

[54] WASTE FOOD DISPOSER MOUNTING ASSEMBLY

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[58] Field of Search 241/32.5, 46 A, 46 B,
241/100.5, 257 G; 4/287, 288; 285/119, 158,
314, 358-362, 394-396, 421

[56] References Cited

UNITED STATES PATENTS

3,477,747 11/1969 Clements 241/100.5 X
3,025,007 3/1962 Wieczorek 241/100.5

Primary Examiner—Robert L. Spruill

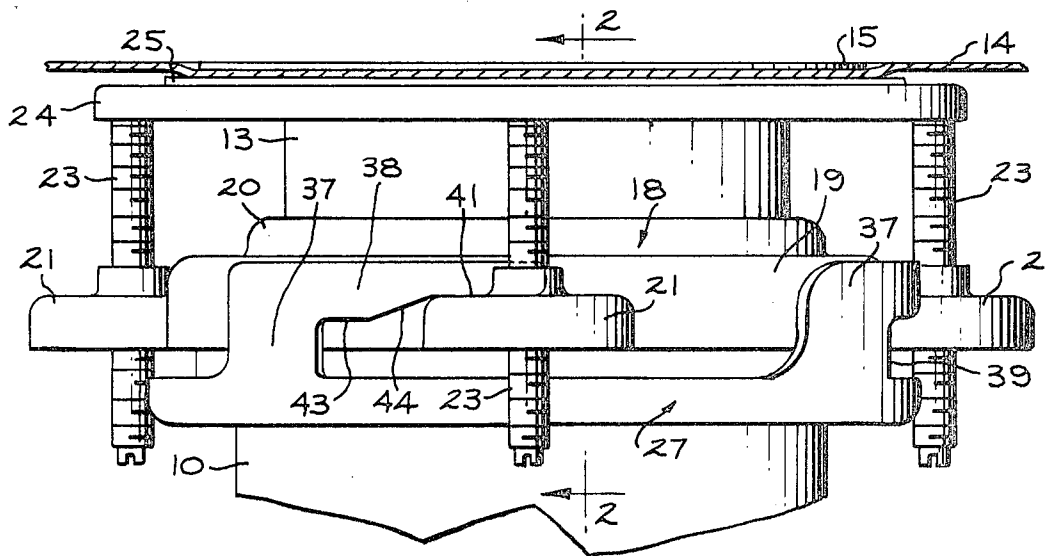
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[57]

ABSTRACT

A sink mount support assembly for a waste food disposer includes a pair of annular members having means thereon to enable engagement of the members, one with the other, when the members are brought together in axial alignment and one of the members is rotated with respect to the other. The means of engaging one of the members to the other provides a first holding position whereby the disposer is suspended beneath the sink but may be axially rotated to complete the plumbing connection thereto. A second relatively tight position is provided whereby the disposer is fastened firmly to the sink drain sleeve and prevented from thereafter rotating relative thereto. The means of engaging the two annular members of the sink mount support assembly is a quick connect arrangement requiring only that the rotatable annular member be manually driven in rotation a relatively short distance to complete the procedure of mounting a disposer to a sink drain sleeve, and it is a quick disconnect assembly inasmuch as the rotatable member may be thereafter manually driven to rotate in a direction opposite to the connecting rotation to free the disposer unit from the drain sleeve.

10 Claims, 6 Drawing Figures



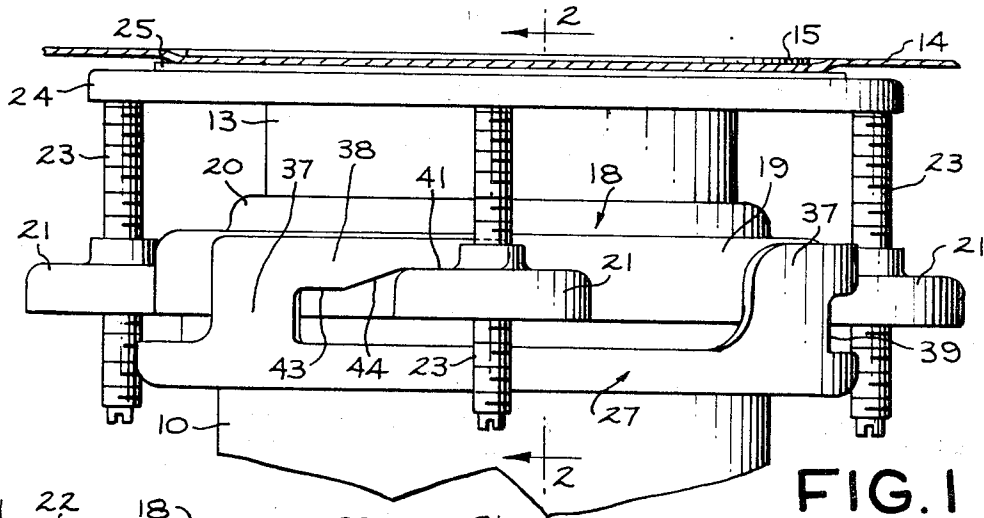


FIG. 1

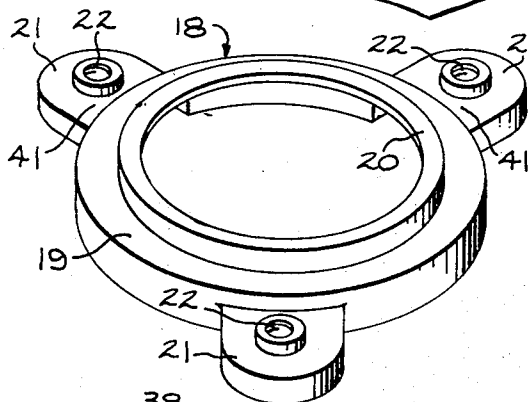


FIG. 3

FIG. 5

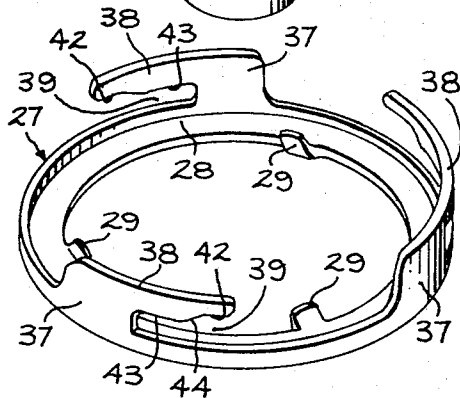
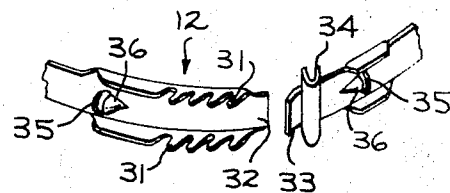


FIG. 4

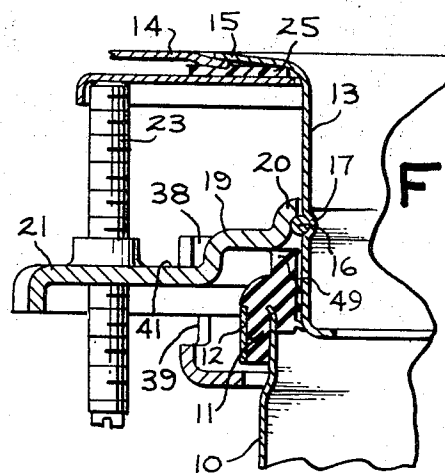


FIG. 2

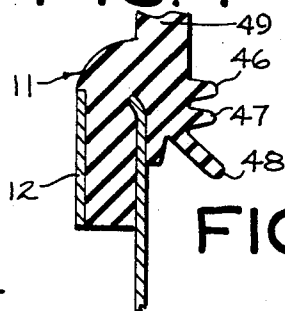


FIG. 6

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WASTE FOOD DISPOSER MOUNTING ASSEMBLY

This invention relates generally to means for mounting a food waste disposer and more particularly pertains to a quick connect and disconnect mounting assembly for coupling a disposer to a tubular drain sleeve beneath a sink.

It has for years been common practice to suspend a food waste disposer from a tubular drain sleeve fastened in sealed relation in the drain opening of a sink. Although the tubular sleeve has undergone changes through the years from a particularly heavy cast body to a comparatively thin-walled construction generally of stainless steel, until relatively recently the most common arrangement for coupling the disposer housing to the drain sleeve remained substantially unchanged primarily due to its proven dependability.

For example, in U.S. Pat. No. 2,166,786, issued to Adalbert Alexay, on July 18, 1939, an assembly for coupling a food waste disposer to a sink sleeve is illustrated that comprises a rigid drain sleeve having an annular radially-outwardly projecting ridge on which a coupling member or clamping ring is carried. The upper end of the disposer housing is provided with a radially-outwardly projecting flange that serves as a second clamping ring whereby bolts may be screwed upwardly through threaded circumferentially spaced-apart openings extending through both clamping rings to affix the upper end of the disposer housing to the drain sleeve. The vertically aligned bolts extend upwardly through the clamping rings whereby they contact an annular sink fitting and press it upwardly against the under surface of the sink around the sink's drain opening. The force exerted upwardly against the annular fitting pressing against the under surface of the sink is translated through to the sink sleeve which is drawn downwardly whereby its upper outwardly extending flange is pulled tightly against the sink's inner surface circumjacent the sink's drain opening. The vertically oriented bolts also tend to pull the clamping rings together against an annular sealing member disposed inwardly therebetween to establish a watertight seal between the upper end of the disposer housing and the sink sleeve.

Although disposer hanging assemblies patterned generally in the arrangement illustrated in the Alexay patent continue to be used as a reliable means of mounting a disposer to a sink, more recent prior art devices have been introduced that are less difficult and time-consuming to assemble and are more functional in reducing vibrations that are transmitted to the sink. For examples of these devices reference may be made to U.S. Pat. No. 3,025,007, issued Mar. 13, 1962 to E. E. Wiczorek or to U.S. Pat. No. 3,108,755, issued to J. W. Yartz et al.

While both Wiczorek and Yartz et al teach the advantages of a quick connect and disconnect assembly and the concept of being able to rotate the disposer on its vertical axis after it is suspended in order to facilitate the plumbing operation, it is nevertheless believed that there are certain problems in assemblies of this general type. Each has certain other exclusive advantages worth retaining and certain disadvantages believed to be obviated by the present invention.

The present invention was developed in the interest of obviating certain recognized problems by devising a

new and improved coupling assembly for mounting a disposer beneath a sink that retains the time-proven advantages of previous assemblies in a new and improved combination. It is believed that these problems and the means by which the present invention overcomes them will be understood from the detailed description of the preferred embodiment of the present invention.

SUMMARY OF THE INVENTION

The present invention provides a simplified, comparatively low-cost mounting arrangement and vibration-absorbing means for mounting a food waste disposer in communication with the drain opening of a sink.

Broadly described, the present invention comprises a means, in combination with a food waste disposer, for removably connecting the disposer to a sink drain sleeve including a pair of annular connecting members adapted to be removably engaged with each other and having means therewith acting to draw one toward the other by a camming action therebetween. The sealing means is fastened to the upper end of the disposer and is adapted to be mounted between the connection members for sealing against the outer side wall of the drain sleeve. The sealing means is preferably adapted to move upwardly on the outer side wall surface of the sink sleeve when the connecting members are engaged and drawn toward each other by the camming action whereby the entire sealing means is circumjacent the outer side wall of the drain sleeve and above the lower end thereof.

The assembly of the invention is adapted to suspend the disposer in a relatively loose arrangement on the drain sleeve so that the installer can rotate the disposer on its vertical axis relative to the drain sleeve in order to align the disposer for the plumbing connection. A simple manual adjustment is all that is required thereafter to fasten the disposer relatively firmly to the sink sleeve whereby the actual rotation of the disposer is curtailed.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is an elevational view of the upper end of a food waste disposer and the presently preferred embodiment of an improved assembly for connecting the disposer to a sink in accordance with the present invention;

FIG. 2 is a sectional view taken along lines 2—2 of FIG. 1;

FIG. 3 is a perspective view of a rigid stationary member that is a part of the illustrated embodiment of the improved mounting assembly of the present invention;

FIG. 4 is a perspective view of a rotatable rigid connecting member that is a part of the illustrated embodiment of the improved mounting assembly of the present invention;

FIG. 5 is a view in perspective showing the ends of a band or clamping strap, a preferred means of compressing a resilient annular boot to the upper end of a disposer housing in accordance with the present invention; and

FIG. 6 is an enlarged view in vertical section of the resilient annular boot component of the present invention, shown as it appears relative to the upper end of the disposer housing prior to being placed in its operative position in the assembly of the embodiment as illustrated in FIG. 2.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to FIGS. 1 and 2, there is illustrated a disposer housing upper end or hopper 10 having a sealing means in the form of an annular resilient gasket or boot 11 fastened thereto by means of a fastening means preferably in the form of a metal clamping strap 12 (shown in detail in FIG. 5). The disposer hopper 10 is disposed in drain flow communication with a tubular drain sleeve 13 extending downwardly from the drain opening in a sink 14. The tubular drain sleeve 13 has an upper annular radially-outwardly extending flange portion 15 that contacts the inner sink surface circumjacent the drain opening of the sink 14.

A radially-outwardly extending annular ridge is provided intermediate the length of the tubular drain sleeve in the form of a snap ring 16 carried in a circumferential groove 17 formed in the body of the drain sleeve 13. A stationary connecting member 18 (shown separately in FIG. 3) is carried around the drain sleeve 13. The stationary connecting member 18 has an annular major body portion 19 with a radially-inwardly extending flange portion 20 that rests on the snap ring 16 carried in the groove 17 of the drain sleeve 13. Extending radially-outwardly, preferably in equidistantly spaced relation to each other, from the major body portion 19 of the stationary connecting member 18 are knob-like portions or bosses 21. Each boss has a threaded opening 22 therein to accommodate a vertically disposed stud 23.

The studs 23 (see FIGS. 1 and 2) are screwed upwardly through the bosses 21 whereby their upper ends exert pressure against an annular clamping ring or sink fitting 24 disposed around the drain sleeve 13. Sealing means in the form of an annular resilient gasket 25 is compressed upwardly by the clamping ring 24. With particular reference to FIG. 2, it will be noted that the gasket 25 underlies the sink surface circumjacent the sink's drain opening and also seals against a portion of the drain sleeve flange 15 whereby a watertight seal is formed between the drain sleeve 13 and the sink 14.

When the plumber or installer prepares to install the disposer beneath the sink 14, his first operation is to drop the end of the sink sleeve 13 through the sink opening and then bring the annular gasket 25 up from beneath the sink 14 and over the body of the drain sleeve 13 into the position shown in FIG. 2. Then the stationary connecting member 18 is slipped up over the drain sleeve 13 after which the snap ring 16 is placed into the groove 17 on the drain sleeve 13. The studs 23 are then threaded up through the bosses 21. By screwing the studs 23 through the openings 22 provided therefore in the bosses 21, and then screwing the studs upwardly, a force is exerted between the clamping ring 24 and the stationary connecting member 18 whereby the flange 20 of the stationary connecting member 18 is forced downwardly against the snap ring 16 and the clamping ring 24 is pressed upwardly toward the sink 14. Tightening the studs 23 serves to rigidly mount the sleeve 13 to the sink 14 and also firmly fastens the stationary connecting member 18 in its position on the drain sleeve 13. The heretofore described procedure is normally completed by the installer even before the disposer is taken from its shipping carbon. Once these preparatory steps are completed the drain sleeve 13 is

firmly positioned and ready to have the disposer mounted thereon.

A rotatable rigid connecting member 27 is carried about the neck of the disposer hopper 10 and has an annular body portion 28 with inwardly projecting flange means, preferably in the form of separate spaced-apart fingers 29, projecting radially-inwardly therefrom for engagement against the under surface of the resilient boot 11. The rotatable connecting member 27 is preferably placed in position about the neck of the hopper 10 before the disposer leaves the factory. The resilient boot 11 is preferably clamped into position as part of the factory assembly line operation, also.

The clamping band 12 is of a type requiring a specific type of tool for its installation and removal so that, unlike many prior art mounting assemblies, the hopper sealing means cannot be easily or inadvertently removed and lost once it has been placed in position on the hopper lip. The clamping band 12, as shown in FIG. 5, is preferably a semi-flexible, one-piece tempered steel spring strap having a series of outwardly protruding teeth 31 along opposite edges near an end 32 thereof. The other end 33 of the band 12 has a transverse channel portion extending outwardly from opposite edges thereof to provide inwardly directed ridge portions 34 for engaging across opposite sets of teeth 31.

At a point set back from each end of the band 12 an opening 35 is provided. Adjacent each opening 35 the band sidewall is expanded outwardly to provide a projection or lip portion 36. The purpose of the two lip portions 36 is to enable the ends 32 and 33 of the band 12 to be gripped by a plier-like tool (not shown). By proper manipulation of the tool, a force may be applied whereby, with end 33 overlapping end 32, the ends can be drawn toward each other to compress the band 12 around the boot 11. This action moves the ridges 34 along the parallel rows of outwardly projecting teeth 31 whereby the ridges will engage a set of opposed teeth. Moving the ridges 34 further along the rows of teeth 31 in ratchet fashion and compressing the band 12 tighter serves to press the resilient boot 11 tightly against the outer surface adjacent the lip of the disposer hopper 10. This type of strapping band connection makes a particularly neat, unobtrusive arrangement that fastens the band 12 quite firmly to the hopper, and, unlike typical circular clamps or bands that utilize circumferentially oriented bolts for tensioning the band, there are no bulky outward projections to interfere with the installation of the other parts of the mounting assembly.

Separate compressing means is provided for fastening the annular boot 11 to the hopper lip of the disposer 10 so that there is no dependence upon any force being exerted directly from the hopper lip and vertically upwardly against the lower end of the drain sleeve 13 to effect a watertight sealing arrangement therebetween. The annular boot 11, after being firmly fastened to the hopper lip, is caused to move upwardly in a squeegee action against the outer side wall of the drain sleeve 13 by the act of changing the orientation of the connecting members 18 and 27 from the first relatively loose holding position to the second tight position. By this arrangement, transmission of vibrations from the operating disposer to the sink is substantially inhibited.

With particular reference now to the rotatable connecting member 27 shown separately in FIG. 4, it will be seen that it has engaging means comprising integral

shoulder portions 37 extending upwardly from the body portion 28 and that each shoulder portion 37 has an arm portion 38 projecting laterally in the direction of rotation of the member 27. Each arm portion 38 extends preferably coextensive with the outer periphery of the body portion 28 of the rotatable connecting member 27 and in spaced relation thereto whereby each arm portion 38, with its base shoulder portion 37, forms a deep-throated hook portion 39. Thus, when the disposer is brought into aligned position beneath the drain sleeve 13 and moved upwardly so that the lower end of the drain sleeve 13 is insertably-received within the throat of the disposer hopper 10 and in contact with radially-inwardly projecting flange portions of the resilient boot 11, the installer need only be sure that the bosses 21 extending from the stationary connecting member 18 are interposed between the arm portions 38 of the body portion 28 of the rotatable connecting member 27. Then, by rotating the rotatable connecting member 27 to the right, that is in a clockwise direction as viewed looking upwardly, each arm portion 38 will pass over and onto the upper surface 41 of one of the bosses 21 at a point radially-inwardly from the adjacent stud 23.

The under surface of each arm portion 38 is provided with at least two step surfaces 42 and 43, on different levels, with the outer step surface 42 at a higher horizontal plane than the inner step surface 43 nearer the shoulder portion 37. Initial rotation of the rotatable connecting member 27 causes the outer step surface 42 to move over and reside upon the upwardly facing surface 41 of a boss 21 whereupon the installer can remove his hands from the disposer and allow it to remain suspended relative to the drain sleeve 13. At this stage the fit between the rotatable connecting member 27 and the stationary connecting member 18 is snug but relatively loose, and it is possible for the installer to rotate the body of the disposer on its vertical axis relative to the drain sleeve 13 in order to align it for completing the plumbing connection thereto. Then, by striking the rotatable connecting member 27 at a point on the back of one of the shoulder portions 37, the rotatable connecting member 27 can be forced to complete its connecting action. Each arm portion 38 is thereby driven fully onto the upwardly facing surface 41 of its corresponding boss 21 so that the inwardly disposed step surface 43 on the underface of each arm portion 38 moves into position against a boss 21.

Between the two successive step surfaces 42 and 43 on the underface of each arm portion 38 is an inclined surface interconnecting the step surfaces 42 and 43 that acts as a camming means against the upper edge of the boss 21 so that rotating the rotatable connecting member 27 from the first described position to its final position acts to cam the member 27 upwardly in closer relation to the stationary connecting member 18.

Should the need ever arise, the disposer may be removed from its installed position on the drain sleeve 13 by hammering a small tool to exert a driving force against the outer tip of one of the arm portions 38 and thereby rotatably disengage the rotatable connecting member 27 from the bosses 21 of the stationary connecting member 18.

The resilient boot 11 is shown in FIG. 6 as it appears prior to its installation against the outer side wall surface of the hopper lip. It will be noted that the radially-inwardly projecting portion of the boot 11, that is, the

part inward of the hopper lip, preferably includes three spaced-apart annular flexible lips 46, 47 and 48. The boot 11 also has an upwardly projecting portion or ridge 49. When the boot 11 is moved upwardly over the outer surface of the drain sleeve 13, the bottom peripheral edge of the drain sleeve 13 progressively contacts all of the lips and pushes the longest inwardly extending lip 48 downwardly. This flexure is translated back to the body of the boot 11 and tends to cause the two shorter lips 46 and 47 to spread away from each other and twist inwardly against the outer side wall surface of the drain sleeve 13. Thus, a watertight seal is established between the drain sleeve's outer wall and the resilient boot 11 that is, when the installation of the assembly is completed, nevertheless yieldable to unusual stress between the disposer and the drain sleeve such as the resultant torque at the start of the disposer's motor.

The particular boot configuration, and means of retaining the boot on the hopper, as shown in FIG. 6, have been found to have excellent sealing and vibration dampening characteristics when used in combination with the more rigid component of the assembly heretofore described. To obtain the desired sealing and dampening effect of the seal in accordance with the present invention, any modification of that which is shown in the preferred embodiment that would tend to exert excessive compressive force to jam the resilient boot 11 against the drain sleeve 13 outer side wall is to be avoided. The fit between the resilient boot 11 and the drain sleeve 13 side wall should be only that which is required to prevent leakage therepast. In fact, prior to the final rotation of the rotatable connecting member 27, it must be possible to rotate the disposer on its vertical axis and thereby slide the resilient boot 11 around the outer surface of the drain sleeve 13 whereby the lips 46, 47 and 48 slip thereagainst.

When the disposer is first suspended to the drain sleeve 13 in its comparatively loose first position, the resilient boot 11 is disposed relative to the sleeve whereby the lip 48 is projecting beneath the lower edge of the sleeve and only the boot lips 46 and 47 are in relatively firm contact against the sleeve's side wall. The final connecting operation, when the rotatable connecting member 27 is turned and caused to cam upwardly toward the stationary connecting member, serves to move the entire boot 11 upwardly along the side wall surface of the drain sleeve 13 so that the annular lip 48 is deformed outwardly and stretched tightly against the sleeve's side wall surface. The upward movement of the boot 11 on the sleeve 13 is caused by the fingers 29 pressing upwardly and digging into the under surface of the boot 11 and pressing the boot's upwardly projecting ridge 49 against the connecting member 18.

The upwardly projecting ridge 49 may be an annular portion of the boot 11 or may be formed as a plurality of circumferentially spaced-apart humps such as, for example, four upwardly projecting humps or ridges disposed in a quadrant relationship around the drain sleeve. Pressure through the boot 11 via the ridge 49, whether the latter is formed as an annular portion or in separate spaced-apart humps, is the means of providing a biasing force between the connecting members 18 and 27 to thereby retain the entire assembly in the installed tight position and eliminate axial rotation of the disposer relative to the drain sleeve 13. The lines of

force retaining the connecting member 27 to the connecting member 18 are substantially vertical through the boot 11, from the points on the under surface of the boot 11 where the fingers 29 press upwardly there-against and thence upwardly through the boot body to where the ridge 49 contacts the connecting member 18. This vertical clamping pressure through the boot 11 occurs radially-outwardly from the drain sleeve 13 so that direct transmittal of vibrations from the disposer directly to the lower end of the drain sleeve does not occur as is the case in a comparatively more rigid connection. Rather, in the structure of the present invention, some vertical reciprocation of the boot 11 relative to the drain sleeve 13 can take place in response to vibratory action of the disposer despite the relative rigidity between the connecting members 18 and 27.

The present invention is believed to have the distinct advantage of allowing for rapid coupling or uncoupling of a disposer to a drain sleeve by rotation of one connecting member relative to a stationary connecting member. It also has an advantage over the older bolt-on system in that it is designed to initially hold the disposer relatively loosely in position beneath the sink and on the drain sleeve without assistance of the installer so that the installer's hands are free to complete plumbing connections thereto, etc. Thereafter, the coupling operation may be completed by a final rotation of the rotatable connecting member whereby the upper end of the disposer housing is sealed relative to the drain sleeve.

It is also believed desirable to utilize the broad concept of having one rigid connecting member rotatable relative to a stationary connecting member without the requirement of substantially redesigning or reshaping the heretofore known construction for the stationary member that has been previously proven to be sturdy and dependable in the prior art. Considerable retooling cost in thereby avoided, and a new and improved assembly is provided which by its appearance imparts confidence and dependability to the experienced plumber.

Experimentation in the development of the present invention has shown it to be advantageous to avoid compressing the annular sealing member or boot of such an assembly between the lower end of the drain sleeve and the upper end of the disposer housing or between either of these parts and the rigid connecting member constituents of the assembly. If the annular boot is utilized in its compressed form as part of the means of translating holding force directly between the disposer housing and the drain sleeve, much of the vibration dampening effect potentially inherent in the annular boot because of its resiliency is lost.

The present invention, therefore, comprehends a new and unique combination by adapting old proven elements in a new disposer mounting assembly wherein structural differences and new concepts appear primarily in a single component of the assembly and its functional interaction with other components thereof.

The foregoing description and the accompanying drawings pertain to the presently preferred embodiment of the invention heretofore disclosed. It is not intended that the invention be limited to either that which has been shown in the accompanying drawing or described in the specification since it will be obvious to those skilled in the art that various changes and modifications may be made after benefit of this disclosure. It

is therefore intended that the appended claims cover all changes and modifications as fall within the true spirit and scope of the invention.

We claim:

1. In combination with a food waste disposer, means for removably connecting the disposer to a sink drain sleeve, comprising:
 - a. a pair of annular connecting members adapted to be removably engaged with each other and having means therewith for drawing one toward the other by a camming action therebetween,
 - b. sealing means disposed between the connecting members for sealing against the drain sleeve,
 - c. means for fastening the sealing means to the upper end of the disposer,
 - d. the sealing means being adapted to move upwardly on the outer side wall surface of the sink sleeve when the connecting members are engaged and drawn toward each other by the camming action whereby the entire sealing means resides above the level of the lower end of the drain sleeve,
 - e. one of the annular members being adapted to be rotatable with respect to the other and having a plurality of rigid shoulder portions extending upwardly therefrom in spaced-apart relation to each other, and each of the shoulder portions having a rigid arm portion extending laterally therefrom in spaced relation to the outer periphery of the rotatable connecting member, and
 - f. at least one of the arm portions having an under surface including at least two step surfaces thereon disposed at different respective levels whereby the step surface nearest the outer end of the arm portion is disposed at a higher horizontal plane than the next inwardly disposed step surface.
2. In combination with a food waste disposer, means for removably connecting the disposer to a sink drain sleeve, comprising:
 - a. a pair of annular connecting members adapted to be removably engaged with each other and having means therewith for drawing one toward the other by a camming action therebetween,
 - b. sealing means disposed between the connecting member for sealing against the drain sleeve,
 - c. means for fastening the sealing means to the upper end of the disposer,
 - d. the sealing means being adapted to move upwardly on the outer side wall surface of the sink sleeve when the connecting members are engaged and drawn toward each other by the camming action whereby the entire sealing means resides above the level of the lower end of the drain sleeve,
 - e. one of the annular connecting members being adapted to be rotatable with respect to the other and having a plurality of rigid shoulder portions extending upwardly therefrom in spaced-apart relation to each other and each of the shoulder portions having a rigid arm portion extending laterally therefrom in spaced relation to the outer periphery of the rotatable connecting member, and
 - f. at least one of the arm portions having an under surface including at least two spaced-apart step surfaces, and an intermediate area between step surfaces being inclined in an ascending line outwardly toward the outer end of the arm portion.

3. In an assembly for mounting the open end of the hopper of a waste food disposer on a tubular drain sleeve, the combination of:

- a. a resilient annular boot for sealing against the open upper end lip of the hopper in drain flow communication with the drain sleeve,
- b. the annular boot being disposed to seal against the outer circumferential surface of the hopper lip,
- c. an annular compressing band around the annular boot for sealing it against the hopper lip,
- d. the annular boot having an annular radially-inwardly projecting flange portion for insertably-receiving and sealing against the outer side wall surface of the drain sleeve,
- e. a rotatable rigid connecting member having an annular body portion disposed circumjacent the hopper downwardly from the hopper lip,
- f. flange means extending radially-inwardly from the body portion of the rotatable rigid connecting member for abutting against the annular boot and supporting the weight of the disposer thereon,
- g. a plurality of rigid shoulder portions extending upwardly from the body portion of the connecting member in spaced-apart relation to each other and from the annular boot,
- h. each of the shoulder portions having a rigid arm portion extending laterally therefrom in spaced relation to the body portion of the first connecting member,
- i. a second rigid connecting member having an annular body portion fastened circumjacent the drain sleeve at a position back from the drain sleeve's lower end,
- j. the body portion of the second connecting member having a plurality of spaced-apart bosses projecting radially-outwardly therefrom, and
- k. the bosses and the arm portions being disposed whereby the arm portions are engageable over the bosses when the end of the drain sleeve is insertably-received within the flange portion of the annular boot and the first connecting member is rotated a substantially short distance relative to the vertical axis of the drain sleeve.

4. The invention of claim 3 wherein at least one of the arm portions has an under surface including at least two step surfaces thereon and wherein the step surface nearest the outer end of the arm is disposed at a higher horizontal plane than the next inwardly disposed step surface whereby, when the first connecting member is rotated relative to the second connecting member, the first step surface is positioned on one of the bosses and thereby establishes a relatively loose engagement between the drain sleeve and the disposer, and further rotation of the first connecting member causes the next inwardly disposed step to move onto the upper surface of the boss and thereby causes a relatively firm engagement between the drain sleeve and the disposer hopper.

5. The invention of claim 3 wherein the flange means of the first connecting member's body portion comprises a plurality of inwardly projecting circumferentially spaced-apart fingers for engaging the under surface of the annular boot.

6. In an assembly for mounting the hopper lip of a

food waste disposer beneath a sink, including a tubular drain sleeve having an upper annular flange that overlays the sink's inner surface circumjacent the sink's drain opening, an annular clamping member around the sleeve and against the sink bottom, a support ring carried in a groove on the sleeve above the drain sleeve's lower open end, a stationary annular connecting member encircling the sleeve and abutting downwardly against the support ring, and a plurality of vertically oriented and spaced-apart studs extending between the clamping member and bosses projecting outwardly from the stationary annular connecting member for sealing the drain sleeve relative to the sink and forcing the stationary annular connecting member down tightly against the support ring, the combination therewith of:

- a. an annular sealing means on the hopper lip having a substantial body portion thereof disposed radially-outwardly therefrom,
- b. the hopper lip, with the sealing means thereon, being of a size to insertably-receive the lower end of the sink sleeve therein in a sealed relation therewith,
- c. an annular rotatable connecting member carried around the hopper below the lip thereof and adapted to be rotatable generally in a horizontal plane thereon,
- d. the inside dimension of the opening in the rotatable connecting member being small enough to prevent its withdrawal upwardly over the sealing means, and
- e. the rotatable connecting member having a plurality of hook portions adapted to engage over and lock on the bosses of the stationary annular mounting member when, with the lower end of the drain sleeve inserted downwardly into the hopper lip, the rotatable support member is rotated a short distance relative to the hopper.

7. The invention of claim 6 wherein each of the hook portions comprises a vertically extending shoulder portion having an arm portion extending laterally from the shoulder portion in coextensive and spaced relation with the outer periphery of the rotatable connecting member.

8. The invention of claim 6 wherein the under surface of the outer end of each hook portion is provided with a stepped surface whereby, when the outer end of each hook portion is engaged on the upper surface of one of the bosses, the weight of the disposer is suspended thereby in a relatively loose relation permitting the disposer to be rotated on its vertical axis relative to the sink.

9. The invention of claim 6 wherein each hook portion is disposed to engage one of the bosses at a point radially-inwardly from and adjacent to the vertically oriented stud extending upwardly from the boss.

10. The invention of claim 6 wherein the annular sealing means includes a resilient annular portion that extends over and radially-inwardly relative to the lip of the hopper and seals circumferentially against the outer side wall surface of the drain sleeve.

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