June 24, 1969 E. S. STODDARD 3,451,557

REMOVABLE ARTICLE SUPPORTING DEVICE FOR AUTOMATIC DISHWASHER RACK

Filed April 12, 1967 Sheet 1 of 2

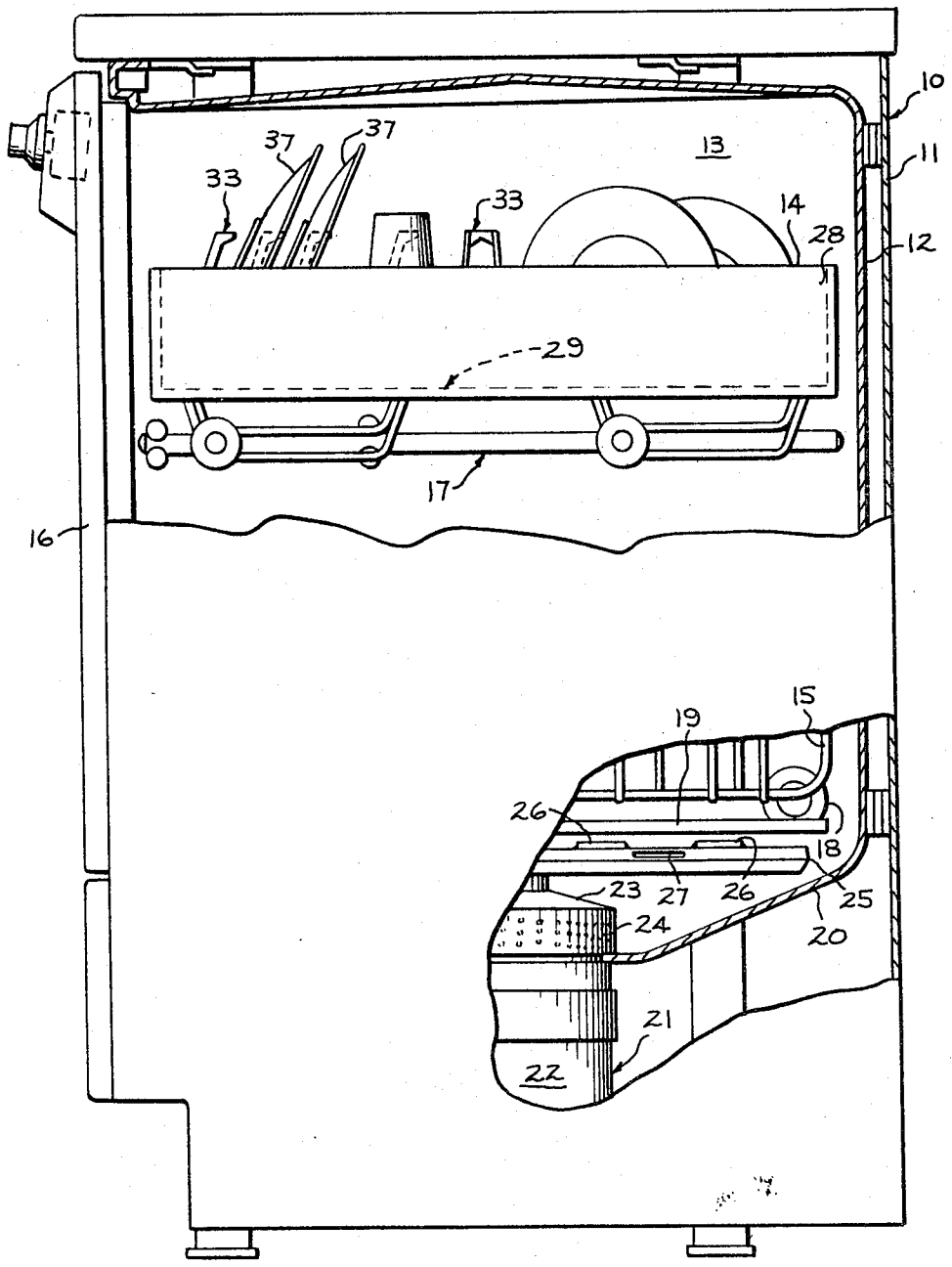


FIG. 1

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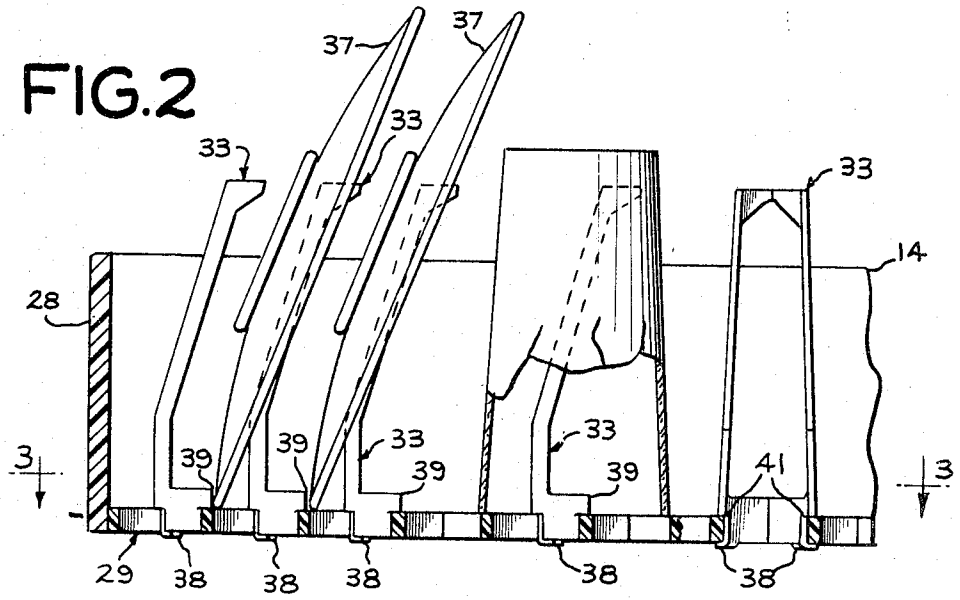
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FIG.2



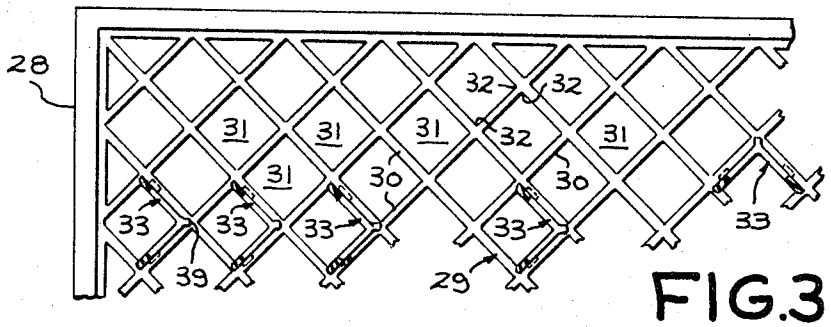


FIG.3

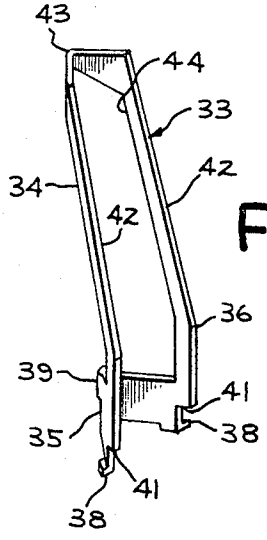


FIG.4

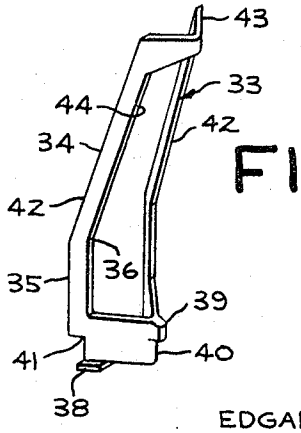


FIG.5

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REMOVABLE ARTICLE SUPPORTING DEVICE FOR AUTOMATIC DISHWASHER RACK

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Int. Cl. A47g 19/08
U.S. Cl. 211—41 13 Claims

ABSTRACT OF THE DISCLOSURE

A device removably secured to the grid-like base of a dishwasher rack to support against tipping articles resting on the base. The device has a lower portion adapted to extend into an opening in the base with tabs extending therefrom to engage the base and secure the device thereto. Resiliency of the device allows manual flexing to move the tabs out of engagement with the base to allow removal of the device from the base.

Background of the invention

The present invention may be employed with a conventional automatic dishwasher of the type normally used in the home. Such dishwashers generally include two dish-supporting racks, one spaced above the other, with a wash mechanism disposed below the lower rack to spray wash fluid up through the racks. Articles, such as plates, bowls, cups, glasses and cooking pans are supported within the racks in an attitude to facilitate washing thereof. A conventional dishwasher rack has a generally horizontally disposed foraminous base, or bottom wall. The base may be formed of wire elements welded together in criss-cross fashion or may be formed from a unitary plastic molding having a large number of openings therein. A plurality of upwardly projecting elements are permanently affixed to the base in spaced relationship to each other. The articles to be washed are inserted into the rack to rest on the base and the upwardly projecting elements maintain the articles in the proper attitude for washing. For example, a plate or a saucer is maintained substantially on its edge so that both surfaces of the plate or saucer will receive the desired action of the wash fluid issuing from the wash mechanism and the liquids will drain therefrom upon completion of the wash operation. Large bowls or cooking pans are generally placed in the rack upside down, as are glasses and cups. Frequently, however, some articles such as large bowls and cooking pans are not compatible with the upwardly projecting elements. That is, the upwardly projecting elements interfere with the article and prevent it from resting firmly on the base. As a result, the article may not assume, or remain in, the proper attitude to facilitate washing and draining thereof.

The present invention solves this problem by providing an improved article supporting device which will perform the function of the upwardly projecting elements, when desired, but which may be completely removed from the dish-supporting rack when articles, with which such upwardly projecting elements may interfere, are to be washed.

Summary of the invention

The present invention relates to an automatic dishwasher having a dish-supporting rack with a recticulated base. An article supporting device is provided and comprises an elongated member having an upper portion and a lower portion. The upper portion is adapted to contact and support against tipping articles resting on the base. The lower portion has means removably securing the member to the reticulated base.

In a specific embodiment, the base has a plurality of

openings and the article supporting device comprises an elongated member having an upper portion and a lower portion. The upper portion is adapted to contact and support against tipping articles resting on the base. The lower portion extends into one of the plurality of openings and has means to removably secure the member to the recticulated base.

In another specific embodiment, the base of the dish-supporting rack is formed by intersecting elements defining therebetween a plurality of openings, and the article supporting device comprises a V-shaped lower portion extending into one of the plurality of openings with the apex of the V fitting into the apex defined by the intersecting elements. At least one finger projects upwardly from the lower portion and is adapted to contact and support against tipping articles resting on the base. Means extend from the lower portion to contact the base and removably secure the device to the base.

Brief description of the drawings

While the specification concludes with claims particularly pointing out and distinctly claiming the subject matter which is regarded as the invention, it is believed the invention will be better understood from the following description of the preferred embodiment taken in connection with the accompanying drawings, in which:

FIGURE 1 is a side view, partially cut away to show details, of an automatic dishwasher employing the present invention;

FIGURE 2 is an enlarged fragmentary sectional view of one of the dish-supporting racks of the dishwasher of FIGURE 1;

FIGURE 3 is a view taken along line 3—3 of FIGURE 2;

FIGURE 4 is a perspective view of the preferred form of the article supporting device of the present invention; and,

FIGURE 5 is a perspective view of the article supporting device of FIGURE 4 from a different view point.

Description of the preferred embodiment

Referring now to the drawings, and initially to FIGURE 1 thereof, there is illustrated an automatic dishwasher **10** having an outer cabinet **11** and an inner cabinet **12**. Inner cabinet **12** defines a wash chamber **13** having dish-supporting racks **14** and **15** disposed therein. Door **16** provides access to wash chamber **13** by pivoting about a hinge (not shown) between a substantially vertical closed position, as illustrated in FIGURE 1, and a substantially horizontal open position. When door **16** is in its open position, dish-supporting racks **14** and **15** may be at least partially withdrawn from wash chamber **13**. Withdrawal of rack **14** is provided by a slide and roller system **17** which slidably supports rack **14** from inner cabinet **12**. Rack **15** is supported by a system which also allows withdrawal and comprises a plurality of rollers **18** which ride upon tracks **19** extending into wash chamber **13** from inner cabinet **12**, only one roller **18** and one track **19** being visible in FIGURE 1.

The lower extremity of wash chamber **13** is defined by a bottom wall **20** which supports a motor-pump assembly **21**. Motor-pump assembly **21** comprises an electric motor **22** and a pump **23**. Pump **23** has an inlet **24** through which wash fluid is drawn from the lower portion of wash chamber **13** to be propelled upwardly through a reaction type spray device **25** or out through an effluent discharge (not shown) connected to the normal household sewer system. Whether the fluid is pumped through spray device **25** or through the effluent discharge may be controlled either by a valve or by having pump **23** of the reversible type and electrically reversing the direction of rotation of motor **22**. Spray device **25** has a plurality of

orifices 26 to effectuate a wash action upon articles supported by racks 14 and 15 and an orifice 27 positioned to rotate spray device 25, about a substantially vertical axis, due to the reaction force of the fluid issuing from orifice 27.

The structure thus far described comprises a substantially conventional undercounter, or drop door, dishwasher. It is to be understood, of course, that the present invention is equally applicable to a portable dishwasher of the top opening variety or any other type employing a dish-supporting rack having a reticulated or grid-like base. Moreover, the structure as thus far described may vary considerably from that shown without seriously affecting the present invention as will become more evident as this description proceeds.

Referring more particularly now to FIGURES 2 and 3, it can be seen that rack 14 comprises a peripheral wall 28 extending upwardly from the periphery of a reticulated, or grid-like, base 29. Peripheral wall 28 is shown in the drawings as being imperforate; however, it would be within the spirit of the present invention, and in some applications desirable, to foraminate wall 28 to allow wash fluid to pass therethrough. Base 29 is formed by intersecting elements 30 defining therebetween a plurality of openings 31 through which wash fluid issuing from spray device 25 may pass to gain access to the articles supported by rack 14. Each opening 31 has an apex 32 formed by the intersection of elements 30.

A conventional rack of this general nature would additionally include a plurality of permanently affixed elements projecting upwardly normal to, and spaced throughout the entire area of, base 29. However, as discussed above, such permanently affixed upwardly projecting elements frequently interfere with the placement of large bowls or cooking pans into rack 14.

In accordance with the present invention, an improved supporting device 33 is provided which may be removably secured to rack 14 to serve the function of the permanently affixed upwardly projecting elements but which also may be removed to avoid interference with such articles as large bowls or cooking pans or whenever any other use of rack 14 may dictate the absence of upwardly projecting elements. Supporting device 33 comprises an elongated member having an upper portion 34 and a lower portion 35 with a bend 36 therebetween whereby upper portion 34 is slanted relative to lower portion 35. Upper portion 34 is adapted to contact, and support against tipping, articles resting on base 29 as illustrated in FIGURE 2 wherein plates 37 are shown supported in an attitude to facilitate washing and draining thereof. Lower portion 35 is adapted to extend into one of the openings 31 and is provided with means to removably secure device 33 to base 29. This means include tabs 38 which extend below base 29 and a tab 39 which extends above base 29. When device 33 is assembled on to base 29, as illustrated in FIGURES 2 and 3, elements 30 are sandwiched between tabs 38 and 39 to secure device 33 to base 29.

From the perspective views of FIGURES 4 and 5, it can be seen that device 33 is generally V-shaped along its axis of elongation throughout its entire length including lower portion 35. When device 33 is assembled onto base 29, the apex 40 of the V of lower portion 35 fits into apex 32 of openings 31. Lower portion 35 has cut-outs 41 opposite apex 40 and adjacent tabs 38. Due to the V-shape of lower portion 35, the upper edge of cut-out 41 overlies the upper surface of base 29 when device 33 is assembled thereto. This can be most clearly seen at the right hand extremity of FIGURE 2. This overlying relationship provides additional stability of device 33 relative to base 29.

Tabs 38 are spaced from apex 40 so that when lower portion 35 is flexed about apex 40, tabs 38 are brought into registry with the opening 31, and thus out of securing relationship with elements 30, to allow lower portion 35 to be removed from opening 31. Removal of device 33 from base 29 is thus effected. It is, therefore, desirable that device 33 be formed from material sufficiently resilient to allow the above-described flexing without a permanent set so that device 33 may be repeatedly inserted into or removed from base 29. Suitable material would include plastic compositions, stainless steel, or plain steel covered with a resilient corrosion resistant coating such as a polyvinyl chloride composition.

Upper portion 34 of device 33, as well as part of lower portion 35, may actually comprise two fingers 42 projecting upwardly from the lower portion in spaced relationship to each other with a web 43 interconnecting the distal ends of the fingers. Fingers 42 and web 43 define an elongated opening 44. Although the upper portion of device 33 may comprise only a single finger of relatively narrow width, as are fingers 42, it may be desirable to provide significant width of device 33 so that the contact with articles, such as plates 37, will be relatively stable. When such width is provided, device 33 may interfere with movement of wash fluid toward the articles being washed. The opening 44 allows wash fluid to pass through device 33 to contact the articles being washed.

The stability of the contact between device 33 and an article such as plate 37 is enhanced by the slant of upper portion 34. This slant provides substantially the same angular relationship to base 39 that plate 37 should assume in order to best facilitate washing thereof.

Thus it can be seen that the present invention provides an improved supporting device which will perform the function of conventional permanently affixed upwardly projecting elements, when desired, to support an article against tipping, but which may be completely removed from the dish-supporting rack when articles are to be washed with which such permanently affixed upwardly projecting elements may interfere.

As will be evident from the foregoing description, certain aspects of the invention are not limited to the particular details of construction of the example illustrated, and it is contemplated that various other modifications or applications will occur to those skilled in the art. It is therefore intended that the appended claims shall cover such modifications and applications as do not depart from the true spirit and scope of the invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. In an automatic dishwasher having a dish-supporting rack with a reticulated base, an article supporting device comprising:
   (a) an elongated member having an upper portion and a lower portion,
   (b) said upper portion being adapted to contact and support against tipping articles resting on said base,
   (c) said lower portion having means removably securing said member to said reticulated base, and
   (d) said member having spaced fingers defining an elongated opening therein to allow wash fluid to pass therethrough.

2. The invention of claim 1 wherein said elongated member has a bend therein whereby said upper portion is slanted relative to said lower portion.

3. In an automatic dishwasher having a dish-supporting rack with a grid-like base formed by intersecting elements defining therebetween a plurality of openings, an article supporting device comprising:
   (a) an elongated member having an upper portion and a lower portion,
   (b) said upper portion being adapted to contact and support against tipping articles resting on said base,
   (c) said lower portion extending into one of said plurality of openings and having means to removably secure said member to said grid-like base, and
   (d) said member having spaced fingers defining an elongated opening therein to allow wash fluid to pass therethrough.

4. The invention of claim 3 wherein said elongated

member has a bend therein whereby said upper portion is slanted relative to said lower portion.

5. The invention of claim 3 wherein said means comprises at least one tab extending below said base and at least one tab extending above said base.

6. The invention of claim 5 wherein said member is generally V-shaped along its axis of elongation.

7. In an automatic dishwasher having a dish-supporting rack with a grid-like base formed by intersecting elements defining therebetween a plurality of openings, at least some of the openings having an apex formed by said intersecting elements, an article supporting device comprising:

(a) a V-shaped lower portion extending into one of said plurality of openings with the apex of the V of said lower portion fitting into the apex defined by said intersecting elements,

(b) at least one finger projecting upwardly from said lower portion and being adapted to contact and support against tipping articles resting on said base, and

(c) means extending from said lower portion to contact said base and removably secure said device to said base.

8. The invention of claim 7 wherein said means extending from said lower portion comprises at least one tab extending below said base.

9. The invention of claim 8 wherein at least said lower portion is formed from material sufficiently resilient to allow said lower portion to be flexed about the apex of the V whereby said one tab extending below said base may be brought into registry with said one of said plurality of openings to allow said lower portion to be removed from said opening.

10. The invention of claim 7 wherein two fingers project upwardly from said lower portion in spaced relationship to each other.

11. The invention of claim 10 wherein a web interconnects the distal ends of said fingers to define an elongated portion having therein an elongated opening.

12. In an automatic dishwasher having a dish-supporting rack with a grid-like base formed by intersecting elements defining therebetween a plurality of openings, an article supporting device comprising:

(a) an elongated member having an upper portion and a lower portion,

(b) said upper portion being adapted to contact and support against tipping articles resting on said base,

(c) said lower portion extending into one of said plurality of openings and having means to removably secure said member to said grid-like base,

(d) said means comprising at least one tab extending below said base and at least one tab extending above said base,

(e) said member being generally V-shaped along its axis of elongation, and

(f) said member being formed from material sufficiently resilient to allow said member to be flexed about the apex of said V whereby said one tab extending below said base may be brought into registry with the opening into which said lower portion extends to allow said lower portion to be removed from said opening.

13. In an automatic dishwasher having a dish-supporting rack with a grid-like base formed by intersecting elements defining therebetween a plurality of openings, an article supporting device comprising:

(a) an elongated member having an upper portion and a lower portion,

(b) said upper portion being adapted to contact and support against tipping articles resting on said base,

(c) said lower portion extending into one of said plurality of openings and having means to removably secure said member to said grid-like base,

(d) said member having a bend therein whereby said upper portion is slanted relative to said lower portion, and

(e) said member having an elongated opening therein to allow wash fluid to pass therethrough.

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CHANCELLOR E. HARRIS, *Primary Examiner.*

U.S. Cl. X.R.

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