occur, a number of openings 16 will be provided on the lateral surfaces of the dragging member 5 (one only opening is shown in the Figure) which openings allow water to be introduced inside the space 10 independently of the sense of rotation of the rotating basket 3.

20 The present invention has been disclosed with particular reference to some specific embodiments of the same, but it is to be understood that modifications and changes can be introduced in the invention by those who are skilled in the art without departing from the spirit and scope of the invention for which a priority right is claimed.

CLAIMS:

1. A basket for washing machines, said basket comprising dragging members provided along the perimeter of the inside surface of the basket itself, said basket being characterized in that
5 mechanical means are provided at points corresponding to each one of said dragging members, said mechanical means being designed for the collection of water from the tub of the washing machine as well as for containing said water inside the space formed by the dragging member itself and by said mechanical means, said basket being
10 also characterized in that each one of said dragging members is provided internally with at least one set of openings for allowing the collected water to fall.

2. A basket for washing machines according to claim 1, characterized in that said mechanical means are made up of a dam provided externally with respect to each one of said dragging members,
15 said dam being so realized as to leave an opening for allowing water to enter said space, said opening being arranged at a forward position with respect to the rotation sense of the basket itself.

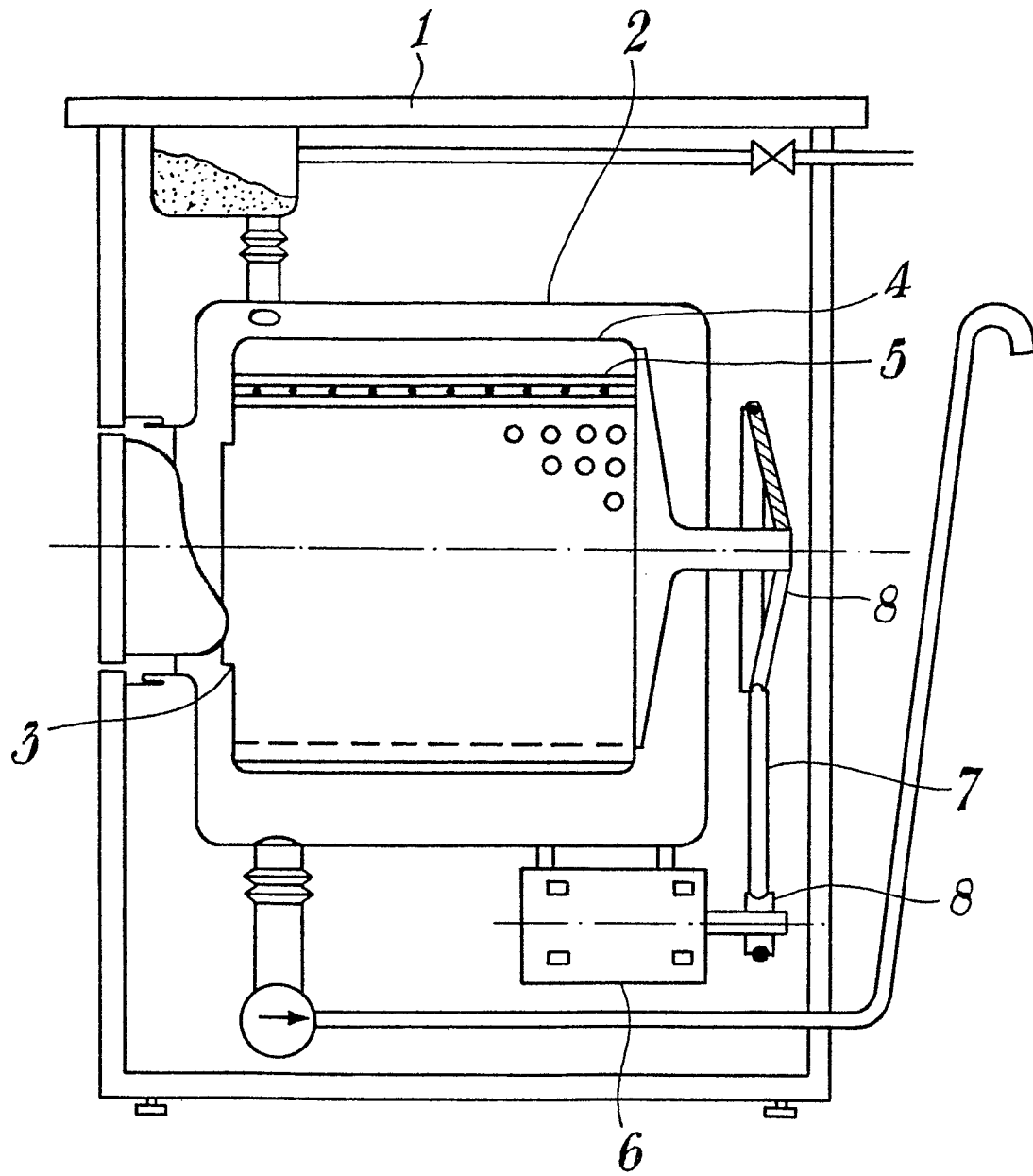
3. A basket for washing machines according to claims 2, said
20 basket being characterized in that said dragging members are so shaped as to realize at least one step on the bottom surface of the dragging member itself, a number of sets of openings being provided which is equal to the number of steps plus one.

4. A basket for washing machines according to claim 1, characterized in that said mechanical means are made up of the extension
25 of the outside surface of the basket itself, a number of openings being provided on the transverse lateral outside surfaces of said dragging members, such openings being designed for the collection of

water contained within the tub of said washing machine.

5 5. A basket for washing machines according to claim 4, characterized in that said dragging members are so shaped as to realize at least one step on the bottom surface of the dragging member itself, a number of sets of openings being provided which is equal to the number of the steps plus one.

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*Fig. 1*

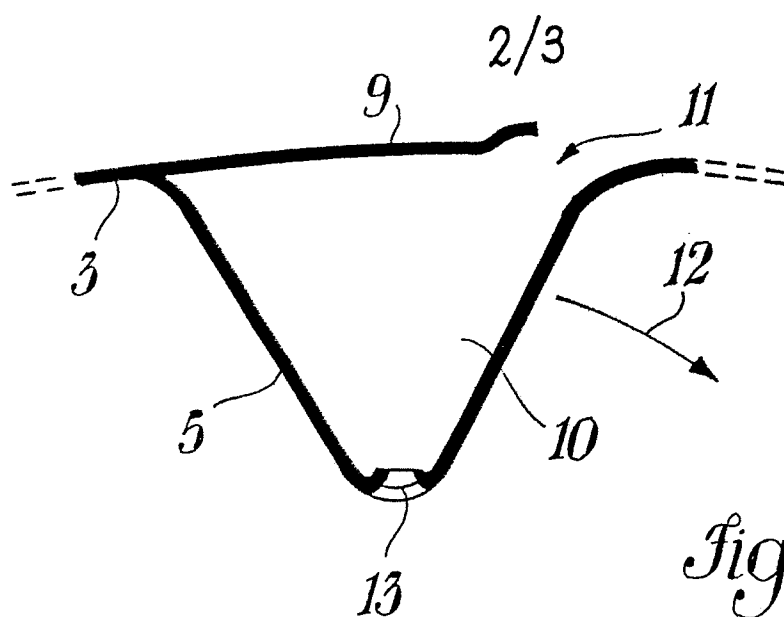


Fig. 2

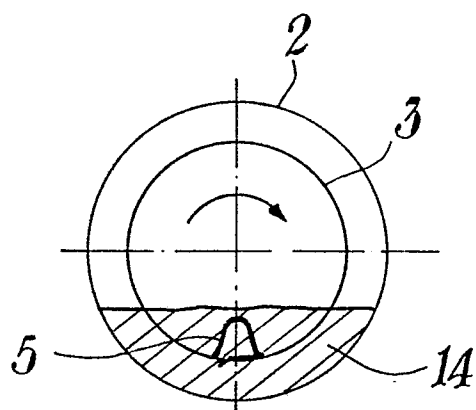


Fig. 3a

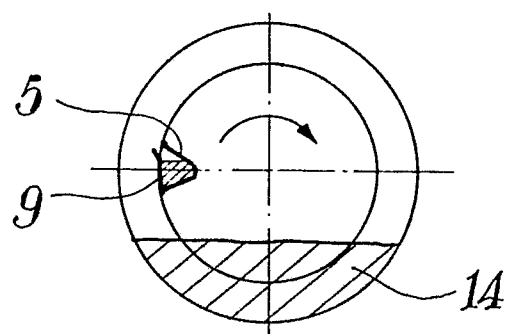


Fig. 3b

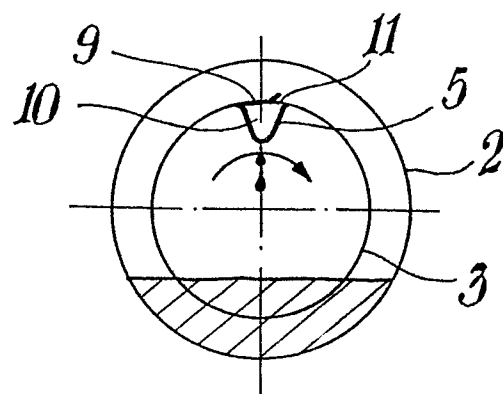
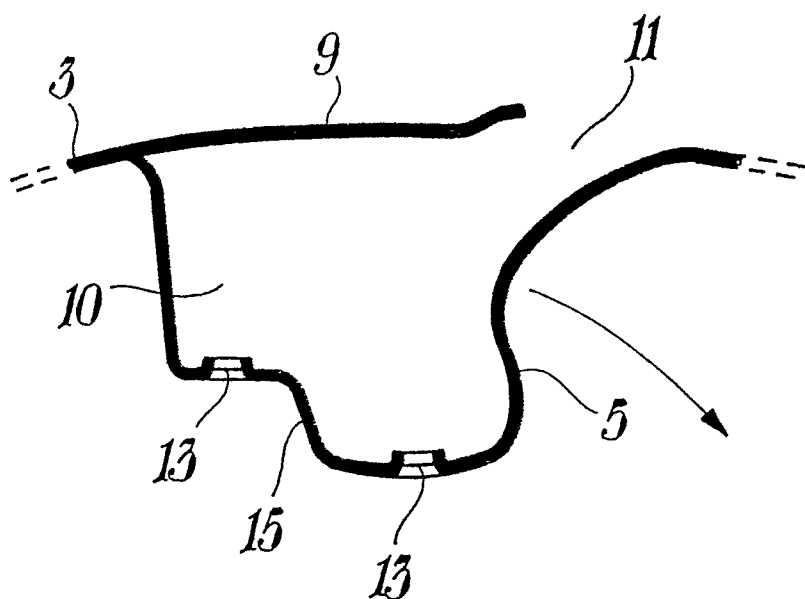
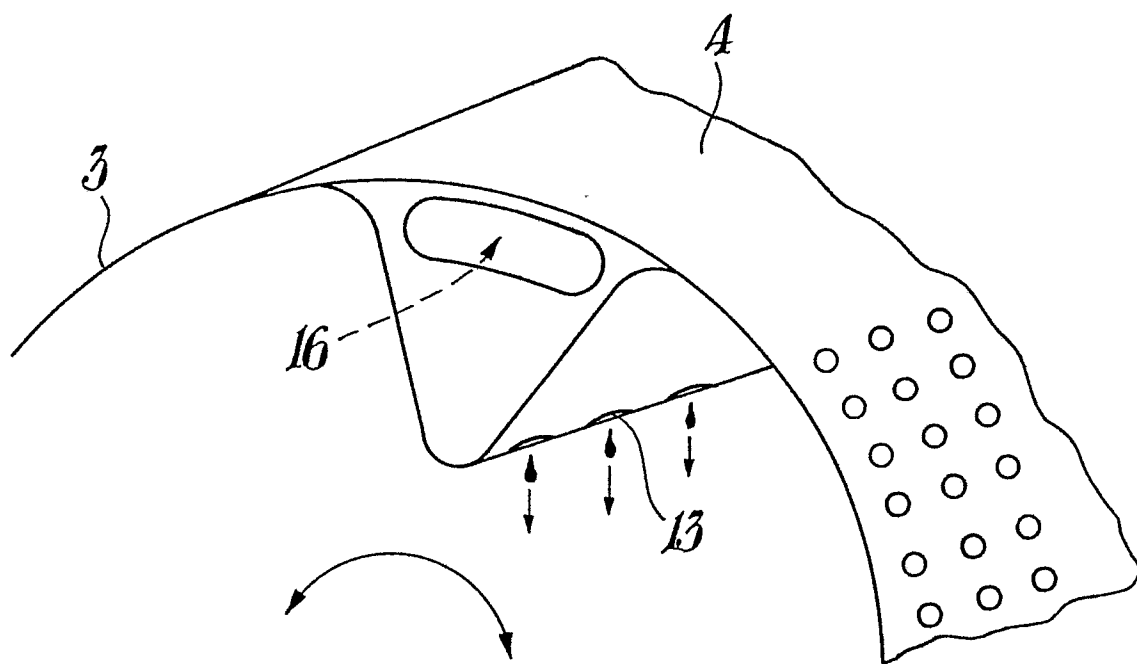


Fig. 3c

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*Fig. 4**Fig. 5*



European Patent
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EUROPEAN SEARCH REPORT

Application number

EP 87 83 0048

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. 4)
X	FR-A-1 299 679 (JESUS) * The whole document *	1,2	D 06 F 23/02
X	DE-C- 836 341 (KLEEFISCH) * Figures 1,2,4; page 2, lines 50-64; claims *	1,4	
X	FR-A- 377 638 (BECKMANN) * The whole document *	1,2	
X	DE-C- 179 891 (SCHULZE et al.) * The whole document *	1	
A		2,3	
X	FR-A- 820 133 (S.A.CONSTRUCTION D'APPAREILS THERMO-MECANIKES) * Figures 1-5 *	1,2	TECHNICAL FIELDS SEARCHED (Int. Cl. 4)
			D 06 F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 03-06-1987	Examiner COURRIER, G. L. A.
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