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Bebinger

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[54] RAPID MOUNTING SYSTEM FOR FOOD WASTE DISPOSER

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[52] **U.S. Cl.** **241/100.5,** 285/159, 285/359

[51] **Int. Cl.**.....**B02c 18/42**

[58] **Field of Search** .....241/32.5, 46 A, 46 B, 100.5, 241/257 G; 285/158, 159, 358–362, 376, 394–396, 401

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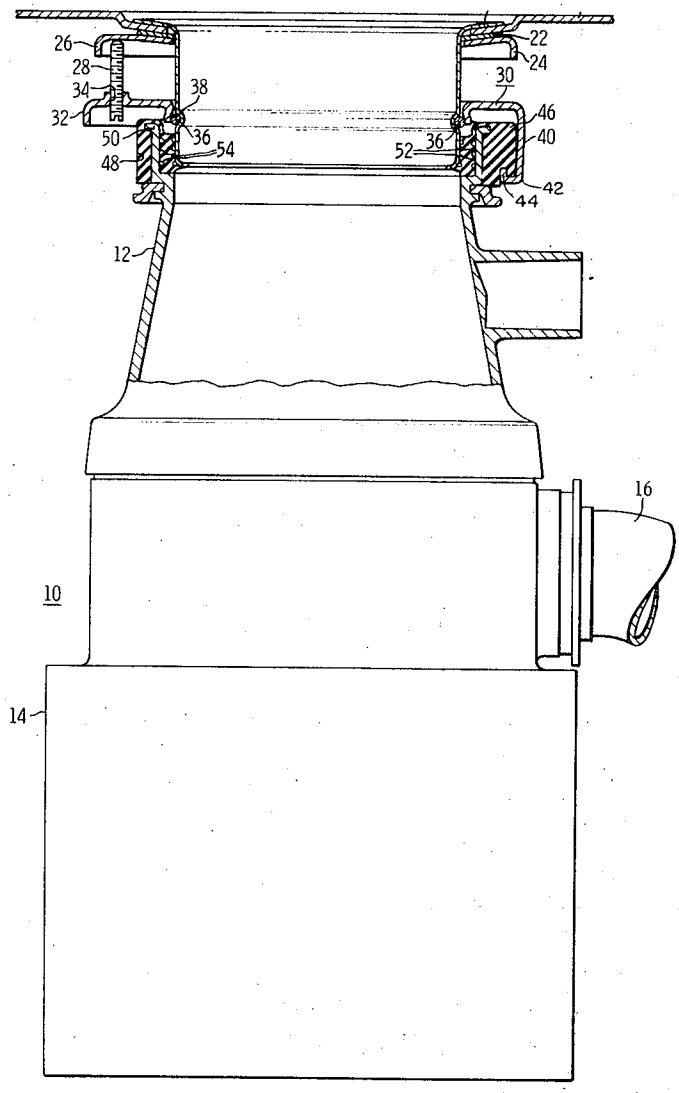
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[57] **ABSTRACT**

The invention provides a food waste disposer which is easily mounted without the use of additional parts or special tools to secure it in place in the sink. A conventional sink flange, gasket, clamp ring, and a novel support ring are provided, with screws threadedly attached to the support ring extending upwardly to hold the sink, sink flange, sink gasket and clamp ring together. In order to mount the major portion of the food waste disposer, the support ring is provided with a series of radial projections which extend downwardly with these projections mating with a series of corresponding projecting lug members carried on a support gasket. Locking between them is occasioned by rotating the support gasket and with it the major portion of the garbage disposer unit in either a clockwise or counterclockwise direction to lockingly engage the lug-like members behind the projections provided on the supporting ring. A series of secondary, upwardly oriented projections are also provided on the projections on the support ring, with these projections resting in well means in the projecting lugs on the support gasket.

7 Claims, 3 Drawing Figures



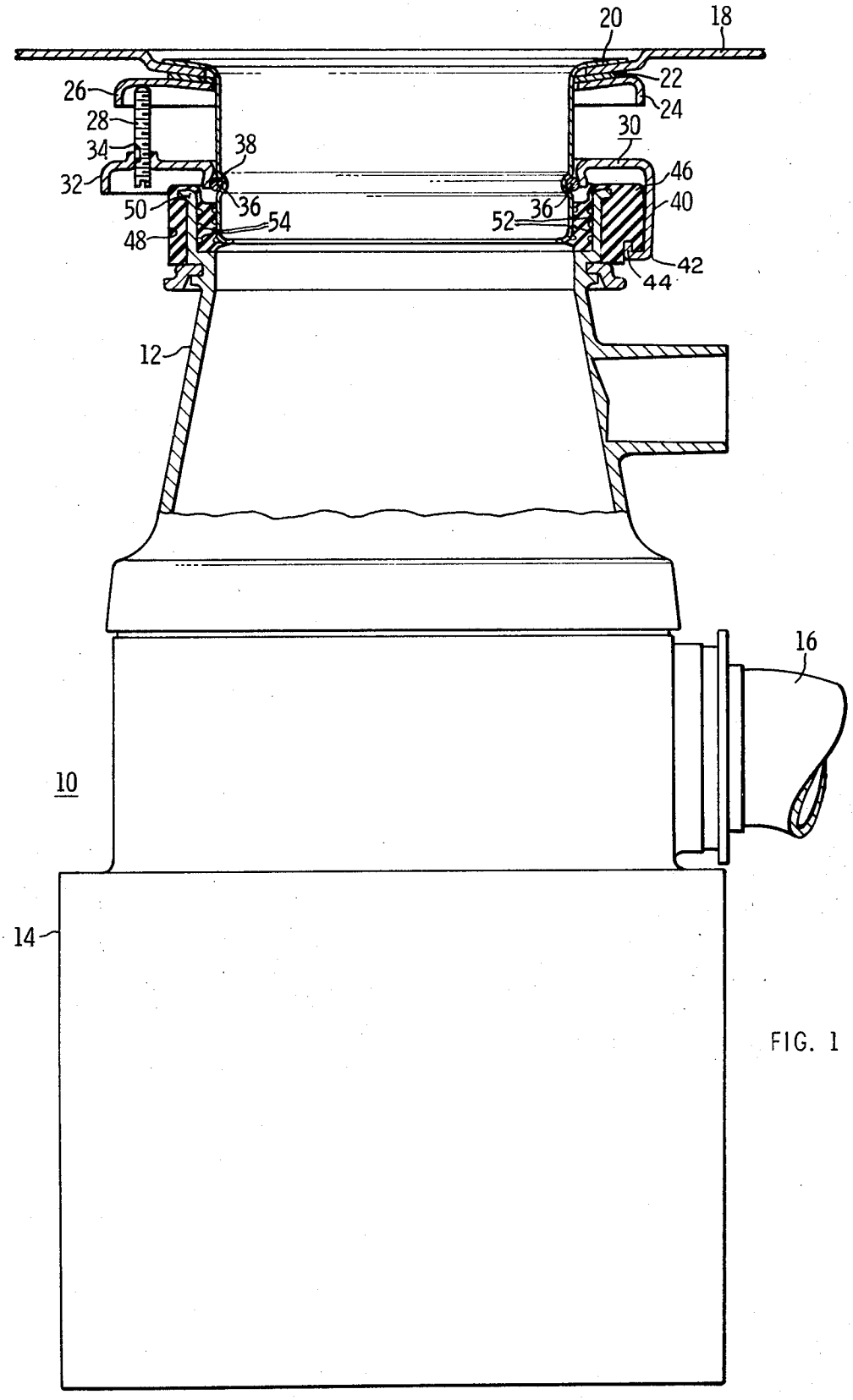


FIG. 1

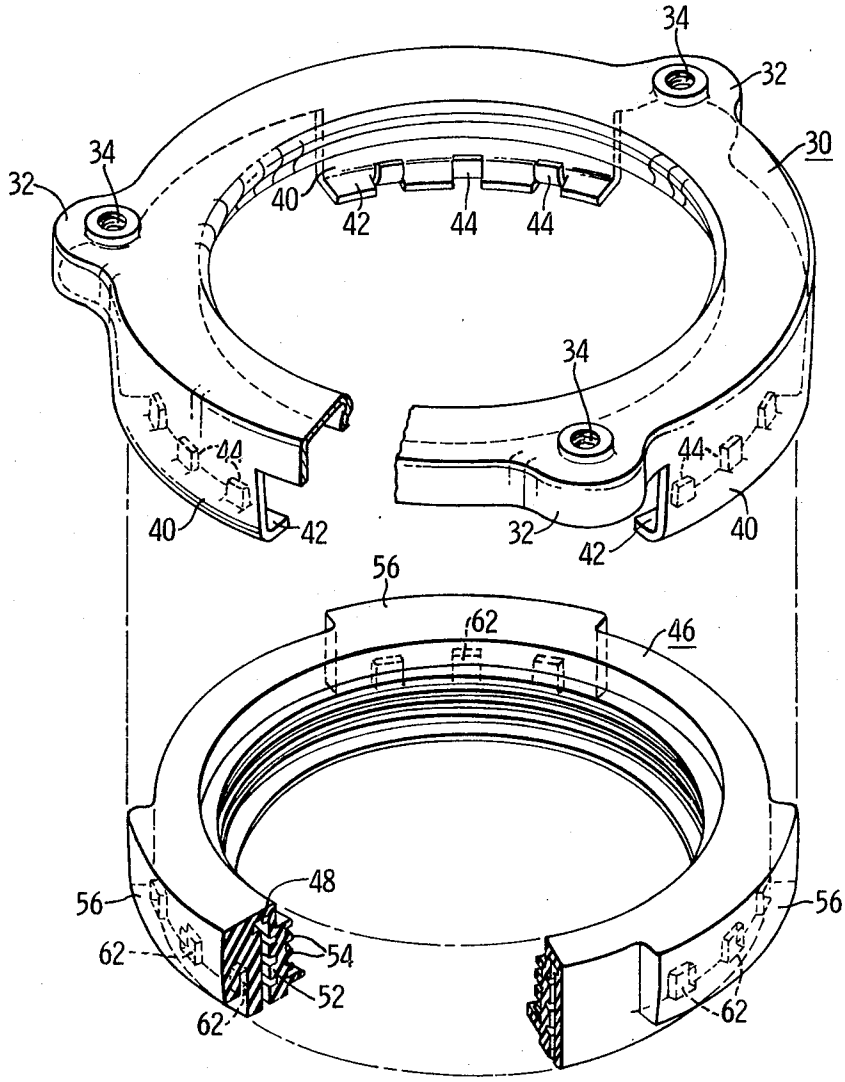

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FIG. 2

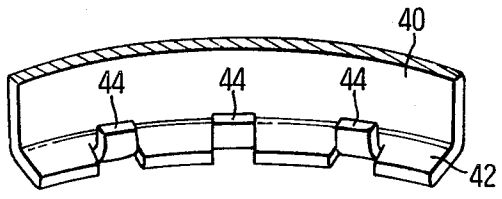

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FIG. 3

RAPID MOUNTING SYSTEM FOR FOOD WASTE DISPOSER

BACKGROUND OF THE INVENTION

1. Field of the Invention:

This invention relates to an easily mountable and dismountable support means and, more particularly, relates to a rapidly dismountable and mountable support means for a food waste disposer.

2. Description of the Prior Art:

The provision of a food waste disposer which contemplates the mounting of the sink flange, sink gasket, clamping ring, support ring and a retaining ring therefor as a separate step prior to the mounting of the main portion of the food waste disposer is shown to be old in U.S. Pat. No. 3,425,637. This patent also illustrates a manner for fairly quickly mounting and dismounting the major portion of the food waste disposer through a series of interengaging projections on the support ring and a lower connector member, mounted with the major portion of the food waste disposer. However, the use of a connector member such as disclosed in this patent requires the use of an additional support ring so as to sealingly assemble the major portion of the food waste disposer to those elements previously fixed to the sink proper. Further, the interengaging arrangement and relationship between the support ring, compressed support gasket and the connector member may prevent easy rotation of the food waste disposer so as to align the drain extending from it with the household plumbing.

Accordingly, it would be advantageous to provide a mounting arrangement for a food waste disposer which yielded easy and quick mounting without a requirement for specialized tools and, at the same time, permitted easy adjustable rotation of the major portion of the food waste disposer so as to align the drain provided through its wall with the plumbing arrangement existing under the sink in which it was mounted. It would also be advantageous to provide a food waste disposer which did not require continuous compressive force application to the support gasket during assembly.

SUMMARY OF THE INVENTION

The invention provides a food waste disposer having a conventional hopper and comminuting chamber for the reduction of waste food products so that they may easily be disposed through a household drainage system. The food waste disposer is attached, within a conventional sink, through the agency of a sink flange, sink gasket, clamping ring, and screws which compress the sink gasket so as to provide a water tight seal between the sink and the sink flange of the food waste disposer. Below the clamping ring and mounted with the sink flange is a support ring having a plurality of threaded holes through which screws are inserted and rotated until a sufficient clamping pressure is provided against the clamping ring and through it to the sink gasket. The support ring is supported from the sink flange by a retaining ring which is received in compressed relationship between it and an annular groove formed on the sink flange. The support ring is provided with a series of three radially projecting, primary supporting portions, while a support gasket fixed to the hopper of the food waste disposer also includes a series of three lug-like projections. The primary supporting portions of the support ring can then be engaged with the lug-like projections on the support gasket by merely placing these two structural elements in nesting relationship and rotating the support gasket and the major portion of the food waste disposer attached to it relative to the support ring until the primary projections provided on the support ring are nestingly engaged beneath the lug-like members of the support gasket.

A series of secondary support portions are provided on the primary support portions, with these secondary projections being engagable in well-like means provided in the support gasket. Engagement of the secondary projections with the support gasket is obtained by aligning the primary projections with the lug-like means on the support gasket and then letting the support gasket and the remainder of the food waste disposer move downwardly due to their own weight until the secondary projections are matingly engaged within the wells provided on the support gasket. The food waste disposer is thus fixedly attached to the conventional sink.

The hopper of the food waste disposer includes an annular right-angled flange at its upper end, with the annular flange extending into the support gasket in a similarly shaped groove contained therein. Since the support gasket and hopper are not an integrally molded subassembly, the hopper and the remainder of the food waste disposer disposed below it may be rotated within the groove in the support gasket to align the drainage means contained in the food waste disposer with the household waste drainage system.

DRAWING DESCRIPTION

For a better understanding of the invention, reference may be had to the preferred embodiment, exemplary of the invention, shown in the accompanying drawings, in which:

FIG. **1** is a cross-sectional view of the food waste disposer of the instant invention showing its connection to a kitchen sink;

FIG. **2** is an exploded perspective view of the support ring and support gasket; and

FIG. **3** is an enlarged detailed perspective view of one of the supporting portions on the support ring.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Food waste disposer **10** which incorporates the principles of my invention is illustrated in cross-section in FIG. **1** and wherein there is shown a hopper **12** which opens into a comminuting chamber **14** in which the actual grinding of food waste occurs. Food waste disposer **10** also includes a drainage means **16** which is provided for hook-up to the waste drainage system of the house in which the food waste disposer is situated.

Food waste disposer **10** is suspended beneath a sink **18** (only partially shown) so that it sits beneath the drain opening provided in this sink. A sink flange **20** of the food waste disposer **10**, having a general cylindrical shape and a funnel-like opening, seats on the bottom surface of the sink **18** and abuttingly engages against the surface which surrounds the drainage aperture formed therein, with a ring of putty being spread around the underside of the sink flange prior to its in-

sertion into the sink opening. A sink gasket **22** which may be formed from a paper type gasketing material or the like is provided to seat on the surface of the underside of the sink **18**, again in the area where the drain is formed therein. A clamp ring **24** is disposed in compressing relationship relative to the sink gasket **22** so as to compress the putty and this gasket and seal the jointure between the sink flange **20** and sink **18** proper.

In order to provide this compressive force the clamp ring **24** includes a series of lug-like elements **26** (preferably three in number, situated equidistant around the periphery of the clamp ring) which extend radially outwardly from the clamp ring **24** so as to be engaged by a series of set screws **28** which force the clamp ring **24** upwardly into its compressed relationship with the sink gasket **22** when the said set screws **28** are threadingly inserted in a support ring **30**.

Support ring **30** also includes a series of lug-like projections **32** which extend radially outwardly from its main body portion, with the number of projections being equal to the number of lug-like elements **26** on clamp ring **24**. A threaded bore **34** is formed in each of the lug-like projections **30** for the insertion in each of the bores **34** of one set screw **28**. The set screws **28**, then, may be threadedly inserted therein and screwed up tight against the clamp ring **24** so that it compresses the sink gasket **22** and affords the aforementioned seal.

In order to insure that the supporting ring **30** assumes a fixed position relative to the sink flange **20**, it is assembled on the sink flange **20** and retained in a specified location by means of a retaining ring **36** which seats in an annular groove **38** extending around the circumferential periphery of the sink flange **20**. The retaining ring **36** extends therefrom a sufficient amount to insure engagement between it and an outwardly and downwardly disposed annular rim **38** which is formed adjacent the cylindrical inner periphery of the support ring **30**. This retaining ring is made of spring steel so as to insure its maintenance in the circumferential groove **38** after once resiliently assembled therewith so as to provide a substantially rigid and positively placed relationship between the retaining ring **30** and the sink flange **20**. Insofar as related, the food waste disposer **10** is substantially conventional.

The novel manner of mounting the remainder of the food waste disposer to those elements immediately above described as already mounted with the sink **18** will now be detailed. A series of downwardly depending primary support portions **40** (preferably three) are provided on the support ring **30** at equidistantly spaced locations for support of the hopper **12** of food waste disposer **10**. Each of these downwardly depending support projections tapers radially inwardly and is substantially right-angled in cross section to provide an inwardly extending ear **42** that extends substantially radially relative to the circumference of support ring **30**. Each of the ears **42** includes, adjacent its inner termination, a plurality of upturned tabs **44** which can be considered a secondary supporting portion for the support of the hopper **12** and ancillary elements disposed therebelow from the support ring **30**.

Below the support ring **30** is a support gasket **46** of elastomeric material which is generally ring-shaped so as to provide an inner diameter of sufficient dimension to receive the bottom portion of the sink flange **20**. Support gasket **46** also includes a right angle (or cross-section) annular groove disposed intermediate its inner and outer diameters which receives a top portion of hopper **14** including an out-turned end **50** of hopper **14**, with the out-turned end **50** being received in that portion of groove **48** which extends radially relative to the circumference of support gasket **46**. Internal ribs **52** are formed within the groove **48** on its inner periphery so that the hopper **14** is received therein in a compressed condition so as to provide a seal between it and the support gasket **46**. Support gasket **46** also includes a series of ribs **54** located on its internal diameter which compressingly envelope the bottom portion of sink flange **20** so as to form a seal therebetween.

In order to provide mating elements for support portions **40**, the outer periphery of support gasket **46** (FIG. **2**) includes a series of equidistantly spaced protuberances or lug-like means **56** which extend radially outwardly relative to the main body portion of support gasket **46**. Each of these lug-like means has a tapering periphery in a downward direction, the purpose of which will be later described. Each of the lug means **56** also includes a series of notched out or well portions **62** on its periphery, with these notched out portions being similar in size to the tabs **44**. All the structure has now been described that is required for supporting engagement between the support gasket **46** and the support ring **30**.

Viewing the illustration shown in FIG. **2** a sufficient make the manner of supporting engagement between these two elements relatively obvious. Support gasket **46** is first attached to the hopper **12** by means of hopper **12** being inserted into its right angled, annular groove **48**. Then the support gasket **46** is moved upwardly relative to the depending support ring **30**, as positioned, below the sink **18**, with the lug-like means **56** offset from the support portions **40** so that the support ring **30** receives the support flange **46** in nesting engagement. Support gasket **46** is then rotated a sufficient extent to place the support portions **40** of the support ring **30** and the lug-like means **56** of the support gasket **46** in close confronting adjacency with the ears **42** disposed below the bottom extent of the supporting gasket **46** The support gasket **46** is then permitted to drop so that the tabs **44** engage in the well-like notches **62** formed on each of the lug-like means **56** of support gasket **46** to thereby maintain the support gasket **46** against rotation relative to support ring **30**, with the tapered support gasket being wedgedly received by the support ring **30**.

The hopper **12** is thereby supported in a hanging or depending relationship relative to sink flange **20** with the moving parts of food waste disposer also depending from support gasket **46** so that the elastomeric, dampening qualities thereof will prevent a large portion of the vibrations produced by food waste disposer **10** from being transmitted backwardly into sink **18**. Further, the tabs **44**, having engaged in the wells **62**, supportingly lock the support gasket **46** against rotation relative to the sink flange **20**. The lateral compression of the inner part of the gasket confined in the space between the sink flange and the upper end of the hopper, obtained by virtue of the relationship of the dimension of that space to the thickness of the inner part of the gasket, results in the deformation of the ribs **52** and **54**, and

provides a tightly sealed food waste disposer which will sealingly contain all food waste placed therein.

As above described, the right angle, annular groove **48** in supporting gasket **46** supports the upper end of the hopper **12** therein. The wedged relationship of the protuberances **56** in the primary support projections **40** results in a lateral compression of the protuberances and the imposition of the sufficient friction between the hopper and gasket that motor torque will not turn the hopper relative to the gasket. However, this friction may be overcome by the installer so that he can rotate the hopper so as to align the drain **16** of food waste disposer **10** with the waste piping system for the sink. Thus, a food waste disposer quick mounting arrangement has been provided which is easily assembled and is extremely flexible so as to permit its easy adjustment relative to the piping configuration contained beneath the sink **18**.

It should be obvious to one skilled in the art that a quick mount support system for a food waste disposer has been described which fulfills all the advantages set out for it and, further, it should also be obvious to one skilled in the art that many modifications can be made therein which would still fall within the purview and scope of the description offered.

What is claimed is:

1. In a food waste disposer and mounting arrangement therefor having a sink flange and means associated therewith for securing a support ring thereto:

a support ring including at least three circumferentially spaced support projections, each said support projection comprising a radially outwardly, then downwardly, and then radially inwardly directed member, with said inwardly directed part thereof being of substantially shorter extent than said outwardly directed part, so that in vertical cross section each said projection has the general form of a channel with the lower leg substantially shorter than the upper leg;

a hopper for said disposer including an upper end provided with a radially directed flange thereon;

an elastomeric gasket seated on said hopper upper end with said flange received in groove means in said gasket for providing suspended support of said hopper from said gasket, said gasket including circumferentially spaced protuberances corresponding in number to said projections on said support ring and being shaped in vertical cross section to generally conform to said projections when received therein;

said gasket being received and supported by said support ring by raising said hopper and gasket slightly above their normal operational position, rotating said gasket to align said protuberances with said projections, and then seating said protuberances downwardly in said projections, so that the only support for said hopper is provided through the direct support of said gasket from said support ring.

2. In a food waste disposer and mounting arrangement therefor having a sink flange and means associated therewith for securing a support ring thereto:

a hopper for said disposer including an upper end provided with flange means thereon;

an elastomeric gasket seated on said hopper upper end with said flange means received in groove means in said gasket for providing suspended support of said hopper from said gasket, said gasket including at least three circumferentially-spaced, outwardly-projecting protuberances thereon;

a support ring having an upper portion supported from said sink flange and including a number of hook portions, corresponding in number to said gasket protuberances, spaced circumferentially around said upper portion and depending therefrom with lower portions of said hook portions being disposed, when said support ring and gasket are in installed relation, to underlie and thereby support said gasket protuberances;

said gasket being received and supported by said support ring by raising said hopper and gasket slightly above their normal operational position, rotating said gasket to vertically align said protuberances with said hook portions, and then seating said protuberances downwardly against said hook portions, so that the only support for said hopper is provided through the direct support of said gasket from said support ring.

3. In a disposer and mounting arrangement according to claim **2** wherein:

said flange means and said groove means in said gasket are dimensioned relative to each other to permit rotation of said hopper relative to said gasket means after said protuberances are seated on said hook portions to facilitate the desired end rotational position of said disposer.

4. In a disposer and mounting arrangement according to claim **2** wherein:

said hook portions and said protuberances include interengaging means for preventing relative rotational movement therebetween when said protuberances are seated against said hook portions.

5. In a disposer and mounting arrangement according to claim **2** wherein:

said interengaging means includes at least one projecting tab on said lower portion of each said hook portion, and at least one corresponding cavity provided on each said protuberance to receive said tab.

6. In a disposer and mounting arrangement according to claim **2** wherein:

said hook portions are formed as integral parts of said support ring and are non-detachable therefrom.

7. In a disposer and mounting arrangement according to claim **2** wherein:

each said hook portion includes a generally downwardly-directed leg inclined slightly inwardly toward its bottom end, and an inwardly-directed toe portion;

each said protuberance is shaped in vertical cross-section to generally conform to the interior shape of said hook portion when said protuberance is seated thereon, so that when said protuberance is elevated slightly from its seated position, clearance in a radial direction is provided between said protuberance and said hook portion.

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