US 20110192808A1

(19) **United States**

(12) **Patent Application Publication**

Buhl et al.

(10) **Pub. No.: US 2011/0192808 A1**

(43) **Pub. Date: Aug. 11, 2011**

(54) **INSERT FOR A DISHWASHER RACK**

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(21) Appl. No.: **13/020,839**

(22) Filed: **Feb. 4, 2011**

(30) **Foreign Application Priority Data**

Feb. 9, 2010 (EP) 10 401 020.2

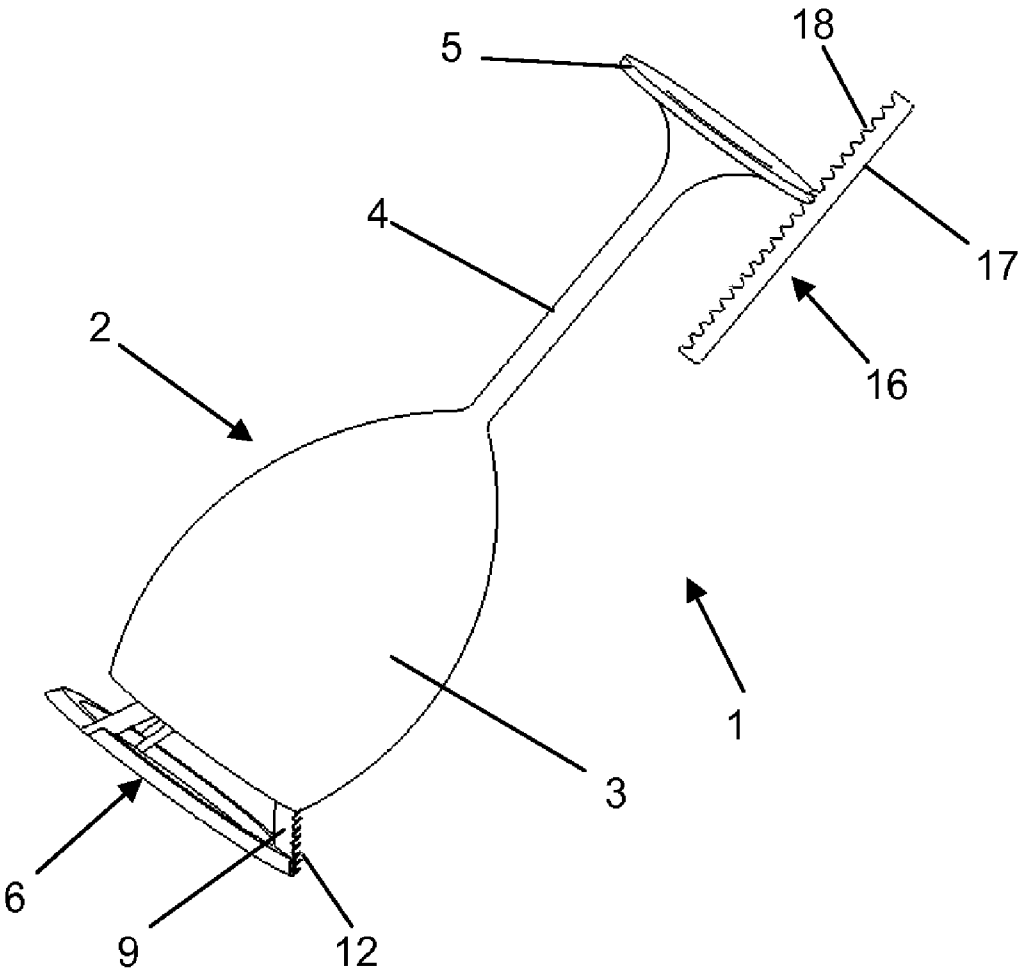
Publication Classification

(51) **Int. Cl.**
A47L 15/50 (2006.01)

(52) **U.S. Cl.** **211/41.9**; 211/41.8

(57) **ABSTRACT**

An insert for a rack of a dishwasher includes a bowl holder having a frustoconical shape and a contact rib. The contact rib has an exterior side and a sawtooth profile disposed on the exterior side.



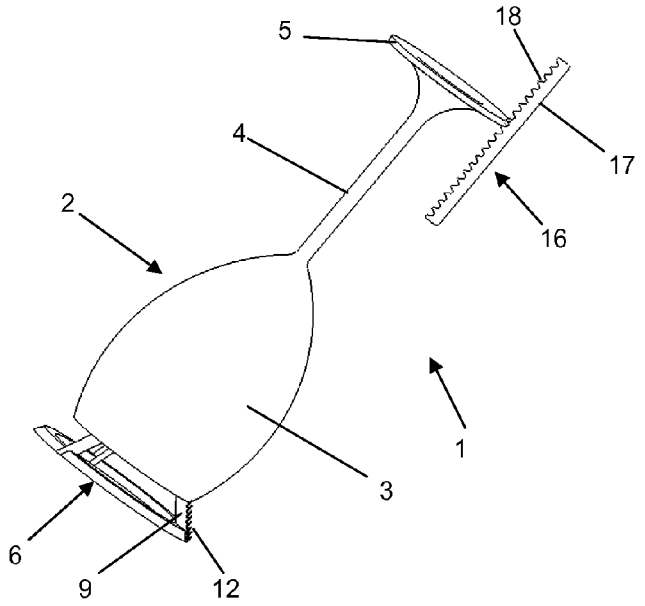


Fig. 1

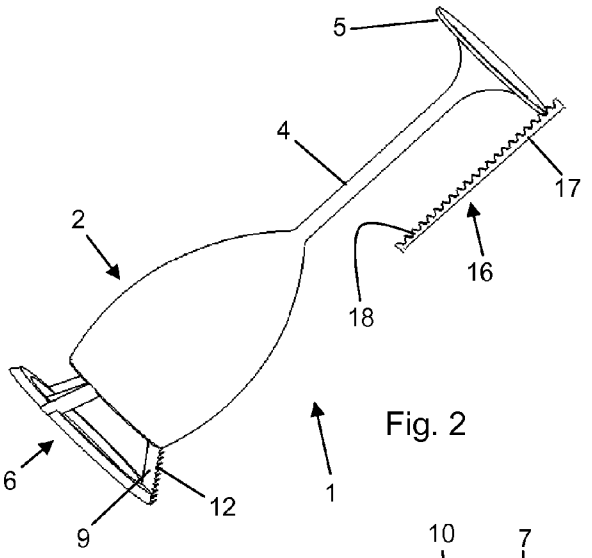


Fig. 2

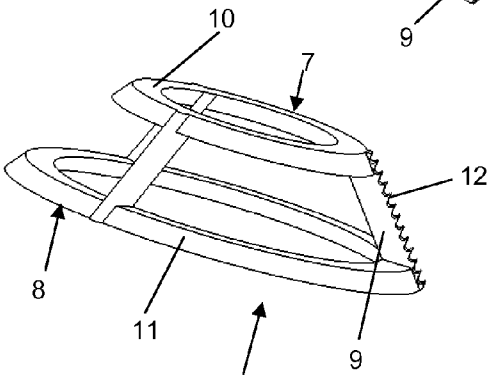


Fig. 3

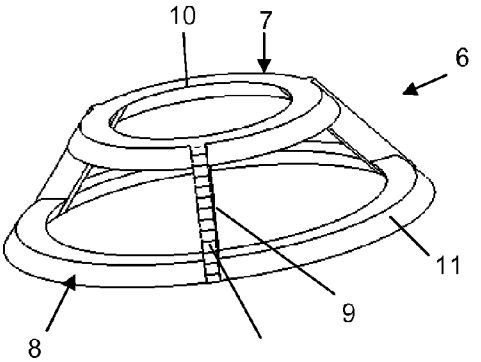


Fig. 4

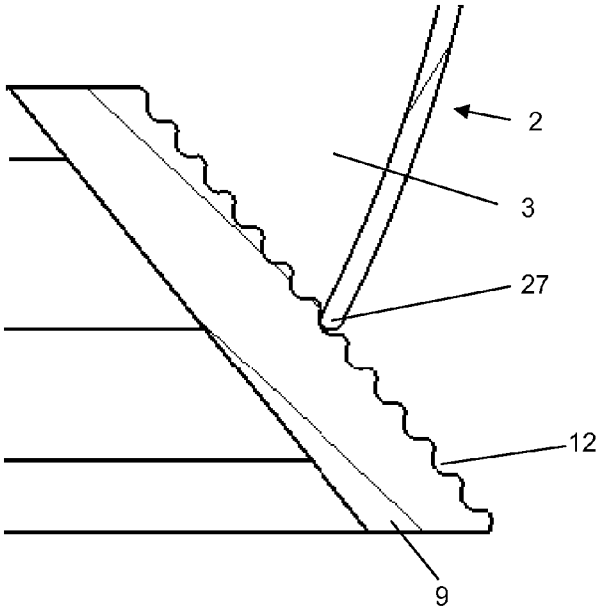


Fig. 5

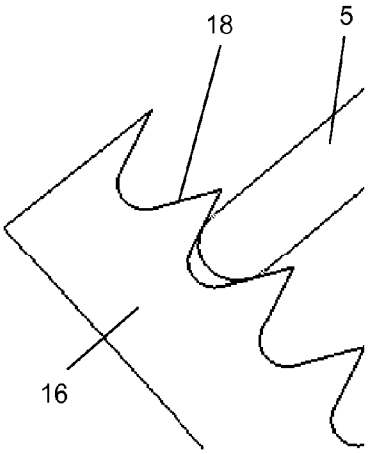


Fig. 6

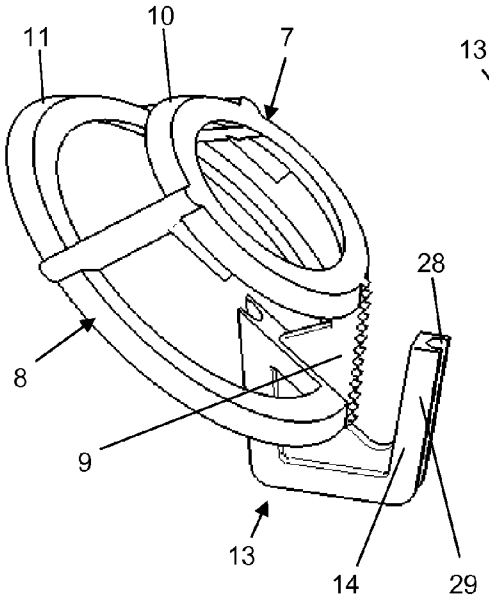


Fig. 7

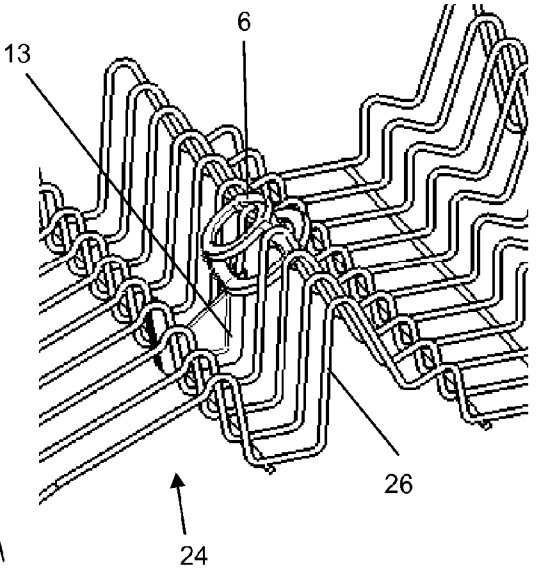


Fig. 8

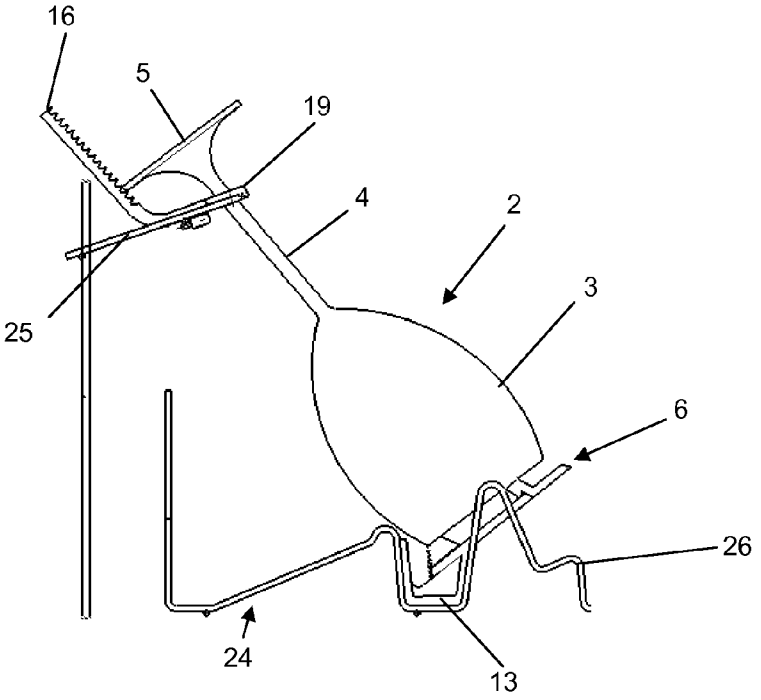


Fig. 10

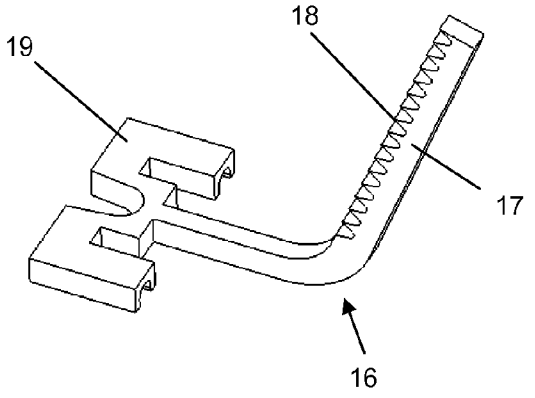
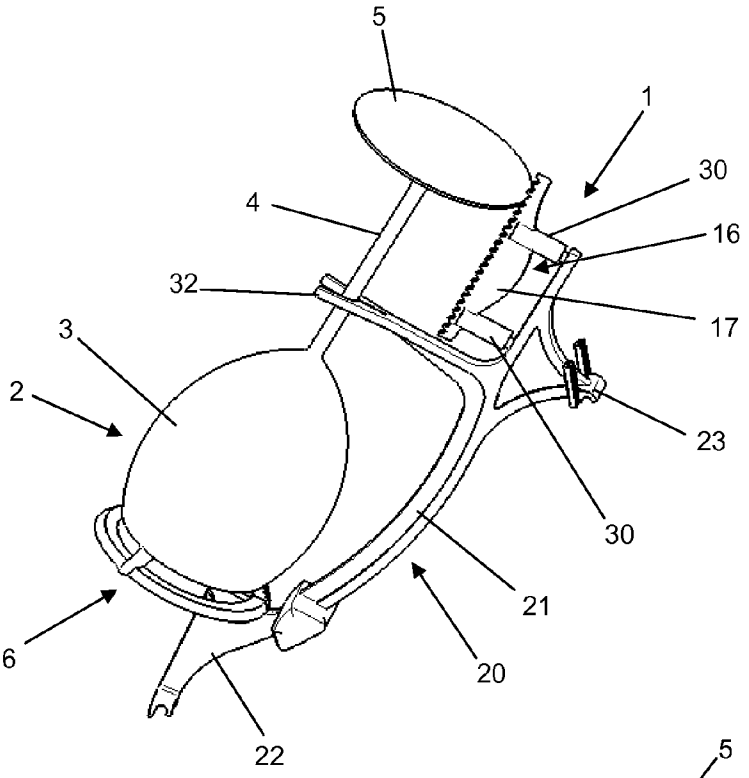


Fig. 9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4
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17
3
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30
21
6
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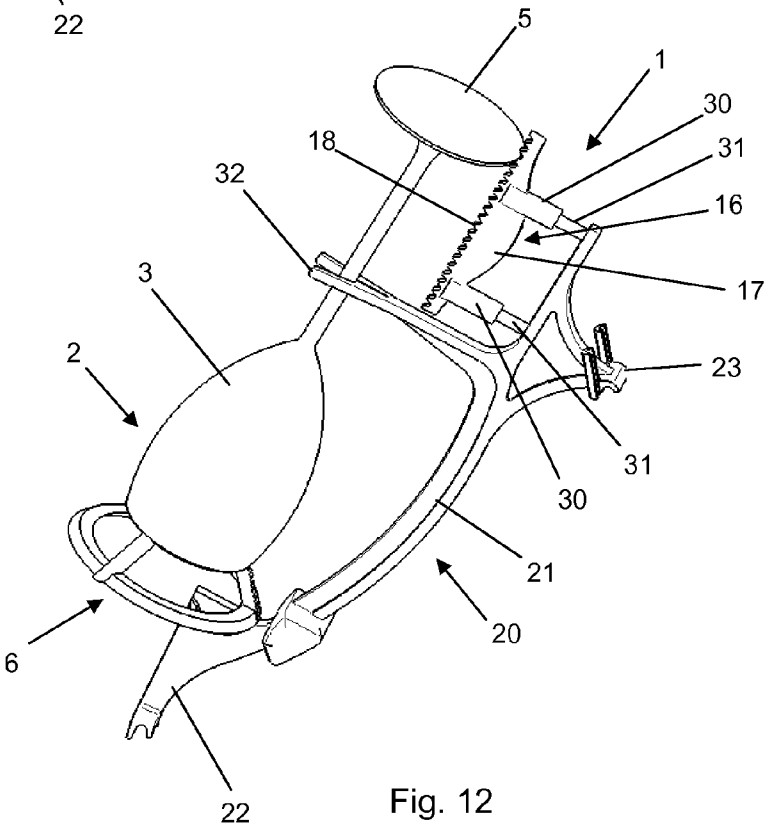
22

Fig. 11


5
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2
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31
30
21
20
6
22

Fig. 12

INSERT FOR A DISHWASHER RACK

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority from European Patent Application No. EP. 10 401 020.2, filed Feb. 9, 2010, which is hereby incorporated by reference herein in its entirety.

FIELD

[0002] The present invention relates generally to an insert for a dishwasher rack, and in particular to an insert adapted to hold long-stem glasses.

BACKGROUND

[0003] Conventional dishwashers generally have what are known as racks for receiving and supporting dishware therein. Typically, a dishwasher has a lower rack, an upper rack and may additionally have a cutlery tray. The lower rack, due to its spacing from the upper rack, is used in particular for receiving and supporting plates, glasses and/or other small items of dishware.

[0004] A common problem is to place long-stem glasses, such as wine or champagne glasses, in conventional racks in a manner that provides positional stability while at the same time ensuring that the desired washing result is actually achieved. Previously known racks allow long-stem glasses, for example, to be received and supported horizontally therein. However, this way of supporting glasses not only has the disadvantage of requiring a large volume of space, but may also result in rinse water remaining in the bowl of the glass. On the other hand, supporting long-stem glasses vertically does not provide positional stability because the glasses are not sufficiently supported. This may disadvantageously result in glass breakage which, of course, is to be avoided.

[0005] In order to overcome the aforementioned problems, rack inserts have been made which are intended to enable dishware of special shape to be accommodated in the racks. For example, German Patent Application DE 199 44 883 A1 describes a click & safe holder for holding long tubular glasses, such as wheat beer glasses. This holder includes a head portion carrying a plurality of movable arms. When this holder is used as intended, the wheat beer glass is placed over the head portion thereof, the movable arms securing the glass in position. It is obvious that, unlike wheat beer glasses, glasses having long stems cannot be securely held in position by this type of holder.

[0006] A rack insert for long-stem wine and champagne glasses is described in DE 200 05 725 U1. The insert described therein is intended to hold wine and champagne glasses in a suspended manner. This insert is made up of a main member mounted on the end of a tube that serves as a holding stem. When used as intended, this tube is slipped over a tine of the dishwasher rack, as can be seen in FIG. 2 of DE 200 05 725 U1.

[0007] The insert described in DE 200 05 725 U1 is disadvantageous for two reasons. For one thing, only glasses up to a certain height can be accommodated. This limitation is due to the height of the tines that carry the insert during the intended use thereof. Another drawback is due to the suspended positioning, which results in residual liquid accumulating in the region between a fork-shaped holding portion of the main member and the foot of a glass, leaving spots on the glass foot and/or stem. During later use of the glass, these dishwasher spots are particularly striking because they are in the direct field of view of an observer. Consequently, the insert described in DE 200 05 725 U1 is neither suitable for holding long-stem glasses, nor does it not allow satisfactory washing results.

SUMMARY

[0008] In an embodiment, the present invention provides an insert for a rack of a dishwasher including a bowl holder having a frustoconical shape and a contact rib. The contact rib has an exterior side and a sawtooth profile disposed on the exterior side.

SUMMARY

[0009] Exemplary embodiments of the present invention are described in more detail below with reference to the drawings, in which:

[0010] FIG. **1** is a schematic view of an insert in accordance with an embodiment of the present invention;

[0011] FIG. **2** is a schematic view of an insert in accordance with another embodiment of the present;

[0012] FIG. **3** is a schematic perspective view showing an embodiment of a bowl holder;

[0013] FIG. **4** is a view showing the bowl holder of FIG. **3** from a different perspective;

[0014] FIG. **5** is a schematic view showing a portion of the bowl holder of FIG. **3**;

[0015] FIG. **6** is a schematic view showing a detail of an embodiment of a foot holder in accordance with the present invention;

[0016] FIG. **7** is a schematic view showing the bowl holder of FIG. **3** in combination with a clamping element;

[0017] FIG. **8** is a schematic perspective view showing the manner in which a clamped holder can be arranged on the lower rack of a dishwasher;

[0018] FIG. **9** is a schematic perspective view showing the foot holder;

[0019] FIG. **10** is a side view showing the manner in which an insert can be arranged on the lower rack of a dishwasher;

[0020] FIG. **11** is a schematic perspective view of an embodiment of a holding device in accordance with the present invention; and

[0021] FIG. **12** is a schematic perspective view of another embodiment of a holding device in accordance with the present invention.

DETAILED DESCRIPTION

[0022] In an embodiment, the present invention provides an insert which is adapted to hold in particular long-stem glasses and which assists in achieving a desired washing result while at the same time providing positionally stable support.

[0023] An insert in accordance with an embodiment of the present invention has a bowl holder which is frustoconical in shape. When used as intended, this bowl holder holds the bowl of a glass. In order for the glass to be held as intended, it is placed with the bowl over the bowl holder of the insert of. The glass is securely held due to the frustoconical shape of the bowl holder. Wash and rinse liquid can run off from both the interior and exterior surfaces of the bowl, so that, advantageously, no dishwasher spots are left on the bowl of the glass.

[0024] When used as intended, the bowl of the glass rests by its edge on a contact rib of the bowl holder. In an embodiment,

a sawtooth profile is formed on the exterior side of said contact rib. This configuration provides a drainage rib for wash and rinse water, allowing any remaining water to run off therealong. This enables the achievement of the desired washing result.

[0025] The frustoconical bowl holder further has the advantage that it allows glasses of different bowl diameters to be positioned in an optimized manner at all times. Thus, the insert is not subject to any limitations with respect to the shape of the glass.

[0026] In accordance with an embodiment, the bowl holder includes a first and a second truncated cone section, the contact rib extending between these two truncated cone sections. It is also possible to provide a plurality of contact ribs, for example three, four or more contact ribs. The configuration including two truncated cone sections has the advantage of minimizing the contact area between the insert and the glass, which, on the one hand, facilitates the intended use and, on the other hand, eliminates the cause of unwanted accumulation of residual water.

[0027] According to another aspect of embodiments of the present invention, the truncated cone sections may be circular segments, the first truncated cone section being smaller in diameter than the second truncated cone section. The term "first truncated cone section" is meant to refer to the one that is closer to the glass. This configuration results in an overall frustoconical shape of the bowl holder.

[0028] The bowl holder may be formed in one piece from plastic. This allows for easier manufacture and increased ease of use.

[0029] The insert may include a clamping element for securing the bowl holder to the dishwasher rack. This clamping element serves to secure the bowl holder in position on a dishwasher rack generally known in the art. Thus, the clamping element may also be referred to as a connecting adapter, which serves to connect the bowl holder and the dishwasher rack. The clamping element may be U-shaped and geometrically configured in such a way that it can be clamped, for example, into a standard loop of a lower rack. For this purpose, the clamp has a peripheral receiving groove which, when used as intended, is engaged by the plastic-coated wire of the loop of the rack.

[0030] The insert may have a foot holder which serves to supportingly receive the foot of a glass. In accordance with this embodiment, the insert includes a bowl holder and a foot holder, so that, when used as intended, a glass is received by the bowl holder and supported at its foot by the foot holder.

[0031] According to yet another embodiment, the foot holder includes a contact leg which has a sawtooth profile on the side facing the foot of the glass. This configuration provides the advantage that accumulation of residual water can be substantially prevented, making it possible to effectively avoid unsightly water spots in the region of the foot of the glass.

[0032] The foot holder can include an attachment portion. This attachment portion serves to secure the foot holder to the dishwasher rack. The attachment portion may take the form of a clamping element which allows the foot holder to be attached to the dishwasher rack by means of a click-type connection.

[0033] Similar to the bowl holder, the foot holder is preferably formed in one piece from plastic.

[0034] In another embodiment, the bowl holder and the foot holder may be combined to form a common holding device. This allows the bowl holder and the foot holder to be jointly and simultaneously manipulated in a simple way. For this purpose, the holding device may have a kind of connecting web which interconnects the bowl holder and the foot holder. Provision may be made, in particular, for the foot holder to be attached to the connecting web so that it is movable relative thereto and, more specifically, in a direction along and/or transverse to the connecting web. This configuration enables the holding device to be individually adapted to glasses of different types, sizes and shapes.

[0035] Overall, embodiments of the present invention provide an insert which is adapted to hold in particular long-stem glasses and which allows glasses to be securely positioned in the rack of a dishwasher and at the same time is easy to use. The insert of the present invention, due to its design as described above, ensures that a good washing result is achieved and prevents, in particular, unwanted accumulations of residual water. The insert can be removably attached to the rack at substantially any desired position.

[0036] FIG. **1** shows an insert **1** according to an embodiment of the present invention.

[0037] Insert **1** has a bowl holder **6** which, when used as intended, holds bowl **3** of a glass **2**. In order to support the foot of glass **2**, insert **1** further has a foot holder **16**, on which supportedly rests foot **5** of glass **2**, which is provided on the end of a stem **4**.

[0038] Foot holder **16** provides a contact leg **17** having a sawtooth profile **18** on the side facing the glass. Similarly, bowl holder **6** has a contact rib **9** which provides a sawtooth profile **12** on the exterior side; i.e., on the side facing the glass.

[0039] The above-described design of insert **1** increases convenience when washing, in particular, long-stem glasses. Bowl **3** of glass **2** is supported on a frustoconical bowl holder **6**, the frustoconical shape having the advantage that it allows glasses **2** of different bowl diameters to be positioned in an optimized manner at all times. This is readily apparent when viewing the FIGS. **1** and **2** in conjunction with one another. In the exemplary embodiment shown in FIG. **1**, bowl **3** is of greater diameter.

[0040] Furthermore, sawtooth profiles **12** and **18** allow any remaining water to run off more effectively. This makes it possible to achieve an optimized washing result. Further, the position of the ridges of sawtooth profile **12** is selected such that they are always extend at the lowermost point of bowl **3**, which makes it possible to prevent water and evaporation residues.

[0041] Likewise, sawtooth profile **18** provided by foot holder **16** permits optimized drying, so that foot **5** of glass **2** is also kept free from unwanted accumulations of residual water and/or evaporation residues. In addition, the configuration of sawtooth profile **18** makes it possible to supportingly receive feet **5** of glasses **2** of different geometric shape, as is readily apparent when viewing especially FIG. **1** and FIG. **2** in conjunction with one another.

[0042] FIGS. **3** and **4** illustrate an exemplary embodiment of a bowl holder **6** of the present invention. In accordance with this embodiment, bowl holder **6** includes a first truncated cone section **7** and a second truncated cone section **8**. First truncated cone section **7** is formed by a circular circumferentially extending segment **10**, and second truncated cone section **8** is formed by a circular circumferentially extending segment **11**. In the embodiment shown, three contact ribs **9**

extend between the two segments **10** and **11**, at least one of said contact ribs **9** providing the above-described sawtooth profile **12**.

[0043] FIG. **5** shows a portion of bowl **3** of a glass **2** received by a bowl holder **6**. As can be seen in this figure, circumferential glass edge **27** of bowl **3** rests on a tooth of sawtooth profile **12**. In this manner, on the one hand, secure support is provided, and, on the other hand, sawtooth profile **12** ensures that accumulations of residual water and/or evaporation residues can be substantially avoided.

[0044] The same effect is provided by sawtooth profile **18** of foot holder **16**, as is apparent from the detail view of FIG. **6**. In this view, an edge portion of foot **5** of a glass **2** is shown engaged with sawtooth profile **18** provided by foot holder **16**.

[0045] FIG. **7** shows, in a schematic perspective view, a clamping element **13**, which serves to secure a bowl holder **6** in the intended manner, for example, to a lower rack **24** of a dishwasher, as can be seen in the view of FIG. **8**.

[0046] Clamping element **13** is U-shaped and includes a rack adapter **14** and a holder adapter **15**. Holder adapter **15** serves to connect bowl holder **6** to clamping element **13**. Optionally, bowl holder **6** and clamping element **13** may also be formed as a single piece. Rack adapter **14** provides a receiving groove **28** which, when used as intended, is engaged by the plastic-coated wire of a loop **26** of lower rack **24**, as can be seen particularly in the view of FIG. **8**. Rack adapter **14** has a leg-like extension **29**, which is capable of resiliently flexing toward bowl holder **6** and in the opposite direction. This resilient design allows clamping element **13** to be fixedly clamped into the associated loop **26** of lower rack **24**.

[0047] FIG. **9** shows a possible embodiment of foot holder **16**. As previously explained with reference to FIGS. **1** and **2**, foot holder **16** includes a contact leg **17** having a sawtooth profile **18** on the side facing the glass. As can be seen in the view of FIG. **9**, foot holder **16** further includes an attachment portion **19**, which is preferably formed in one piece with contact leg **17**. This attachment portion **19** serves to secure foot holder **16** to the dishwasher rack, as can be seen particularly in the view of FIG. **10**.

[0048] FIG. **10** shows, in a schematic side view, a possible arrangement of bowl holder **6** and foot holder **16** on lower rack **24** of a dishwasher.

[0049] As shown in the view of FIG. **10**, bowl holder **6** is clampingly secured to a loop **26** in the dish support plane. This is accomplished using the above-described clamping element **13**.

[0050] Foot holder **16** is secured on the hinged glass and cup holder **25** of lower rack **24**. The illustrated positioning of bowl holder **6** and foot holder **16** results in an angular orientation of glass **2** with respect to the dish support plane. In the exemplary embodiment shown, the angle is about 45°. This angular arrangement ensures that any remaining water can run off from a depression in glass foot **5**.

[0051] In the aforedescribed embodiment, bowl holder **6** and foot holder **16** are components that are manipulated separately. FIGS. **11** and **12** show an alternative embodiment, in which bowl holder **6** and foot holder **16** are combined to form a common holding device **20**.

[0052] Holding device **20**, as illustrated in FIGS. **11** and **12**, includes a connecting web **12**. This connecting web **21** provides a first fastening adapter **22** and a second fastening adapter **23**. These fastening adapters **22** and **23** allow connecting web **21** to be secured, for example, to lower rack **24** of a dishwasher. In particular, fastening adapter **22** may be used for attachment to a loop of the rack, whereas fastening adapter **23** is used to hook onto a glass and cup holder **25**. Holding device **20** is preferably arranged so that it has an angular orientation with respect to the dish support plane, as is shown in FIGS. **11** and **12**.

[0053] Holding device **20** provides a bowl holder **6** of the aforedescribed type. Optionally, connecting web **21** and bowl holder **6** may be formed integrally as a single plastic piece.

[0054] Holding device **20** further provides a foot holder **16**, which serves to supportingly receive a foot **5** of a glass **2** in the aforedescribed manner. In the exemplary embodiment shown, foot holder **16** has two guide sleeves **30**. In the final assembled state, guide extensions **31** having integrated compression springs (not shown) are fitted into said guide sleeves. This configuration allows foot holder **16** to be displaced transversely to the longitudinal extent of stem **4** of glass **2** relative to connecting web **21**, which allows for adjustability to the diameter of foot **5** of glass **2**.

[0055] In the embodiment of holding device **20** shown in FIGS. **11** and **12**, a fork-shaped stem holder **32** provides additional support for glass **2**.

[0056] While the invention has been particularly shown and described with reference to preferred embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention.

What is claimed is:

1. An insert for a rack of a dishwasher comprising:

a bowl holder having a frustoconical shape and a contact rib, the contact rib having an exterior side and a sawtooth profile disposed on the exterior side.

2. The insert recited in claim **1**, wherein the bowl holder is configured to hold long-stem glasses.

3. The insert recited in claim **1**, wherein the bowl holder includes first and second truncated cone sections, and wherein the contact rib extends between the first and second truncated cone sections.

4. The insert recited in claim **3**, wherein the first and second truncated cone sections each comprise a circular segment, the first truncated cone section being smaller than the second truncated cone section.

5. The insert recited in claim **1**, wherein the bowl holder is an integrally formed plastic piece.

6. The insert recited in claim **1**, further comprising a clamping element configured to secure the bowl holder to a rack of a dishwasher.

7. The insert recited in claim **1** further comprising a foot holder configured to supportingly receive a foot of a glass.

8. The insert recited in claim **7**, wherein the foot holder includes a contact leg having a sawtooth profile on a side adapted to face the foot of the glass.

9. The insert recited in claim **7**, wherein the foot holder includes an attachment portion configured to attach to the rack of the dishwasher.

10. The insert recited in claim **7**, wherein the foot holder is an integrally formed plastic piece.

11. The insert recited in claim **7**, wherein the bowl holder and the foot holder are combined in a common holding device.

12. The insert recited in claim **11**, wherein a connecting web extends between the bowl holder and the foot holder.

13. The insert recited in claim **12**, wherein the insert is configured to hold stem glasses, and wherein the foot holder

is displaceable relative to the connecting web in a direction transverse to a longitudinal direction of a glass stem held by the insert.

14. A rack for a dishwasher including an insert comprising:

a bowl holder having a frustoconical shape and a contact rib, the contact rib having an exterior side and a sawtooth profile disposed on the exterior side.

15. The rack recited in claim **14**, wherein the insert includes a foot holder configured to supportingly receive a foot of a glass.

16. The rack recited in claim **15**, wherein the foot holder includes a contact leg having a sawtooth profile on a side adapted to face the foot of the glass.

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