

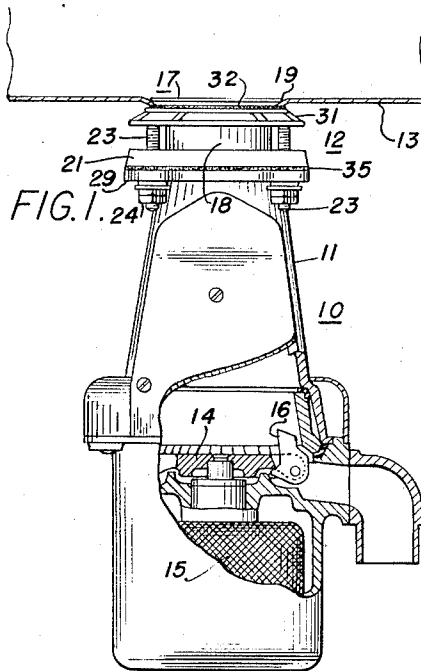
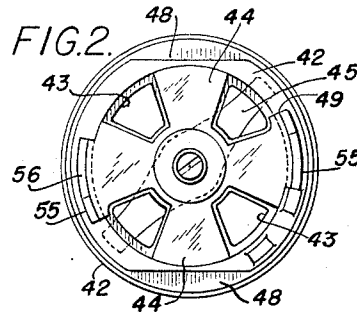
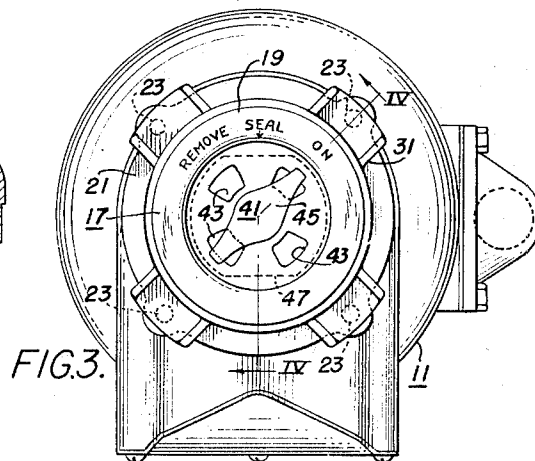
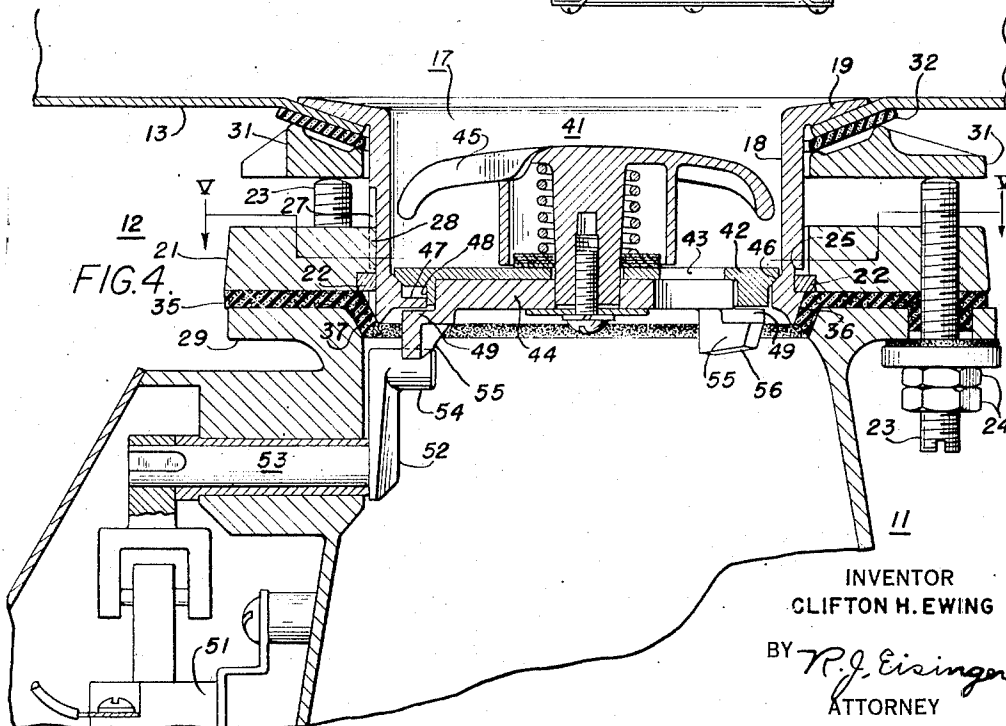
June 5, 1951

C. H. EWING
WASTE FOOD GRINDER

2,555,583

Filed June 16, 1949

2 Sheets-Sheet 1



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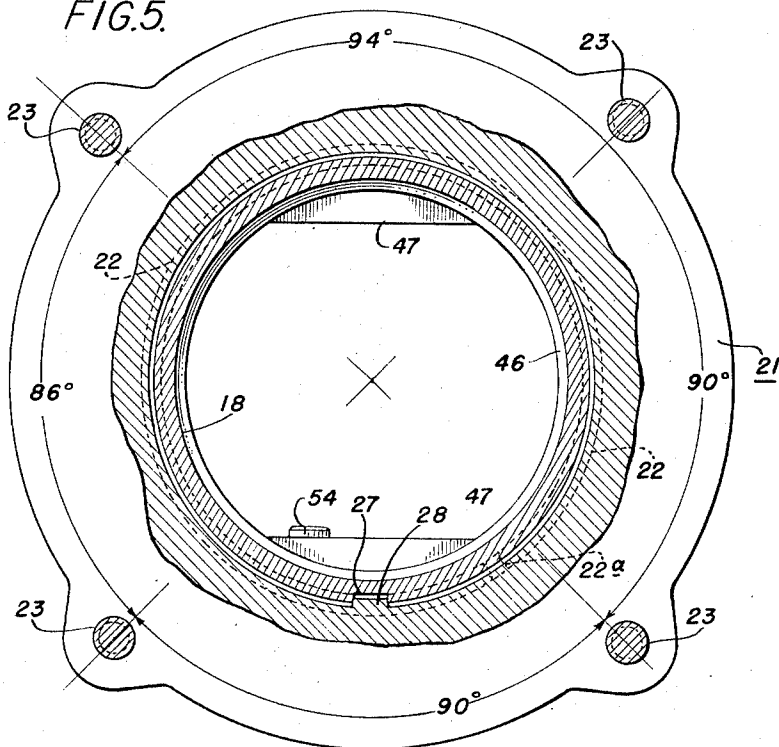
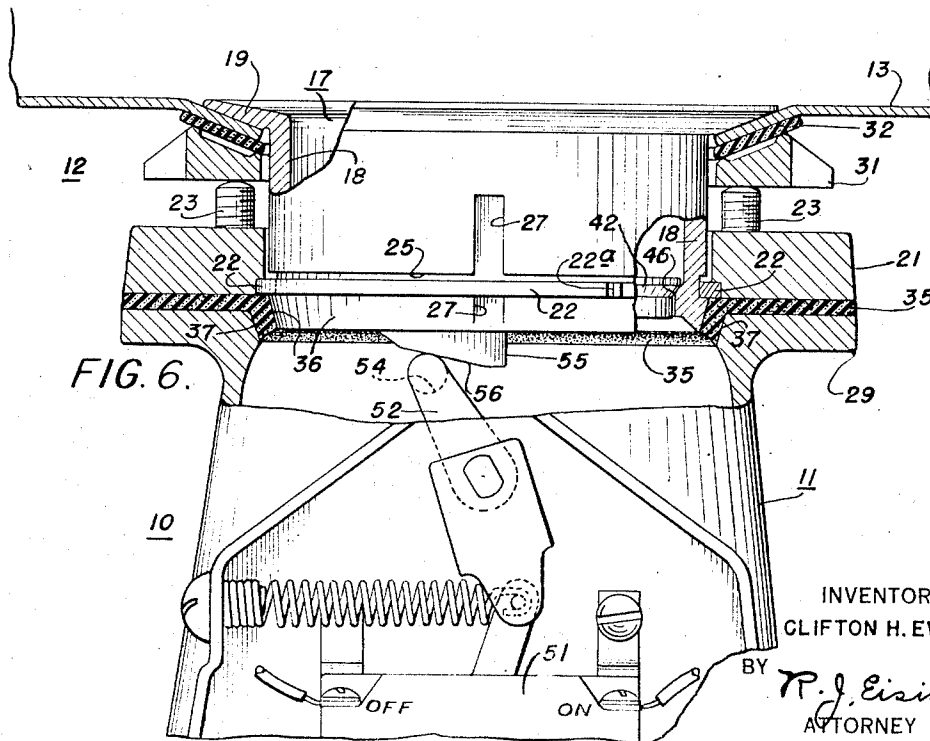
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2 Sheets-Sheet 2

FIG. 5.



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WASTE FOOD GRINDER

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4 Claims. (Cl. 285—37)

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My invention relates to a waste food grinder, more particularly to an assembly for suspending the grinder from the bottom wall of a sink at the drain opening thereof, and it has for an object to provide an improved assembly of this type.

A particular object is to provide an assembly which assures alignment between the housing of the grinder and the adapter ring that engages the sink. Such alignment is necessary when the grinder is provided with a switch that is mounted on the housing and operated by a closure seating in the adapter ring.

A further object is to provide an assembly having relatively simple and inexpensive parts that are easily assembled.

In accordance with the present invention, I provide an adapter ring which seats in the drain opening of the sink and which comprises a tubular portion and a flange. A retaining ring, which may be in the form of a split snap ring, is seated in a groove or on a shoulder on the outer surface of the tubular portion. A supporting ring rests on the retaining ring, being preferably provided with a recess in which the retaining ring is received. The supporting ring and the tubular portion are provided with interlocking or key portions to assure alignment therebetween. Such key portions preferably comprise a vertical keyway in the outer surface of the tubular portion and a key projecting into the keyway from the inner periphery of the supporting ring. The housing is bolted to the supporting ring and is maintained in aligned relation therewith by disposing the attaching bolts in non-uniformly spaced relation.

In the preferred embodiment of my invention, the lower end of the tubular portion of the adapter ring closely approaches the upper end of the housing and a single gasket provides a seal therebetween, thereby minimizing possibility of leakage of fluid from the housing. Also, the interior surfaces of the lower end of the tubular portion, the gasket and the upper end of the housing are substantially flush with each other and curved smoothly and gently and of sufficiently steep slope so that said surfaces are washed clean by the flow of water through the housing.

These and other objects are effected by my invention as will be apparent from the following description and claims taken in connection with the accompanying drawing, forming a part of this application, in which:

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showing a waste food grinder attached to a sink by my improved mounting assembly;

Fig. 2 is a bottom plan view of the closure member;

Fig. 3 is a plan view of the grinder showing the closure and the mounting assembly;

Fig. 4 is an enlarged section, taken on the line IV—IV of Fig. 3, showing the upper portion of the grinder, including the mounting assembly and the closure;

Fig. 5 is a horizontal sectional view taken on the line V—V of Fig. 4; and

Fig. 6 is an elevational view of the upper portion of the grinder, showing parts of the mounting assembly in section.

Referring to the drawing in detail, I show a waste food grinder 10 having a housing 11 and also having my novel mounting assembly 12, by means of which it is suspended from the bottom wall 13 of a sink. The grinder proper is of a construction heretofore known. It comprises a flywheel 14 driven by a motor 15 and carrying a pair of cutters or impellers 16.

The mounting assembly, shown more particularly in Figs. 4 and 6, comprises first an adapter ring 17 which seats in the drain opening of the sink 13. The adapter ring 17, which is also commonly referred to as a sink flange, comprises a tubular portion 18 and a flange 19 that overlies the portion of the bottom wall 13 surrounding the drain opening. The mounting assembly further includes a supporting ring 21, a retaining ring 22, stud bolts 23 and nuts 24. The retaining ring 22 is a resilient or snap ring which is split as shown at 22a in Fig. 5, to permit it to be expanded for assembly. It seats in an annular groove 25 formed in the outer surface of the tubular portion 18, adjacent the lower end thereof. The lower surface of the groove 25, which supports the ring 22, constitutes an upwardly facing shoulder. The supporting ring 21 rests on the retaining ring 22 and is preferably provided with a recess to receive the retaining ring, as shown in Figs. 4 and 6, thereby serving to prevent expansion of the retaining ring when assembled. The supporting ring 21 and the tubular portion 18 are provided with interlocking or key portions for holding the same in alignment against relative rotation. In the illustrated embodiment, the tubular portion 18 is formed with a vertical slot or keyway 27 in its outer surface, and the supporting ring 21 is formed, on its inner periphery, with a key 28 projecting into the vertical keyway 27.

The housing 11 is provided at the top with a

Fig. 1 is an elevational view, partly in section,

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flange 29, which is bolted to the supporting ring 21 by the stud bolts 23 and the nuts 24. As illustrated in Figs. 3 and 5, the bolts 23 and the bolt openings in the flange 29 and the ring 21 are spaced non-uniformly circumferentially, so as to assure that the housing and the ring will be assembled in the proper relation. The spacing of the bolts and the bolt openings in Figs. 3 and 5 permits assembly of the housing and the ring in only one circumferential or angular relation. However, there may be employed a spacing which permits assembly in either one of two diametrically opposite relative positions, especially where the closure is provided with duplicate cam surfaces for operating the switch, as hereinafter described.

A clamping ring 31 also encompasses the tubular portion 18 and is forced upwardly by the bolts 23 to clamp the edge portion of the wall 13 between the flange 19 and the ring 31. A gasket 32 may be provided between the ring 31 and the wall 13.

As shown in Figs. 4 and 6, the outer surface of the tubular portion 18 below the groove 25 is of convex conical form, tapering downwardly, as indicated at 36. The housing 11 is formed with a concave conical surface 37 arranged in opposed relation to the convex conical surface 36. A gasket 35 has a flat portion which is clamped between the flange 29 and the ring 21, and a conical portion which is clamped between the conical surfaces 36 and 37 to provide a liquid seal. As will be noted from Fig. 4, there is a sufficient width of the conical surface 36 below the bottom wall of the keyway 27, so that the gasket 35 seals effectively adjacent the keyway. The gasket 35 also has tubular portions encompassing the four bolts 23 and extending into the bolt openings in the flange 29.

As shown in Figs. 4 and 6, the inner surface of the gasket 35 and the adjacent inner surfaces of the tubular portion 18 and the housing 11 are substantially flush with each other and provide a smooth, gently curved surface, extending downwardly at a sufficiently steep incline, so that these surfaces are swept by the water flowing through the grinder and are thereby kept clean.

The top opening of the grinder is adapted to be closed by a closure 41, which is of known construction. The closure comprises a plate 42 which has four openings 43 of segmental form, and a second plate 44 which is rotatable relative to the plate 42, by means of a handle 45. The plate 44 has four recesses or openings, also of segmental form, which are adapted to register with the openings 43 to permit flow of liquid into the housing when the plate is in the position shown in Fig. 2 or when it is turned 90 degrees in counterclockwise direction as seen in Fig. 2. When the plate 44 is turned 45 degrees in counterclockwise direction, as seen in Fig. 2, it closes the openings 43.

The tubular portion 18 is provided with a conical surface 46 which provides a seat for the plate 42, and it is also provided with two diametrically opposite chordal portions 47 (Fig. 5) cooperating with complementary recesses 48 (Fig. 2) of the plate 42 to limit positioning of the plate 42 to either one of two diametrically opposite positions. The plate 44 is provided with two extensions 49 which are adapted to engage under the chordal portions 47 to lock the closure in place when the plate 44 is turned 90 degrees after being placed in its position.

In accordance with a known safety feature,

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there is provided a switch 51 which prevents operation of the grinder except when the closure is in place. The switch 51 is actuated by a crank 52, mounted on a shaft 53 and having a projection 54. The plate 44 is provided with two identical projections 55, extending downwardly from the extensions 49. Each of these projections 55 is formed with a cam surface 56 which is adapted, when it is disposed adjacent the projection 54, to engage the projection 54 for closing the switch, as shown in Fig. 6. Since there are two of these projections, the switch 51 may be operated with the closure in either one of two diametrically opposite positions. The structure of the present invention is necessarily and inherently assembled in proper alignment both rotationally and vertically, thereby assuring that one of the cam surfaces 56 will be in proper operative relation to the projection 54 to assure actuation of the switch.

Assembly

To mount the waste food grinder in suspended relation to the bottom wall 13 of a sink, the adapter ring 17 is first seated in the drain opening of the sink, as shown in Figs. 4 and 6. The gasket 32, the clamping ring 31, and the supporting ring 21 are then successively assembled over the tubular portion 18, the key 28 of the supporting ring being engaged in the keyway 27. The retaining or split ring 22 is then slipped over the tubular portion 18, the conical surface 36 serving to spread the ring, until the ring engages in the groove 25, into which the ring contracts. The supporting ring 21 is then brought down to rest on the retaining ring and also to retain it against expansion. The stud bolts 23 are inserted through the screw-threaded openings in the supporting ring 21 until they abut the clamping ring 31 to clamp the sink wall 13 between the ring and the flange 19. The grinder proper, with the gasket 35 resting on the flange 29, is then raised to position in the proper angular or circumferential relation, so that the bolts 23 extend through the bolt openings in the gasket and the flange, whereupon the washers and the nuts 24 are assembled to fasten the housing to the supporting ring and to clamp the gasket 35 therebetween.

Operation

To operate the grinder, it is necessary to install the closure 41, which can be placed in either one of the two diametrically opposite positions, but not in any intermediate position. After the closure is placed in position, the plate 44 is rotated 90 degrees, counterclockwise as seen in Fig. 2, or clockwise as seen from above. In this position the extensions 49 engage under the chordal portions 47 to lock the closure in place. Also, the recesses in the plate 44 are again in registry with the openings 43 to permit flow of water therethrough. At the same time, one of the projections 55 moves into engagement with the projection 54 to turn the shaft 53 and close the switch 51.

The motor is now energized by known means which form no part of this invention. During such operation, there is flow of cold water admitted through the openings 43 to carry away the ground material. Due to the fact that the above-mentioned inner surfaces of the lower end of the tubular portion 18, the gasket 35 and the housing 11 are substantially flush and smoothly curved and extend downwardly at a sufficiently steep in-

cline, these surfaces are swept by such flow of water and are thereby kept clean. The cleaning of these surfaces is also very effective when the closure 41 is removed, at which time the water can flow more directly to these surfaces. This may be done, for example, after a grinding operation is completed.

It will thus be seen that the grinder may be easily and quickly installed, and that alignment is assured. The supporting ring 21 cannot be installed except in the proper relation to the adapter ring 17, by reason of the key 23 and the ring 22 in the groove 25, and alignment between the casing and ring 21 is assured by reason of the unequal spacing of the bolts and the bolt openings. The particular advantage of the retaining ring 22 is that it assures that the supporting ring 21 will be located in a fixed vertical relation to the adapter ring 17, since the supporting ring 21 cannot be supported in any but the one fixed position, as distinguished from a screw-threaded arrangement, in which it is difficult to assure fixed positioning because of possible failure to rotate the parts to bring them to the proper position. It is thus assured that one of the cam surfaces 56 will be in proper operating relation to the projection 54 for controlling the switch 51.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications without departing from the spirit thereof.

What I claim is:

1. In a waste food grinder, the combination of a housing having an opening at the top and an outwardly extending flange surrounding said top opening, an adapter ring comprising a vertical tubular portion having an outwardly extending flange at the top, said tubular portion having an upwardly facing, ring-supporting shoulder on the exterior thereof and also having a vertical keyway, a supporting ring encompassing said tubular portion, said supporting ring having a key projecting inwardly from its inner periphery into said keyway, a retaining ring encompassing said tubular portion and seated on said shoulder, said supporting ring being seated on said retaining ring, and means for securing said housing flange to said supporting ring for supporting said housing, said housing and said supporting ring having aligning means to assure their assembly in predetermined angular relation.

2. A waste food grinder as set forth in claim 1 wherein the lower end of said tubular portion and the upper end of said housing have adjacent opposing surfaces adjacent the interior of the

housing and further including a gasket between said opposing surfaces, said gasket being clamped and forming a seal between said surfaces.

3. In a waste food grinder, the combination of a housing having an opening at the top and an outwardly extending flange surrounding said top opening, an adapter ring comprising a vertical tubular portion having an outwardly extending flange at the top, said tubular portion having an upwardly facing, ring-supporting shoulder on the exterior thereof and also having a vertical keyway, a supporting ring encompassing said tubular portion, said supporting ring having a key projecting inwardly from its inner periphery into said keyway, a retaining ring encompassing said tubular portion and seated on said shoulder, said supporting ring being seated on said retaining ring, said supporting ring and said housing flange having registering openings which are spaced non-uniformly circumferentially, the openings in the supporting ring being screw-threaded, and means engaging said screw-threaded openings for bolting said housing to said supporting ring.

4. In a waste food grinder, the combination of a housing having an opening at the top and an outwardly extending flange surrounding said top opening, an adapter ring comprising a vertical tubular portion having an outwardly extending flange at the top, said tubular portion having an upwardly facing shoulder on the exterior thereof, a retaining member seated on said shoulder, a supporting ring encompassing said tubular portion and seated on said retaining member, said tubular portion and said supporting ring having aligning means for retaining the same in predetermined angular relation, said aligning means comprising a key on one of such parts and a vertical keyway or recess in the other of said parts to receive such key, and means for securing said housing flange to said supporting ring for supporting said housing therefrom, said housing and said supporting ring having aligning means to assure their assembly in predetermined angular relation.

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