



(11) Publication number : **0 661 019 A1**

(12) **EUROPEAN PATENT APPLICATION**

(21) Application number : **94120088.3**

(51) Int. Cl.⁶ : **A47L 15/50**

(22) Date of filing : **19.12.94**

(30) Priority : **28.12.93 IT TO930280 U**

(43) Date of publication of application :
05.07.95 Bulletin 95/27

(84) Designated Contracting States :
DE ES FR GB IT

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(54) **Basket for a dishwashing machine and manufacturing method thereof.**

(57) A basket for dishwashing machines, having internally partitions or supports (11) for dishes, of the type obtained starting from a plurality of metallic wires (2,3,4,11) appropriately shaped and made to be integral with each other; according to the invention, at least some of said partitions or supports (11) comprise a first (13) and a second portion having dimensions and/or colourings being different from each other.

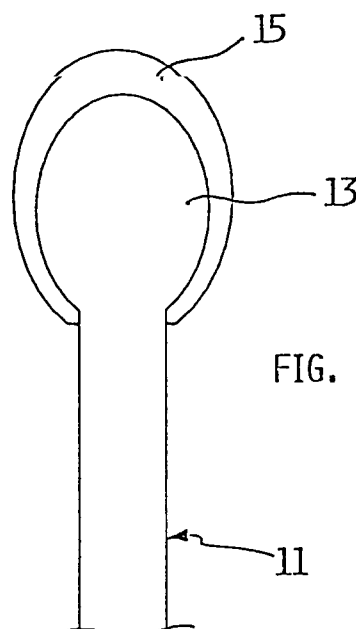


FIG. 4

The present invention refers to a basket for dish-washing machines, and to the relative manufacturing method.

It is known that normally dishwashing machines utilise at least an extractable crockery basket. Said basket is usually realised from a net of large metallic wires, welded perpendicularly one to the other so as to form a rectangle; the four edges of the rectangle are then refolded upwards in order to form the side walls of the basket. The baskets are then completed by connecting together, generally by way of further welded metallic wires, the four side walls.

If necessary, the basket is completed by welding where appropriate other pieces of wire for realising partitions or vertical supports for dishes; finally the basket is refinished by covering the metallic wires in a known way with a layer of suitable plastic material.

In baskets according to the prior art, the upper end of said vertical supports is in the greater part of cases obtained by a simple cutting; the substantially cylindrical form of such ends, therefore, apart from not being aesthetically agreeable, have angles, constituting critical points; for example in such points the risk of damaging the plastic coating of the basket is greater, produced by the dishes; such angles can also cause scratching of the dishes themselves.

For reducing such drawbacks baskets have been proposed for dish-washing machines in which the upper end of the partitions or vertical supports is bevelled; also with such solution some drawbacks remain.

In fact, in baskets according to the prior art, as the diameter of the metallic wire is constant and the bevelling of the end moreover reduces the diameter, the plates tend to rest on said partitions along a certain section, determining diffused plate-partition adjacency zones that hinder the evacuation of the water and therefore the drying of the plates themselves; such points furthermore negatively affect the efficiency of the washing, because of deposits of small points of residues in such contact zones; within certain limits, the extended contacts between the plates and partitions also amplify the noise of the machine, due to functioning vibrations of the same.

A further problem, of common occurrence, of baskets according to the prior art is that often the user tends to forget which is the optimal arrangement of dishes inside the baskets; in other words, notwithstanding the apparent simplicity of the operation, the correct insertion of dishes inside the actual baskets, which all have a series of supports and partitions, can give cause problems and time losses for the user, that has to search for the optimal arrangement.

The purpose of the present invention is that of overcoming the above mentioned problems, illustrating a basket for dish-washing machines that is of an agreeable aesthetic appearance, of increased functionality if compared to baskets of the traditional type and that is of simple industrial realisation.

So as to reach such purpose, the subject of the present invention are a basket for dishwashing machines and the relative manufacturing method having the characterising features of the annexed claims.

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

- figure 1 represents a view of a basket according to usual techniques;
- figure 2 represents a view of a basket according to the invention;
- figure 3 represents a frontal view of a detail of figure 2;
- figures 4 and 5 represent a sectioned view of two possible realisation forms of a detail of the basket according to the invention, in a particularly advantageous embodiment.

Figure 1 represents a view of a basket according to the usual techniques, shown as a whole with 1; such basket 1 is realised starting from large metallic wires 2 and 3, welded perpendicularly to each other so as to form a rectangle; the four edges of the rectangle are then folded upwards in order to form the side walls.

With 4 further metallic wires are indicated, welded to the said side walls for completing the base structure of the basket.

With 5 vertical metallic wires are indicated, welded in appropriate points to the bottom of the base structure of the basket; such vertical wires, placed within the base structure, realise partitions or supports for the dishes to be arranged in the basket: typically such vertical supports have the function to maintain the plates in an upright position, at a certain distance one from the other.

The basket 1 obtained in the way described is then refinished by uniformly covering in a known way the metallic wires 2, 3, 4 and 5 with a layer of a suitable plastic material.

As is noted in figure 1, the upper end of the vertical partitions, or supports, has a form being substantially flat, obtained by cutting the wires 5; such solution has the previously cited aesthetic-functional problems, above all in the zone of mutual contact of two substantially parallel surfaces (wires of a uniform section and the surfaces of dishes).

Figure 2 represents a view of a basket according to the invention, indicated as a whole with reference number 10. Such basket 10 is substantially realised with the above described technique and also has a series of partitions or central vertical supports, some of which are shown with 11; with 12 a handle in a plastic material is shown, apt at facilitating the insertion and removal operations of the basket 10 within the washing chamber of the dish-washing machine, not represented for simplicity.

If compared to the basket of figure 1, the basket 10 has the peculiarity that at least the upper ends 13 of the partitions or vertical supports 11 are worked in order to present a larger section than that of the relative metallic wires, and in particular in order to present a substantially oval form; in figure 3 the upper ends 13 of some of the partitions 11 are in fact illustrated in greater detail.

The particular oval form of such ends 13, besides determining a better aesthetic effect of the basket 10, allows to reach some functional advantages that allow for overcoming the problems mentioned in the opening part of the present description.

In the basket 10 according to the invention the dishes arranged between the partitions 11 tend to rest only on the oval ends 13, the diameter of which being greater than that of the wires constituting the partitions 11; in conclusion, therefore, the plates rest in a single point only, both defined and precise, i.e. in connection with oval part 13: consequently the evacuation of the water from the plates, and therefore the drying of which, is improved; as is also improved the efficiency of the washing, due to the reduction of shaded zones, and the silence of the machine, inasmuch the transmission of vibrations to the plates is limited.

The delicate form of the ends 13 of partitions 12 similarly reduces the risks of damaging the plastic coating of the metallic wires making up the basket and the risks of scratching the dishes.

The form of the ends 13 also allows to increase furthermore the functionality of the basket 10 according to the invention.

In fact, in a particularly advantageous embodiment of the invention, to the ends 13 caps of a suitable plastic or rubber material can in fact be snap-fitted, being resistant to thermic stress: such caps have the function of increasing furthermore the positive effects of the larger section of the ends 13 if compared to the remaining portion of the wires 11 that make up the vertical partitions.

The fixing of such caps is irremovable, due to the form of the ends 13; in known baskets, of the type illustrated in figure 1, the presence of caps would be on the contrary a source of problems, as their insertion on the cylindrical end of the wires 5 would not be secure: as a result of thermic stress and the movement of the dishes the caps could free themselves from the cylindrical ends of the wires 5, with easily imaginable consequences (for example their loss, or the clogging of the recycling filter of the dish-washing machine).

In figures 4 and 5 several possible constructive forms of caps are illustrated, indicated with 15, to be fixed on the wires 11 of the basket according to the invention.

In general, the internal hollow of the caps 15 is essentially a copy of the form of the ends of wires 11,

oval in the case illustrated, in order to consent the snap fixing and to prevent their undesired extraction; the form of the external part of the caps 15 can, on the other hand, be chosen from various types: for example it may be oval, as in the case illustrated in figure 4, or pointed, as in the case of figure 5, so as to improve the support of the dishes and to minimise the contact between the dishes and caps 15, in order to improve furthermore the efficiency of the washing.

In any case the caps 15 may be of any form considered useful for increasing the functionality and the efficiency of the basket.

According to the invention, the oval ends of the partitions 11 may be obtained with a simple riveting operation, i.e. deforming the upper end of the metallic wires from which they are made, in order to realise a head, or a counter-head, irremovable, of an oval form. After such operation, that can be obtained with a suitably equipped riveting machine, the basket may be covered in a known way with a suitable plastic material.

In the eventual successive working phase the caps 15 are then snap-fitted to the ends 13, an operation that is easily carried out also in an automatic manner with suitably equipped machines, in themselves known.

The caps 15 can advantageously be differently coloured if compared to the remaining part of the basket (usually of a white colour); for example they could be of the same colour as the handle 12, so as to provide the basket with uniform aesthetic elements; moreover, according to an important aspect of the innovation, the caps 15 are of a plurality of different colours depending on the supports 11 on which they are mounted.

In other words, therefore, by way of the caps 15 of different colours, it is possible to identify, or better to distinguish, in an unequivocal manner the different supports present within the crockery basket; in the instruction booklet of the dish-washing machine equipped with the basket according to the invention, the function of the different colourings of the caps will be duly explained: for example the green caps indicate the supports in which the dishes are to be inserted, the red caps indicate those for soup dishes, the yellow caps for saucers, and so on.

It is clear that, in this way, the user is facilitated in the purpose of having the optimal load of dishes within the basket; the exact arrangement of dishes can be carried out in a rapid way and with "intuition", associating the coloured caps 15 with the different categories of dishes.

From the given description the characteristics of the basket subject of the present invention are clear, as are clear its advantages.

In particular the described basket has, with a modest increase of production costs, aesthetic and functionality characteristics which are certainly im-

proved.

It is clear that numerous variations can be introduced to the basket subject of the present invention, without departing from the novelty principles inherent in the innovative idea; for example the ends of the metallic wires making up the side walls and the bottom of the basket 10 could be riveted for obtaining the form illustrated in figure 3; in light of this, the caps 15 in rubber could also be provided in the frontal wall of the basket 10, for cushioning the eventual impacts between the door lining of the dish-washing machine and the basket itself, during the closing phases of the door.

Furthermore the supports and/or partitions 11 could have forms, shapes and inclinations different from those illustrated in figure 2.

It is also clear that the ends 13 of the partitions or supports 11 could be obtained by riveting with another form, provided that they are able to carry out the function of reducing the contact area between the wires and the dishes, and allowing for a secure fixing of the caps 15.

It is finally clear that in a practical realisation of the invention the materials and the forms of the illustrated details may be different, and the same can be replaced with technically equivalent elements.

Claims

1. Basket for dishwashing machines, having internally partitions or supports (11) for dishes, of the type obtained starting from a plurality of metallic wires (2,3,4,11) appropriately shaped and made to be integral with each other, characterised in that at least some of said partitions or supports (11) comprise a first (13) and a second portion having dimensions and/or colourings being different from each other.
2. Basket, according to claim 1, characterised in that the first portion is an end (13) which presents a shape being substantially oval, having a greater section than that of the remaining part of the metallic wire (11) constituting the second portion.
3. Basket, according to at least one of the previous claims, characterised in that said metallic wires (2,3,4,11) are covered with a layer of plastic material.
4. Basket, according to claim 1 or 2, characterised in that to said first portion or ends (13) ending elements (15) are fixed, in particular snap fitted.
5. Basket, according to the previous claim, characterised in that said ending elements are caps (15) of plastic or rubber material, in particular being of

different colours if compared to the plastic material that covers said metallic wires (2,3,4,11).

6. Basket, according to claims 1 or 4, characterised in that said partitions or supports (11) are of different kinds, provided for different categories of dishes, and in that the relative first portions or ends (13) of metallic wire and/or the relative ending elements (15) have different colours according to the different kinds of partitions or supports (11).
7. Basket for dishwashing machines, having a base structure within which a plurality of partitions and/or supports (11) are defined, provided for different categories of dishes, said partitions and/or supports (11) being in particular obtained by way of metallic wires, characterised in that said partitions and/or supports (11) have at least in part a different colouring between them, in function of the type of dishes destined to be separated and/or supported, said different colouring being provided for indicating which partitions and/or supports (11) are particularly appropriate for separating and/or supporting a certain type of dish, said partitions or supports (11) having a different colouring at least in correspondence of one of their ends, onto said ends being in particular fixed ending elements (15) of various colourings.
8. Manufacturing method of a basket for dishwashing machines, where said basket (10) is obtained by joining, by way of welding or equivalent fixing technique, a plurality of metallic wires (2,3,4,11), characterised in that, after a cutting phase, the ends of at least some of said wires (11) are made subject to at least a further treatment, in order to realise thereon an irremovable head (13) of a shape and/or colouring being different with respect to the remaining portion of the constituting metallic wire.
9. Method, according to the previous claim, characterised in that said further treatment comprises a riveting phase, i.e. of deformation of the cut end of the metallic wire (11), for realising thereon a head (13) of a larger section than that of the remaining portion of metallic wire (11), said head (13) having in particular a substantially oval form.
10. Method, according to the previous claim, characterised in that said further treatment comprises the fixing, in particular by snap fitting, of an ending element (15) onto said head (13), said ending element being of different material and/or shape and/or colouring if compared to the metallic wires (11) or its covering.

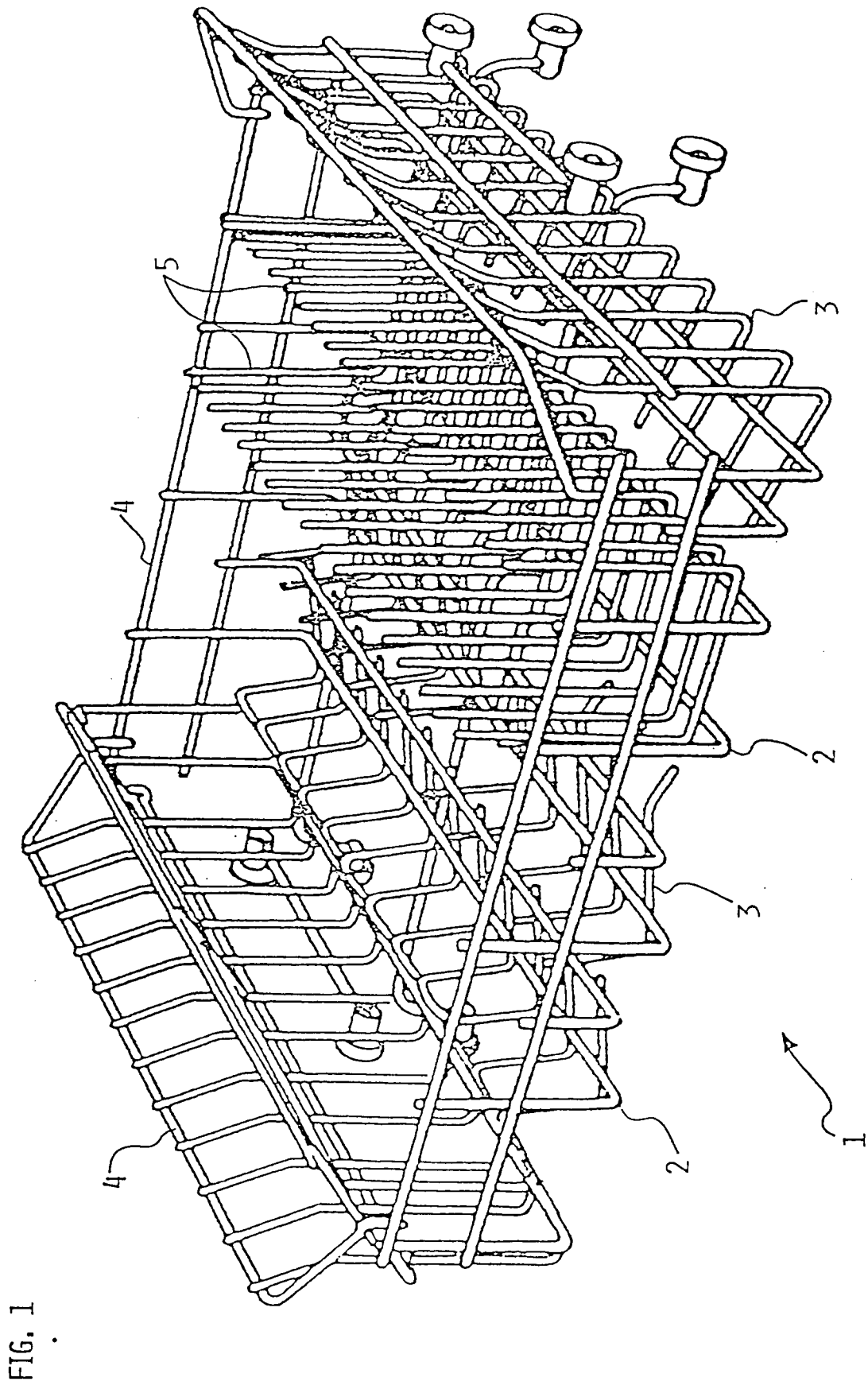
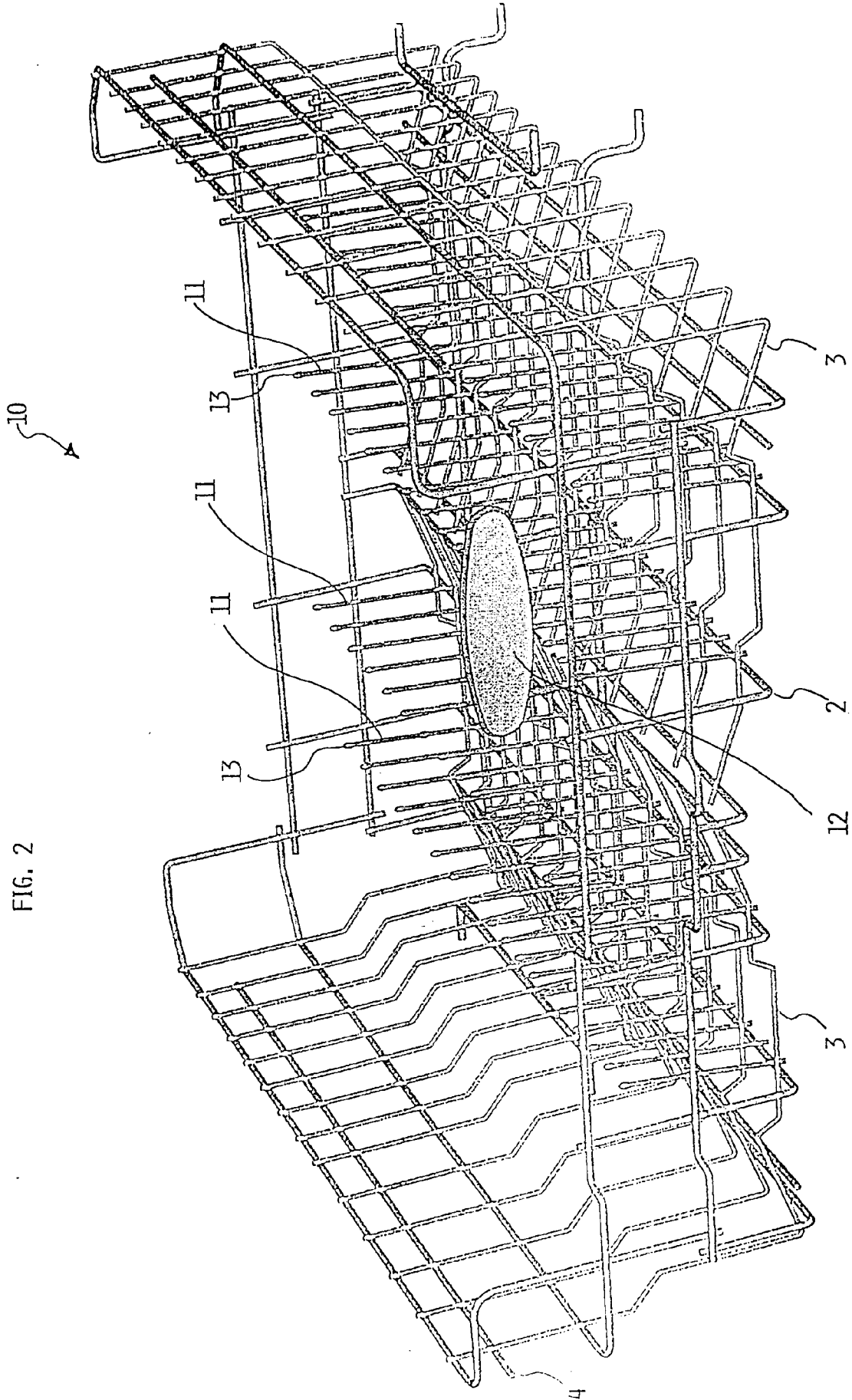
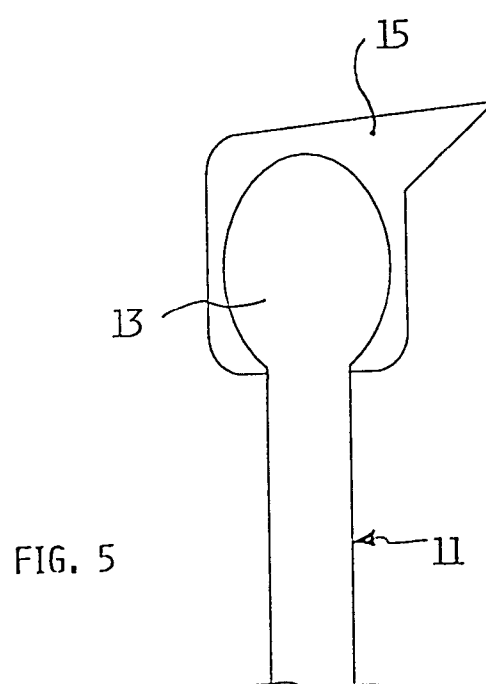
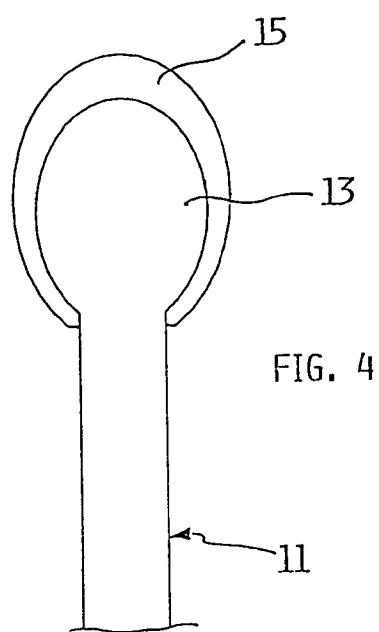
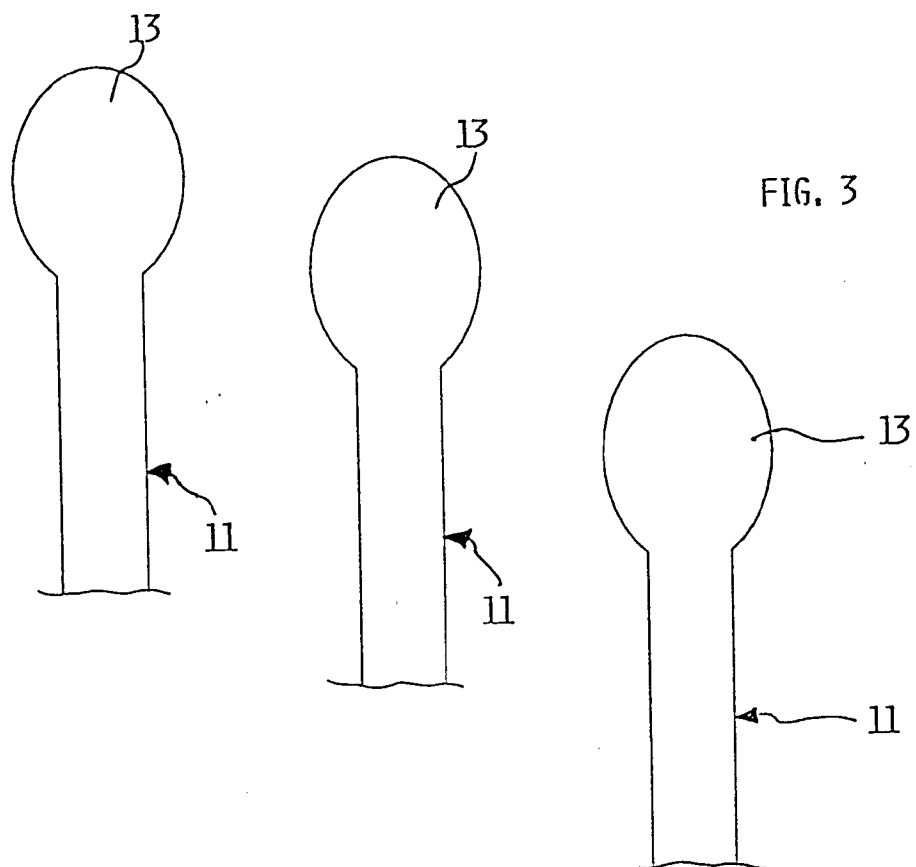


FIG. 2







European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 94 12 0088

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)
A	US-A-5 158 185 (MAYTAG CORPORATION) * figures 1-9 *	1,2	A47L15/50
A	DE-A-24 49 767 (MIELE & CIE. GMBH.) * figure 2 *	1,4,10	
A	US-A-3 269 548 (THE HOBART MANUFACTURING COMPANY) * column 3, line 73 - column 4, line 7; figure 4 *	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			A47L
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 20 March 1995	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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