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Description

The present invention relates to a dishwashing machine having a rectangular base, with one dimension of the washing chamber substantially bigger than the other, comprising all the elements as known for its operation.

To uniform the style of composable kitchen elements, the manufacturers of household appliances endeavour to introduce such products on the market that may comply more and more with the users' requirements. This is why at retailer shops it is possible to see more and more household appliances of different size, different colour tones, featuring details of undoubtful esthetic taste or bearing glamorous fashion names that increase the value of appliances.

The present invention relates to a dishwashing machine with one dimension of the washing chamber substantially bigger than the other, eg. with its depth bigger than its width. The problem characterizing the machines of this type is that the rectangular shape of the washing chamber, seen in plan view, does not let the spraying arms to reach evenly each part of the chamber internal space, thus affecting the washing results of the crockery.

As known, the document EP-A-0 278 371 describes a dishwashing machine having a rectangular base, which in its front view shows a convex line along the washing chamber sides near the lower arm.

This achievement has the purpose of providing a lower arm that is longer than the upper one, which would not be achievable should the chamber sides be perpendicular all over their length, as in this case the motion of the lower arm would be hindered by said chamber walls. Therefore, it is the aim of said European Patent application to have the lower arm increasing, through its diameter, the washing capacity in the washing chamber depth, since an arm with a diameter slightly smaller than the width of said washing chamber would not achieve it.

However, said Patent application entails considerable problems both of constructive and cost-effect nature, among which the most significant and obvious ones are as follows:

- construction of the washing chamber causes considerable manufacturing difficulties due to its special configuration;
- the manufacturing costs for the washing chamber are higher if compared to standard machines;
- the small space increase achievable through a convex configuration is not such yet to allow construction of a very deep washing chamber without falling back into the known inconveniences for this type of dishwashing

machines.

There is also known from FR-A- 2 243 671 a dishwashing machine with a washing chamber and means for spraying a washing fluid within said chamber, comprising an element showing at least one spraying hole, said element being mounted in a way to present combined movements of rotation and revolution, so that said hole is moved along a continuous epicyclical path meandering within internal and external limits. The described machine requires a complicated mechanical arrangement.

Therefore the purpose of the present invention is to provide an improved dishwashing machine, relatively simple and reasonable in cost, which nevertheless allows an even washing result all over the washing chamber without any of the inconveniences mentioned above.

To achieve said purpose it is the aim of the present invention to realize a dishwashing machine having a rectangular base and comprising all elements as known for its operation, including a washing chamber, upper and lower spraying arms, and upper and lower baskets, to hold the crockery, characterised in that one dimension of the rectangular base is substantially bigger than the other, the spraying arms rotate around fixed axes which are located in the washing chamber in a non-coaxial manner, and are out of alignment at least with respect to the bigger dimension of the chamber, so that one of the two spraying arms cooperates with the other arm by spraying also the basket associated to said other arm.

Further aims and advantages of the present invention are clearly described in the following detailed description and annexed drawings, where:

- Fig. 1 is a side sectional view of a dishwasher achieved according to the present invention;
- Fig. 2 is a top view of the dishwasher according to the present invention, showing specifically the spraying arms.

In Fig. 1, where a side sectional view of the dishwashing machine achieved according to the invention is shown, number 1 indicates the washing chamber of the dishwasher containing two baskets to hold the crockery, namely an upper one 2 and a lower one 3. Beneath said baskets 2 and 3 there are two spraying arms, 4 and 5 respectively, provided with outlet holes for the washing fluid; said holes are obtained on the upper surface 6, on the lower surface 7 and on the ends 8 of the upper spraying arm 4, and likewise on 9, 10, 11 of the lower spraying arm 5.

As shown in the figure, spraying arms 4 and 5 are located on two different axes 12 and 13, respectively.

Fig. 2, showing a top view of the dishwasher without the baskets 2 and 3, gives a better view of

how axes 12 and 13 of the upper arm 4 and lower arm 5 are differing; moreover, the circumferences 14 and 15 generated by the vertices of said arms 4 and 5 are clearly visible.

It will be noted that the two rotating axes 12 and 13 of spraying arms 4 and 5 are out of alignment with respect to both the side and depth of the washing chamber 1. Thus, as can be seen from the circumferences 14 and 15 generated by the arms 4 and 5, also the chamber corners are reached by the water jets of the spraying arms.

Fig. 2, reporting the reference numbers of Fig. 1, brings to evidence the rectangular base of the washing chamber 1, where numbers 16a and 16b indicate the side walls, 17 the front door and 18 the back wall; an arm 19 on the side wall is foreseen to support the spraying arm 4.

According to the present invention, the spraying arms 4 and 5 can achieve a good washing result of the crockery placed on the baskets 2 and 3 through the jets of the washing fluid coming out of the holes 6, 7, 8, 9, 11. This result is obtained by the non-coaxial arrangement of said spraying arms, which covers the spaces of the washing chamber 1 otherwise difficult to reach. Washing action is also increased by the special presence of the holes 7, through which the detergent fluid coming from the upper spraying arm 4 is spraying onto the crockery placed on the lower basket 3, whereas the holes 10 are intended for the cleaning of the filter located in the base 20 of the dishwashing machine through the action of the spraying jets coming from the lower spraying arm 5.

The characteristics of the dishwashing machine described above are clearly illustrated in the description and annexed drawings.

Likewise also the advantages of the improved dishwashing machine according to the present invention are clear.

Specifically, they are represented by:

- the possibility of increasing the depth of the washing chamber 1, however without detriment for the washing results;
- its simple achievement in view of the manufacturing procedures;
- its low cost as the standard shape of the washing chamber does not need to be changed.

It is obvious that for the man skilled in the art many other changes to the dishwashing machine described by way of example are possible, however without departing from the scope of the innovating criteria inherent to the present invention as defined in the appended claims.

By way of example it is suggested the possibility of a different arrangement of the upper spraying arm 4 instead of locating it on an arm 19, eg. to receive the washing fluid from above though keep-

ing its non-coaxial position against the lower spraying arm 5.

A further version may consist of a different arrangement of the crockery supports in the baskets. For instance, a part of the lower basket 3 could have its supports arranged with a different orientation from the one described in Fig. 1, selecting an inclination angle that allows an excellent spraying on the crockery from both spraying arms. To this purpose it is suggested that orientation of the crockery supports in the lower basket 3 be selected in such a way that on the crockery touched by the jets of washing fluid no shaded areas are left in respect to the upper arm 4 and the lower one 5.

Claims

1. Dishwashing machine having a rectangular base and comprising all elements as known for its operation, including a washing chamber (1), upper and lower spraying arms (4, 5), and upper and lower baskets (2, 3), to hold the crockery, characterised in that one dimension of the rectangular base is substantially bigger than the other, the spraying arms (4, 5) rotate around fixed axes (12, 13) which are located in the washing chamber (1) in a non-coaxial manner, and are out of alignment at least with respect to the bigger dimension of the chamber (1), so that one (4) of the two spraying arms cooperates with the other arm (5) by spraying also the basket (3) associated to said other arm (5).
2. Dishwashing machine according to claim 1, characterised in that the two rotating axes (12, 13) are out of alignment also with respect to the smaller dimension of the chamber (1).
3. Dishwashing machine according to claim 1 or 2, characterised in that said spraying arms (4, 5) are provided with a set of holes (6, 7, 8, 9, 10, 11) for the spraying of the crockery placed in the baskets (2, 3), said holes being so arranged to cover the space of the washing chamber (1) in a substantially even manner with the jets of washing fluid.
4. Dishwashing machine according to any of the preceding claims, characterised in that some holes (7) are provided in the lower surface of the upper spraying arm (4) so as to cooperate in the washing of the crockery arranged in the lower basket (3).
5. Dishwashing machine according to any of the preceding claims, characterised in that said

lower spraying arm (5) is provided with some holes (10) in its lower surface.

6. Dishwashing machine according to any of the preceding claims, characterised in that the crockery supports in the lower basket (3) are oriented in such a way that on the crockery reached by the jets of the washing fluid no shaded areas are left in respect to the upper arm (4) and the lower arm. (5).

Patentansprüche

1. Geschirrspülmaschine mit einem rechteckförmigen Basisteil und aufweisend alle für ihre Funktion bekannten Elemente, einschließlich einer Spülkammer (1), oberen und unteren Sprüharmen (4, 5) und unteren und oberen Körben (2, 3) zum Halten des Geschirrs, dadurch gekennzeichnet, daß eine Abmessung des rechteckförmigen Basisteils wesentlich größer als die andere ist, daß die Sprüharme (4, 5) sich um feste Achsen (12, 13) drehen, die in der Spülkammer (1) in nicht coaxialer Weise und nicht fluchtend, zumindest bezogen auf die größere Abmessung der Kammer (1), angeordnet sind, so daß einer (4) der beiden Sprüharme mit dem anderen Arm (5) zusammenwirkt, indem er auch den dem anderen Arm (5) zugeordneten Korb (3) besprüht.
2. Geschirrspülmaschine nach Anspruch 1, dadurch gekennzeichnet, daß die beiden Drehachsen (12, 13) auch in bezug auf die kleinere Abmessung der Kammer (1) nicht fluchtend angeordnet sind.
3. Geschirrspülmaschine nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß die Sprüharme (4, 5) mit einem Satz Löchern (6, 7, 8, 9, 10, 11) zum Besprühen des in den Körben (2, 3) angeordneten Geschirrs versehen und die Löcher so angeordnet sind, um den Raum in der Spülkammer (1) wesentlich gleichmäßig mit den Strahlen der Spüllösung abzudecken.
4. Geschirrspülmaschine nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß einige Löcher (7) in der Unterseite des oberen Sprüharms (4) vorgesehen sind, um beim Spülen des Geschirrs in dem unteren Korb (3) mitzuwirken.
5. Geschirrspülmaschine nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß der untere Sprüharm (5) mit einigen Löchern (10) in seiner Unterseite versehen ist.

6. Geschirrspülmaschine nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß die Geschirrräger in dem unteren Korb (3) derart orientiert sind, daß auf dem von den Sprühstrahlen erreichten Geschirr keine übergangenen Bereiche in bezug auf den oberen Arm (4) und der unteren Arm (5) verbleiben.

Revendications

1. Lave-vaisselle ayant une base rectangulaire et comprenant tous les éléments connus pour son fonctionnement qui comportent une chambre de lavage (1), des bras supérieur et inférieur (4, 5) de pulvérisation et des paniers supérieur et inférieur (2, 3) destinés à contenir la vaisselle, caractérisé en ce qu'une première dimension de la base rectangulaire est nettement supérieure à l'autre, les bras de pulvérisation (4, 5) tournent autour d'axes fixes (12, 13) qui sont placés dans la chambre de lavage (1) de manière non coaxiale et ne sont pas alignés au moins sur la plus grande dimension de la chambre (1), si bien que l'un (4) des deux bras de pulvérisation coopère avec l'autre bras (5) par pulvérisation aussi sur le panier (3) associé à l'autre bras (5).
2. Lave-vaisselle selon la revendication 1, caractérisé en ce que les deux axes de rotation (12, 13) présentent aussi un défaut d'alignement par rapport à la petite dimension de la chambre (1).
3. Lave-vaisselle selon la revendication 1 ou 2, caractérisé en ce que les bras de pulvérisation (4, 5) ont un ensemble de trous (6, 7, 8, 9, 10, 11) destinés à arroser la vaisselle placée dans les paniers (2, 3), les trous étant disposés afin qu'ils recouvrent l'espace de la chambre de lavage (1) de manière pratiquement uniforme avec les jets de fluide de lavage.
4. Lave-vaisselle selon l'une quelconque des revendications précédentes, caractérisé en ce que certains trous (7) sont formés à la face inférieure du bras supérieur (4) de pulvérisation afin qu'ils coopèrent au lavage de la vaisselle placée dans le panier inférieur (3).
5. Lave-vaisselle selon l'une quelconque des revendications précédentes, caractérisé en ce que le bras inférieur de pulvérisation (5) a certains trous (10) à sa face inférieure.
6. Lave-vaisselle selon l'une quelconque des revendications précédentes, caractérisé en ce

que les supports de vaisselle placés dans le panier inférieur (3) ont une orientation telle qu'il ne reste aucune zone sur la vaisselle qui ne soit pas atteinte par les jets de fluide de lavage pour le bras supérieur (4) et le bras inférieur (5).

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Fig. 1

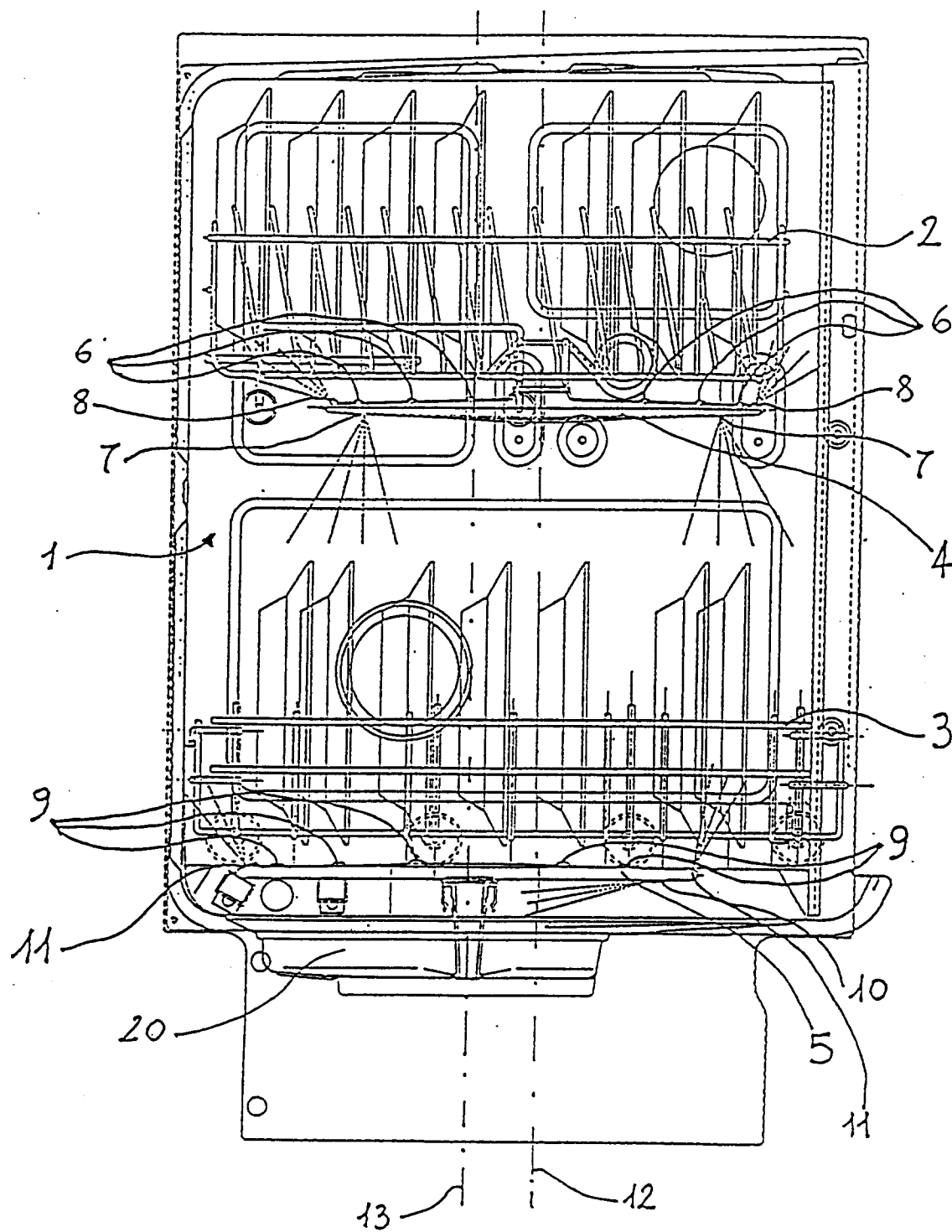


Fig. 2

