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(54) **Multi-function shelf for dishwasher rack**

(57) A shelf for dishwasher rack includes a mobile member (2) mounted coplanar and rotatable on a carrying member (1), that also has a fixed portion on which cutlery supports (3) are formed, as well as adjustment means (4, 4a) to adjust the rotation of the mobile member (2) with respect to the carrying member (1) around a longitudinal axis (X). In this way, the flexibility of use of the rack is increased, allowing the user to optimally exploit

the loading capacity thereof depending on the number of cups and/or cutlery to be placed therein. In fact, if the shelf is intended to receive cups it is possible to rotate the mobile member (2) whereby the inclined position of the cups will prevent water stagnation on the bottom of the cups, whereas in order to receive cutlery the mobile member (2) is made coplanar with the carrying member (1).

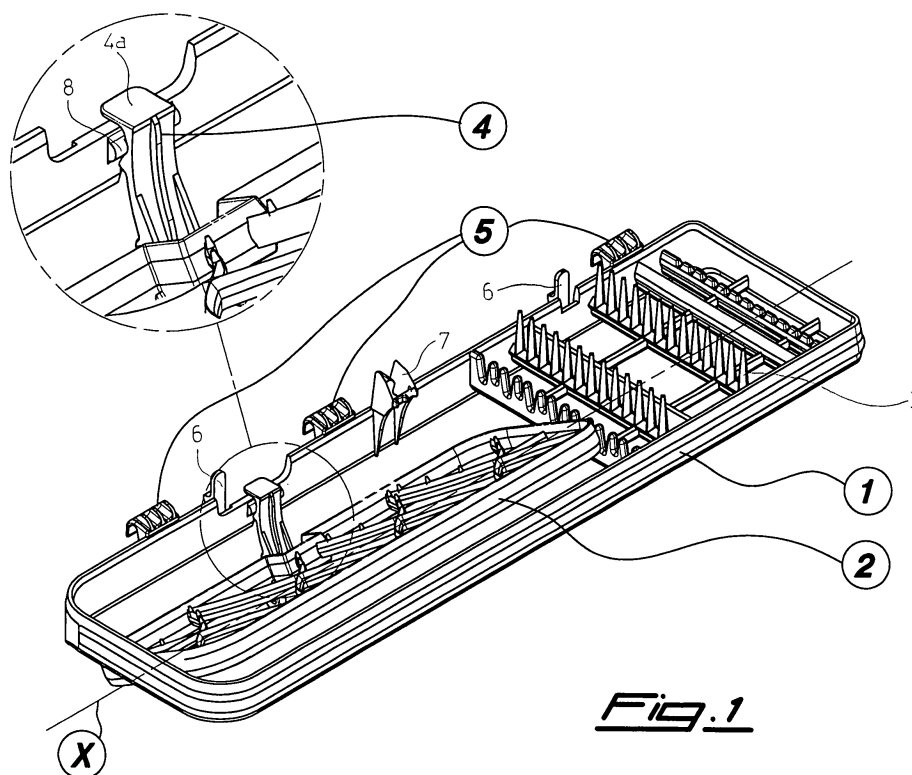


Fig. 1

Description

[0001] The present invention relates to dishwashing machines, and in particular to a multi-function shelf for dishwasher rack.

[0002] It is known that dishwasher racks are usually made from metal wires coated with plastic and welded together so as to form a supporting structure for the dishes. In order to make the use of said racks more flexible, mobile or removable supports are often provided which allow to change the exploitation of the rack according to the need of the moment.

[0003] An example of such a flexibility of use is found in the upper rack which is usually intended to receive the smaller dishes such as cups, glasses and the like. In order to fully exploit its height, there is usually provided a cup-supporting shelf extending along one or both sides of the rack and located at such a level as to allow the positioning of the glasses under the shelf. Said shelf may also be used to place thereon large-size cutlery such as kitchen knives, kitchen spoons and the like, or even standard cutlery if the shelf is shaped as a cutlery grid or provided with cutlery supports.

[0004] The shelf can be made as a separate insert to be applied to the rack or as a rack component, and possibly as a tip-up shelf. Regardless of the selected arrangement, when the shelf is in the operating position it has a small inclination with respect to the horizontal so as to allow the placement thereon of both cups and cutlery, either large- or standard-sized.

[0005] With this known arrangement, however, there is the drawback that in the recess usually present on the cup bottom water stagnation occurs, that inevitably remains even after the drying step which therefore does not provide optimal results. On the other hand, a greater inclination of the shelf would make it poorly suitable to receive cutlery and could uselessly reduce the loading capacity thereof.

[0006] Therefore the object of the present invention is to provide a shelf for dishwasher rack which overcomes the above-mentioned drawbacks.

[0007] This object is achieved by means of a shelf wherein a mobile member is mounted coplanar on a carrying member, the inclination of the mobile member with respect to the carrying member being adjustable around a longitudinal axis of the shelf.

[0008] The main advantage of the present shelf is that of increasing the flexibility of use of the rack, so as to allow the user to optimally exploit the loading capacity thereof depending on the number of cups and/or cutlery to be placed therein. In fact, if the shelf is intended to receive cups it is possible to rotate the mobile member whereby the inclined position of the cups will prevent water stagnation, whereas in order to receive cutlery the mobile member is made coplanar with the carrying member.

[0009] Another advantage of this shelf, in its preferred embodiment, stems from the possibility to remove it from

the rack if its presence is useless or to tip it upward to make easier the introduction and removal of the dishes to be placed under it.

[0010] Further advantages and characteristics of the shelf for dishwasher rack according to the present invention will be clear to those skilled in the art from the following detailed description of an embodiment thereof, with reference to the annexed drawings wherein:

Fig.1 is a perspective view, with an enlarged detail, showing the shelf with the mobile member at the maximum inclination;

Fig.2 is a front view of the shelf in the position of the previous figure;

Fig.3 is a perspective view similar to fig.1 showing the shelf mounted on a dishwasher rack and loaded with cups and cutlery;

Fig.4 is a front view of the shelf in the condition of the previous figure;

Fig.5 is a perspective view similar to fig.3 showing the shelf with the mobile member coplanar with the carrying member;

Fig.6 is a front view of the shelf in the condition of the previous figure;

Fig.7 is a perspective view similar to fig.5 showing how the shelf is tipped upward to place plates thereunder; and

Fig.8 is a front view of the shelf in the condition of the previous figure.

[0011] With reference to figs.1 and 2, there is seen that a shelf for dishwasher rack according to the present invention includes a carrying member 1 on which a mobile member 2 is mounted coplanar and rotatable around an axis X. In the illustrated embodiment, the mobile member 2 is pivoted between a peripheral frame of the carrying member 1 and a fixed portion of the latter, where cutlery supports 3 are formed. However, the mobile member 2 could take up the whole length of the carrying member 1 or it could be pivoted between two fixed portions of the latter.

[0012] The rotational position of the mobile member 2 with respect to the carrying member 1 is defined by adjustment means that in the illustrated embodiment consist of a flexible adjustment flap 4. Said flap 4 has at its top end a transverse lug 4a, that acts as an end stop by abutting on the carrying member 1, and is joined at its bottom end to the peripheral frame of the mobile member 2 through a flexible U-shaped connector 4c.

[0013] A recess 4b is formed at the plane of the mobile member 2 and is shaped to mate a relief 8 formed on the inner side of the peripheral frame of the carrying member 1 at the plane of the fixed portion of the latter. In this way, the position of the mobile member 2 with respect to the carrying member 1 can be adjusted between a null angle, when recess 4b engages relief 8, and an angle of about 30° when lug 4a is in abutment as indicated in the enlarged detail of fig.1.

[0014] Obviously, it would be possible to provide further lock positions at different angles, even greater than 30°, depending on the size of the shelf, the rack and the dishwasher tank.

[0015] Said shelf is preferably pivoted onto the rack through hooks 5, having an inverted U shape, that are snap-mounted on a lateral horizontal wire of the rack which acts as rotation axis Y. The substantially horizontal position of the shelf is maintained by lower end stops 6 abutting against the same horizontal wire from below and also acting as release clips for the removal of the shelf. In order to obtain a practical tip-up shelf, there is also preferably provided a top grip 7 suitable to engage a lateral vertical wire of the rack.

[0016] In the light of the description above, the ease and flexibility of use of the present shelf are readily understood.

[0017] Figures 3 and 4 show the shelf illustrated in figures 1 and 2 mounted on a rack R, with the mobile member 2 rotated with respect to the carrying member 1. In this way, three cups C can be placed in an inclined position on member 2 without having water remain on their bottoms at the end of the drying step, while the fixed portion of member 1 receives a plurality of small spoons S.

[0018] As mentioned above, in the absence of cups the shelf can be used to receive cutlery of various sizes such as a ladle L and knives K, as shown in figures 5 and 6. In this case, members 1 and 2 are aligned on the same plane and the adjustment flap 4 partially projects above said plane.

[0019] Finally, figures 7 and 8 show how the shelf can be tipped up by rotating it around axis Y and then locked in the raised position by means of grip 7 that engages a lateral vertical wire of rack R. In this way, the user can conveniently introduce and remove the plates P to be placed under the shelf, with no need to hold it raised or remove it.

[0020] It is clear that the above-described and illustrated embodiment of the shelf for dishwasher rack according to the invention is just an example susceptible of various modifications. In particular, the size and arrangement of the mobile member 2 may change, as previously mentioned, and the mechanism for mounting and rotating the shelf on rack R may be made in various ways according to specific manufacturing needs, same as the mechanism for the adjustment of the rotation of the mobile member 2 with respect to the carrying member 1.

Claims

1. Shelf for dishwasher rack, **characterized in that** it includes at least one mobile member (2) mounted coplanar on a carrying member (1), as well as adjustment means to adjust the rotation of said mobile member (2) with respect to said carrying member (1) around a longitudinal axis (X) of the shelf.

2. Shelf for dishwasher rack according to claim 1, **characterized in that** the carrying member (1) has at least one fixed portion on which cutlery supports (3) are formed.

3. Shelf for dishwasher rack according to claim 1 or 2, **characterized in that** the rotation adjustment means of the mobile member (2) consist of a flap (4) provided at the top end with a transverse lug (4a) suitable to act as an end stop by abutting on the carrying member (1), and a recess (4b), formed at the plane of the mobile member (2) and suitable to engage a relief (8) formed on the carrying member (1), said flap (4) being joined at its bottom end to the mobile member (2) through a flexible U-shaped connector (4c).

4. Shelf for dishwasher rack according to the preceding claim, **characterized in that** it includes further lock positions at different angles.

5. Shelf for dishwasher rack according to one of the preceding claims, **characterized in that** the maximum angle of rotation of the mobile member (2) with respect to the carrying member (1) is about 30°.

6. Shelf for dishwasher rack according to one of the preceding claims, **characterized in that** it further includes hooks (5), having an inverted U shape, for the snap-mounting on a lateral horizontal wire of the rack, as well as lower end stops (6) abutting against the same horizontal wire from below and also acting as release clips for the removal of the shelf.

7. Shelf for dishwasher rack according to one of the preceding claims, **characterized in that** it further includes a top grip (7) suitable to engage a lateral vertical wire of the rack.

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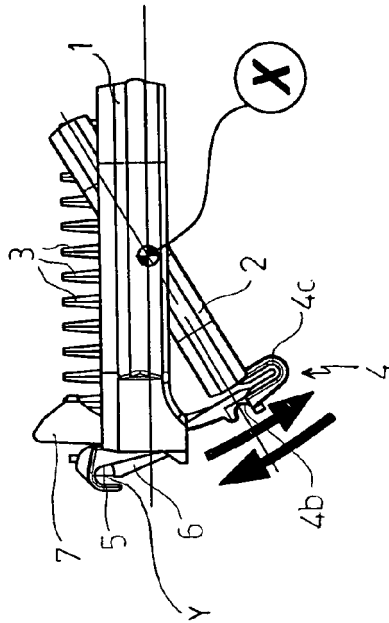


Fig. 2

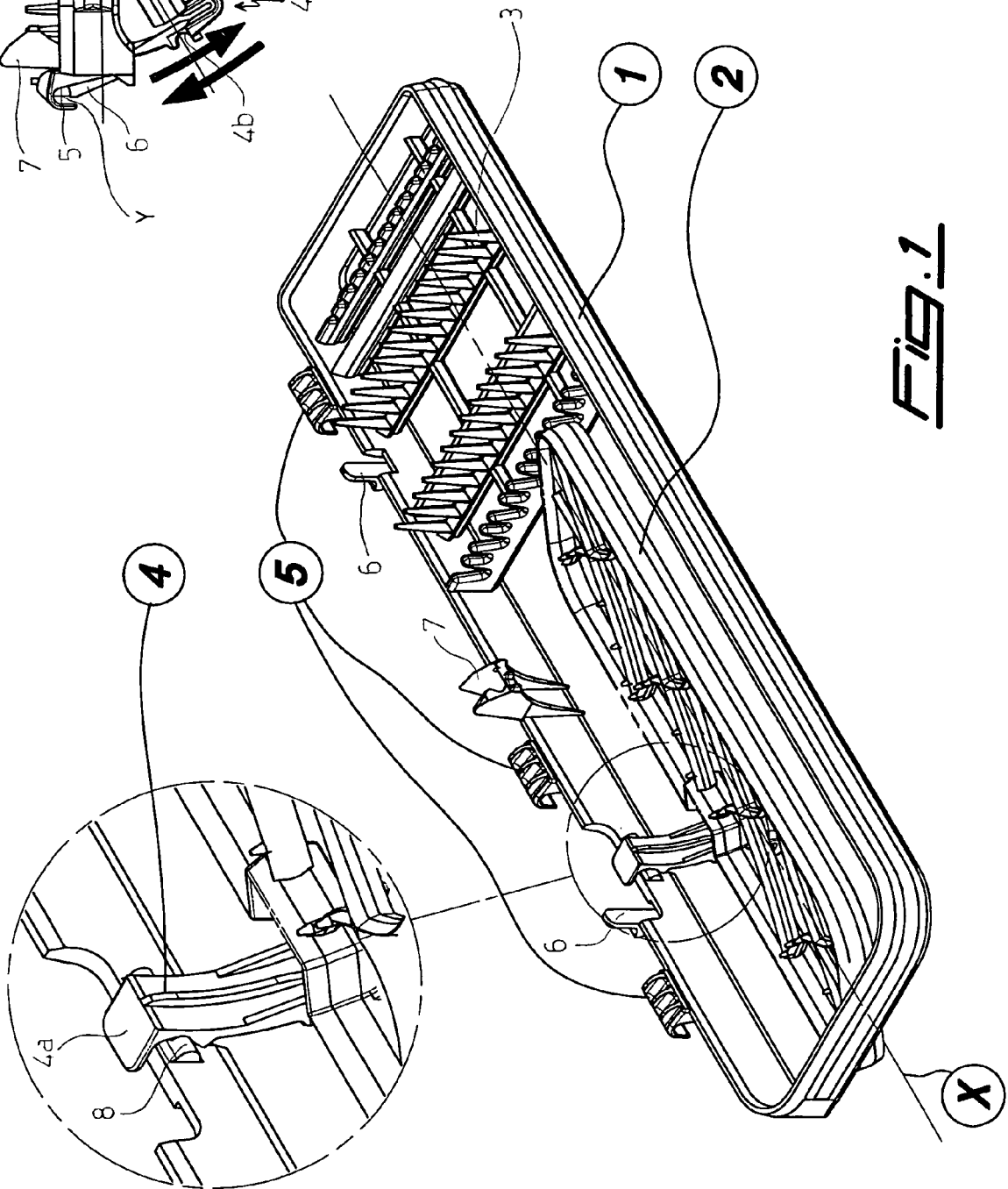


Fig. 1

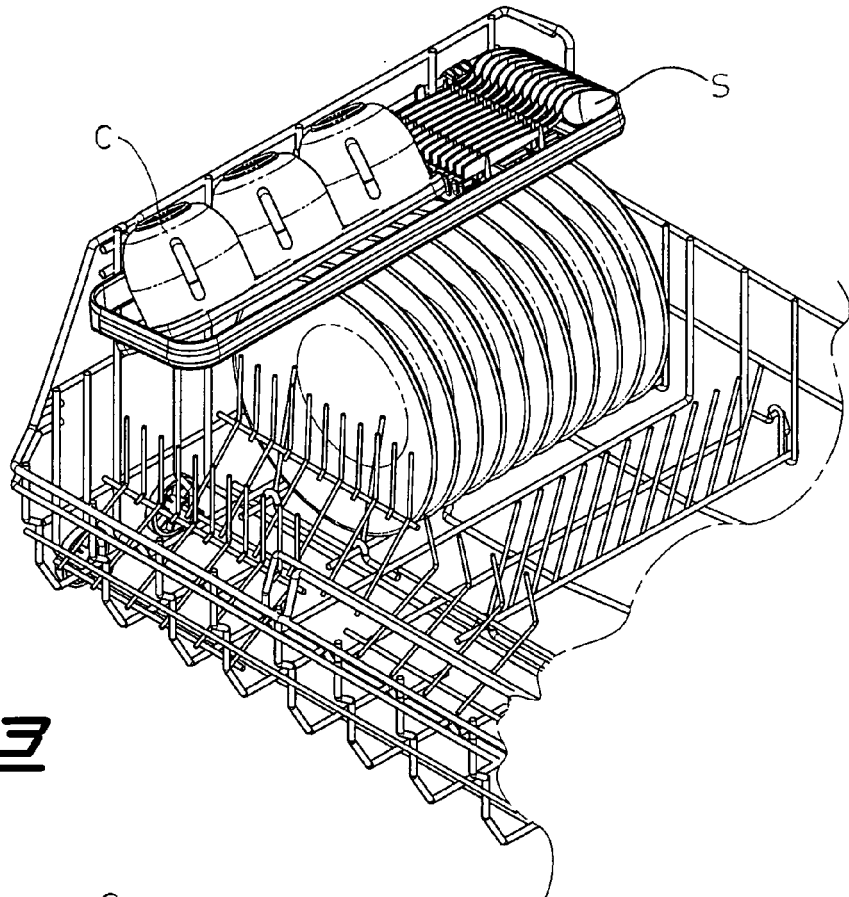


Fig. 3

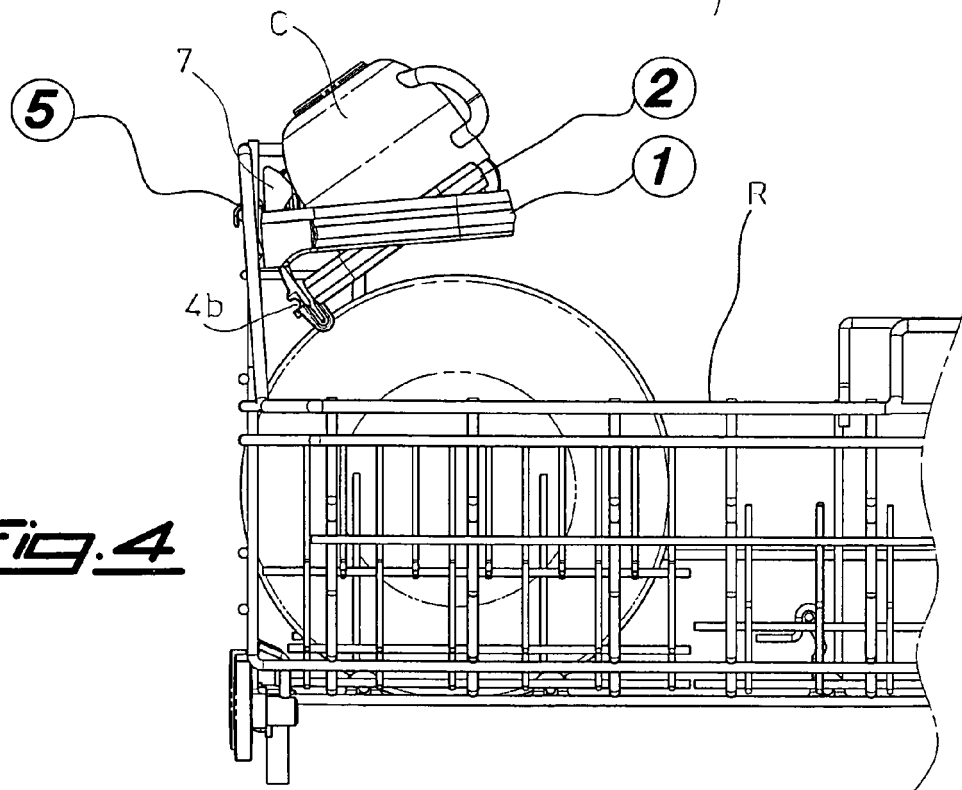


Fig. 4

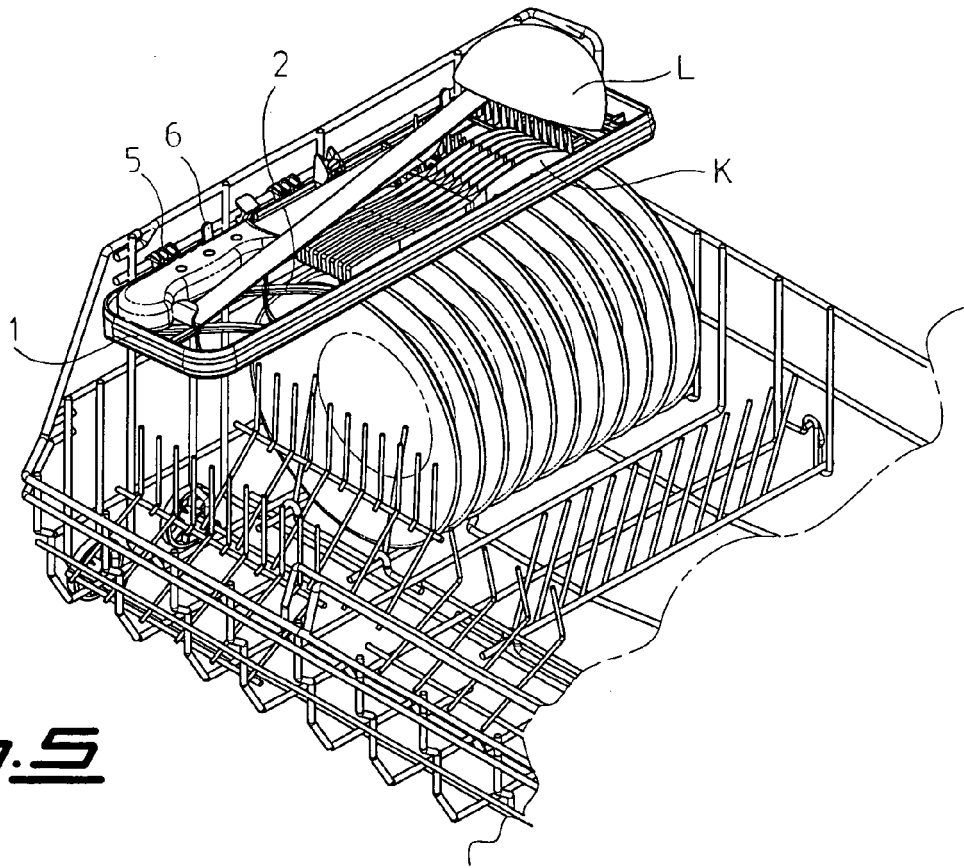


Fig. 5

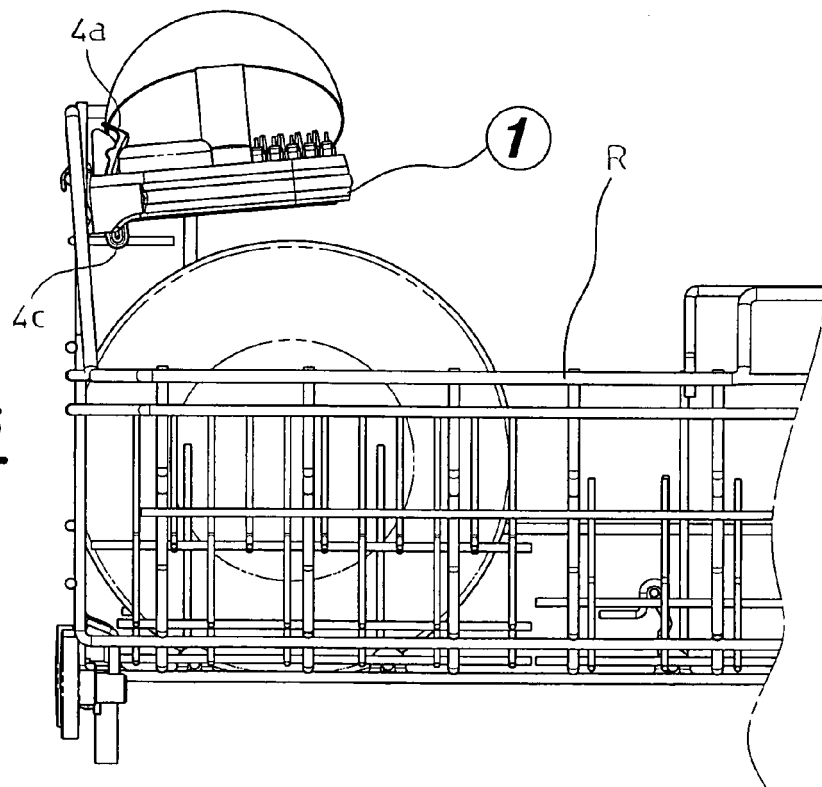


Fig. 6

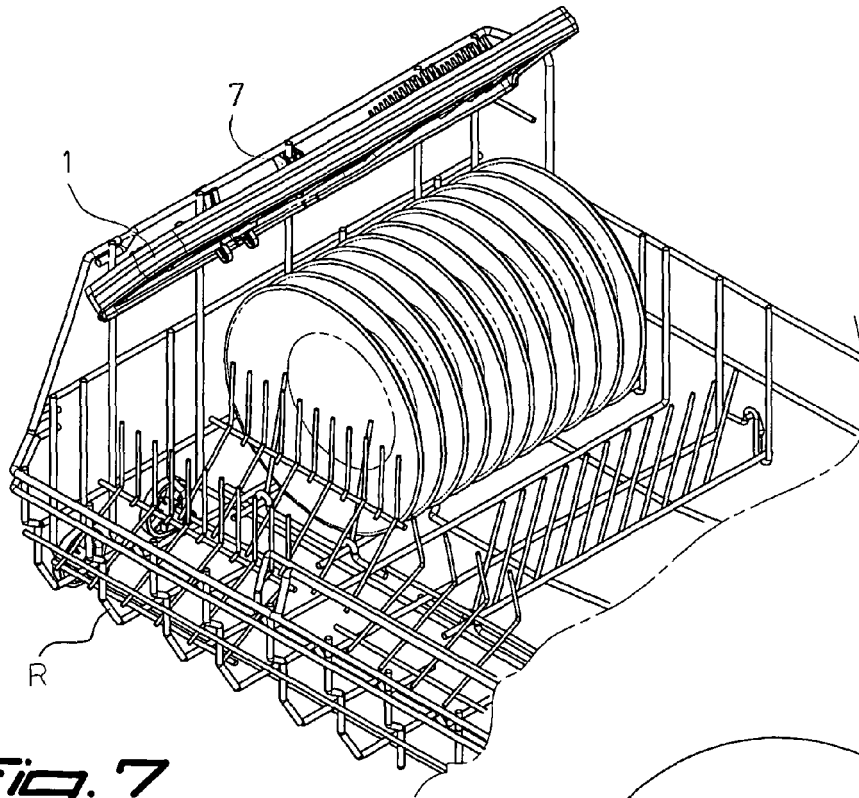


Fig. 7

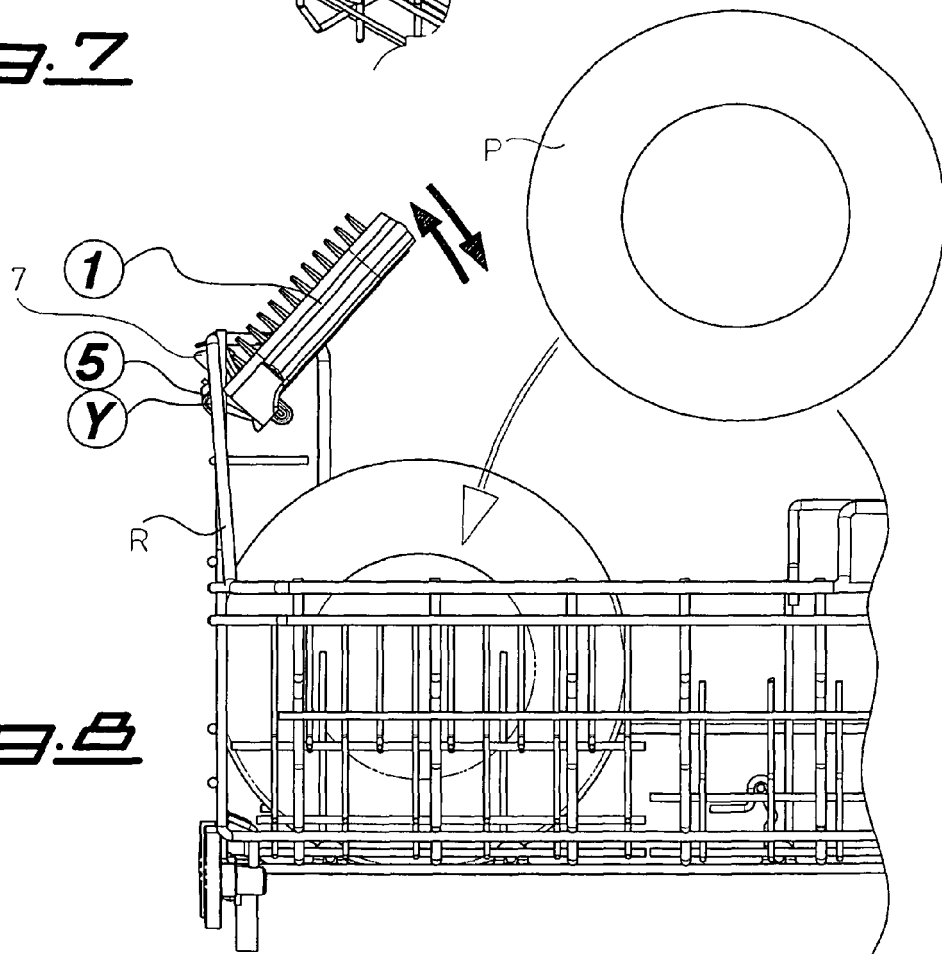


Fig. 8



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 06 42 5354

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 13 October 2006	Examiner Lopez Vega, Javier
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 06 42 5354

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The members are as contained in the European Patent Office EDP file on
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