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54 **Device for a dishwasher.**

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Description

This invention relates to a door for a household appliance, in particular for a dishwasher, where the door is pivotable about a lower horizontal axis and comprises a box shaped shell having two opposite side edges each being fixed to a hinge part.

Doors of the abovementioned type are previously known and usually comprise two sheet metal door halves, one inner and one outer, which are combined to a comparatively thick, box shaped, shell comprising containers for detergents and rinsing agents, sound absorbing material, electric installations, door locks and so on. In order to fasten the door to the machine there is at the lower part of each side of the door a hinge part. This hinge part is usually fixed to the side edge of the door by means of screws.

A door structure of the abovementioned type has certain drawbacks. The door often tends to be flappy because the two door halves are not firmly fixed to each other but have too much play at the points where they are joined. This in turn might cause difficulties in sealing the door against the tub.

In order to increase the stiffness of the door it has been suggested to use reinforcing elements such as beams or tubes which are welded to one of the door halves. Such welding operations on the free metal plates of the door halves means surface treatment problems and a risk for corrosion attacks at the welding points. Because of the open structure and the play at the points where the door halves are joined the parts of the door which are placed at a distance from the reinforcing part, such as the two hinge parts, are turnable with respect to each other despite the reinforcing element which means that there is a risk that the door becomes distorted.

It has been suggested - see DE 3,541,789 - to use an L-shaped bar extending from one side of the door to the other, the bar at each side being bent so that a hinge part is formed. The purpose is however not to reinforce the door but to create a seat for a sealing arrangement. The publication does not reveal how the bar is fixed to the door. If it is welded there are the same drawbacks, with regard to surface treatment problem, as has been described above and if screws or rivets are used there is a risk for play at the joints and also a negative influence on the door appearance. The L-shaped structure is neither sufficiently torsion stiff between the hinge parts with a reasonable material thickness of the bar. Further, the bar does not extend all the way between the side edges of the door which also bears a negative influence on the stiffness of the door.

It has also been suggested to use doors for ovens, see DE-A-2,205,488, where the door is pivotable about a lower horizontal axis and comprises a box shaped shell having two opposite side edges each being fixed to a hinge part. Even if this patent relates

to the solution of quite another problem the design of the door has been taken as a basis for the preamble of claim 1.

The purpose of this invention is to construct a door which is almost totally stiff and this is achieved by means of a door having the characteristics mentioned in the claims.

An embodiment of the invention will now be described with reference to the accompanying drawings wherein Fig. 1 shows in perspective view a dishwasher having a door which is folded down whereas Fig. 2 is a perspective view of the lower part of the door with its hinge part being folded up.

As appears from Fig. 1 a dishwasher 10 as usual has a door 11 for a tub 12 in which baskets 13 for the dish and one or several wash arms 14 spraying water on the dish are indicated. The door encloses a container 15 for a detergent and a container 16 for a rinsing agent. The door is by means of a hinge part 17 at each side edge of the door pivotally supported on dowels, not shown, fastened to the dishwasher so that the door can be turned about a horizontal axis A and be balanced by spring means, not shown.

The hinge part 17 of the door forms a bracket which has a U-profile with a fastening plate 18 with holes (19) for screws which are used to fix the side edges of the door halves of which the door is made, to the hinge part the door being indicated by the dash-dotted lines in Fig. 2. The hinge part also comprises an arm 20 having a U-shaped bearing surface 21 intended to rest on the dowels which are provided at the dishwasher so that the door can be turned about the axis A. The outer part of the arm has fastening means 22 for a spring, not shown, by means of which the door can be balanced.

Between the two hinge parts 17 extends a tube 23, said tube being fixed to the fastening plates 18, for instance by welding which means that the two hinge parts 17 with the fastening plate 18 form a totally stiff construction serving as a frame for the two door halves which enclose the tube 23. By means of this construction the assembled door displays a stiffness which by far exceeds previously known door constructions for dishwashers.

Claims

1. Door (11) for a household appliance, in particular for a dishwasher (10), where the door (11) is pivotable about a lower horizontal axis (A) and comprises a box shaped shell having two opposite side edges each being fixed to a hinge part (17), **characterized** in that the two hinge parts (17) are firmly connected to each other by means of a torsion stiff element (23) extending over the width of the door (11) and being enclosed by the shell.

2. Door according to claim 1, **characterized** in that each hinge part (17) comprises a bracket at which the side edges of the door are fastened.
3. Door according to claim 1 or 2, **characterized** in that said element (23) comprises a beam preferably a tubeshaped beam.
4. Door according to any of the preceding claims, **characterized** in that the hinge part (17) consist of a mainly U-shaped profile with a fastening plate (18) for the shell of the door and an arm (20) forming the pivot point (21) for the hinge part.
5. Door according to claim 4, **characterized** in that the arm (20) is provided with a fastening point (22) for a spring means for balancing the door.

Patentansprüche

1. Tür (11) für Haushaltsgeräte, insbesondere für eine Geschirrspülmaschine (10), wobei die Tür (11) um eine untere horizontale Achse (A) schwenkbar ist und einen kastenförmigen Mantel aufweist, dessen zwei sich gegenüberliegende Seiten jeweils an einem Scharnierteil (17) befestigt sind, **dadurch gekennzeichnet**, daß die beiden Scharnierteile (17) mittels eines sich über die Breite der Tür (11) erstreckenden torsionssteifen Elements (23) miteinander fest verbunden und von dem Mantel umgeben sind.
2. Tür gemäß Anspruch 1, **dadurch gekennzeichnet**, daß jedes Scharnierteil (17) mit einem Winkelstück versehen ist, an dem die Seitenkanten der Tür befestigt sind.
3. Tür gemäß Anspruch 1 bzw. 2, **dadurch gekennzeichnet**, daß das Element (23) aus einer vorzugsweise röhrenförmigen Stange besteht.
4. Tür gemäß einem der obigen Ansprüche, **dadurch gekennzeichnet**, daß das Scharnierteil (17) aus einem vorwiegend U-förmigen Profil mit einer Befestigungsplatte (18) für den Mantel der Tür sowie aus einem die Schwenkachse (21) für das Scharnierteil bildenden Arm (20) besteht.
5. Tür gemäß Anspruch 4, **dadurch gekennzeichnet**, daß der Arm (20) Mittel (22) zur Befestigung einer Federvorrichtung aufweist, die zum Massenausgleich der Tür dienen.

Revendications

1. Porte (11) pour un appareil ménager, notamment

pour un lave-vaisselle (10) où la porte (11) peut pivoter sur un axe horizontal inférieur (A) et comprend une enveloppe en forme de boîte ayant deux bords latéraux opposés étant chacun fixé à une partie formant charnière (17), caractérisée en ce que les deux parties formant charnières (17) sont fermement reliées l'une à l'autre au moyen d'un élément rigide résistant à la torsion (23) s'étendant sur la largeur de la porte (11) et étant enfermé par l'enveloppe.

2. Porte selon la revendication 1, caractérisée en ce que chaque partie formant charnière (17) comprend une patte à laquelle les bords latéraux de la porte sont fixés.
3. Porte selon la revendication 1 ou 2, caractérisée en ce que ledit élément (23) comprend une poutre, de préférence une poutre en forme de tube.
4. Porte selon l'une quelconque des revendications précédentes, caractérisée en ce que la partie formant charnière (17) est constituée d'un profilé ayant principalement la forme d'un U avec une plaque de fixation (18) pour l'enveloppe de la porte et un bras (20) formant le point de pivotement (21) pour la partie formant charnière (17).
5. Porte selon la revendication 4, caractérisée en ce que le bras (20) est muni d'un point de fixation (22) pour un moyen à ressort pour équilibrer la porte.

