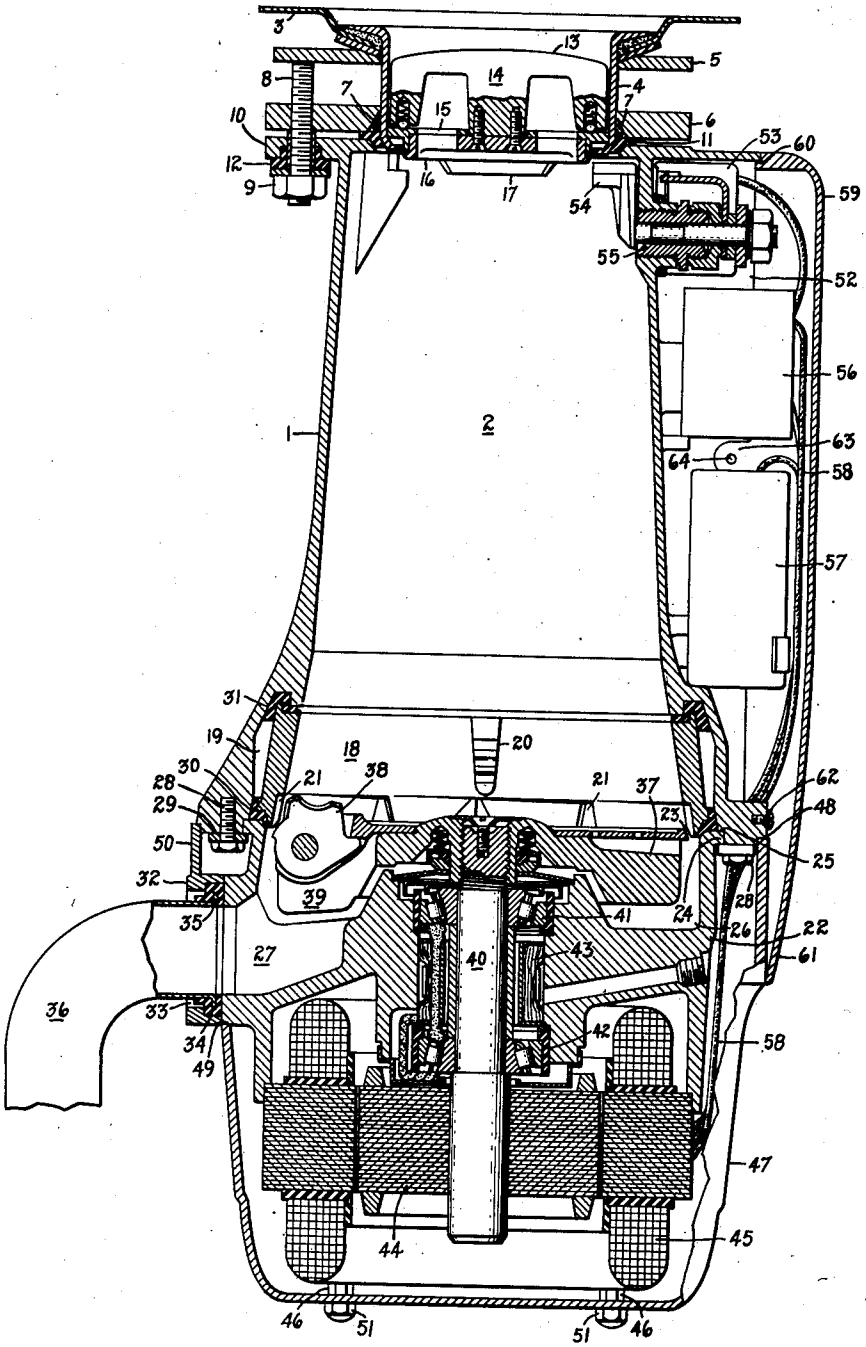
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FOOD WASTE COMMINUTING UNIT

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FOOD WASTE COMMINUTING UNIT

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3 Claims. (Cl. 241—257)

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My invention relates to units for comminuting food waste, sometimes generally referred to as garbage grinders. Particularly, my invention relates to improvements in the formation of the outer housing or casing and the manner of supporting and enclosing interior parts of a waste food disposal unit. In this respect, my invention is an improvement upon housing and supporting structures of the types disclosed in my former Patents 2,185,037, 2,220,729, 2,244,402, 2,322,058, and 2,482,124, all of which are assigned to the same assignee as the present invention.

One object of my invention is to promote ease in manufacture and installation of food waste comminuting and disposing units. Another object is to provide a basic construction of the essential parts such that the appearance of the units may be improved. A further object is to conserve space, and to add a greater degree of flexibility in installation of these units by the space saved and through other means.

When these units are installed, it is not always known at what radial angle the sewage drain connections will be located with respect to the vertical axis of the unit. My invention provides for a substantially unlimited angular adjustment of the sewage drain connection with respect to the unit, even though the angle of the top part of the unit is fixed relative to a sink or other supporting structure. To accomplish this, parts of the unit are made readily detachable for ease in installation, adjustment, and replacement, and the general shape and function of parts of the unit are modified as will be described herein.

Other objects and the details of that which I believe to be novel and my invention will be clear from the following description and claims taken with the accompanying drawing in which is illustrated an example of waste food comminuting and disposing unit embodying the present invention and incorporating my improvements. In the drawing, the single figure is a vertical cross sectional view through an exemplary unit according to my invention.

For the reception of food wastes, I have provided a main housing or body 1 substantially in the form of a vertical cylindrical tube. As shown, this may be tapered slightly from bottom to top, but its form remains essentially that of a cylinder with circular openings at its top and bottom ends. The open inside of the main housing or body provides a shredding chamber or compartment 2, at the bottom of which the comminuting or shredding of the food waste takes place as will be later described.

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It is customary for the main body of the device to be suitably secured to the drain opening in a sink 3 or other structure to which water is supplied. The main body is suitably secured to the sink opening as by a sink flange 4, cooperating with a clamping ring 5, support ring 6, and retaining ring segments 7. A series of clamping bolts 8 threaded through the support ring 6 and bearing against the underside of the clamping ring 5, exert pressure in the proper direction to clamp the sink flange to the sink opening, and the main body is suitably supported as by nuts 9 on these clamping bolts, located underneath flanges or lugs 10 outside of the top of the main body. Suitable resilient gaskets 11 (around the sink flange and inside of the top opening of the main body) and 12 (around the clamping bolts and under the nuts 9) tightly seal the parts together and support them in a vibration damping manner.

The sink flange removably holds a combined sink stopper and unit control head 13, having a handle portion 14, a stopper face 15 with drain openings therein, and a shutter portion 16 connected to the handle and carrying a controlling cam surface 17. This combined control and stopper member is similar to those described and claimed in my Patent 2,185,037 and therefore need not be further described here.

At the bottom of the main body, the comminuting or shredding mechanism is located. I have shown this as consisting of a shredding ring 18 removably seated in an annular recess 19 at the bottom edge of the main body and carrying shredding elements in the form of projections 20 and drainage openings 21 at its bottom edge. For the purposes of the present invention, the shredding elements need not be carried by a ring and the drainage openings could be formed in the bottom edge of the main body itself, but I prefer the construction illustrated because it lends itself to ease in manufacture and assembly of the parts as will be clear from later portions of this specification.

The shredding element is held in place by the other principal part of the unit which I have called the bottom support or casting 22. This support member has a circular opening 23 in its top face of approximately the same diameter as the inside of the main body member. An annular outwardly extending flange 24 is provided in the top edge of the bottom support member and this seats in an annular recess or groove 25 in the bottom edge of the main housing. Because the bottom of the main body and the top of the supporting member are both circular, these two

members have unlimited possibilities of rotary angular adjustment with respect to each other about the axis of the unit. This is important because it is never known at what angle the sewage drain connection pipes will be located with respect to the unit when the device is to be installed. The bottom casting has a waste discharge chamber 26 in its upper face, leading to a radially directed discharge confining passage 27 which extends to the outside of the supporting member, and it is this discharge passage which must be properly connected to the sewer line.

In order to detachably secure the top edge of the supporting member to the bottom of the main body in any selected angular degree of relative rotation therewith, I have provided a series of bolts 28 (only two shown) threaded into the bottom edge of the main body at spaced points around its periphery. These bolts carry under their heads clamping washers 29 which extend inwardly beyond the edge of the annular groove 25 and removably engage under the flange 24 of the supporting member. When these bolts are loosened, the main body and the supporting member may be rotated with respect to each other in order to select the proper angle at which the drain outlet 27 will project from the unit. When once the proper angle has been selected and set, the main body and the supporting member are secured together by tightening the bolts 28, whereupon the washers 29 will force the flange 24 into secure seating engagement with the recess 25. Resilient sealing and supporting gaskets 30 and 31 at the bottom and top respectively of the shredding ring assist in the frictional holding of the parts in their proper position and seal the joint between the main body and the supporting member. These gaskets also reduce vibration which might be transmitted from the comminuting mechanism to the sink or other supporting structure.

The drain outlet 27 in the bottom flanged supporting member has a suitable cover and connection to the sewage drain, and I have shown this connection in the form of a tailpiece clamping plate 32 surrounding the drain opening 27 and removably secured directly to the supporting member 22 as by means of bolts or machine screws (not shown). This tailpiece clamping plate may be provided with a stepped opening 33 in which a drain gasket 34 is positioned to hold in place the flanged end 35 of a drain pipe or elbow 36.

For cooperating with the shredding ring or elements in the comminution of waste material fed into the chamber 2, I have provided a flywheel 37 carrying impelling cutters 38 which, upon rotation of the flywheel, cooperate with the shredding elements 20 and with the openings 21 to shred food waste and discharge it into the drain chamber 26 below the flywheel. Pumping fins or blades 39 on the bottom of the flywheel may assist in directing comminuted waste and water to the drain outlet. It will be noted that the flywheel extends substantially across the entire opening at the bottom of the main body member so that, as the flywheel is rotated, all waste and water will have to pass the shredding mechanism before it is discharged to the drain.

The flywheel is rotatably supported by the supporting member 22 by means of a vertical shaft 40 suitably journaled as in bearings 41 and 42 in the supporting member. These bearings are suitably lubricated as by the lubricating reservoir 43 located between the bearings. The details of this bearing and supporting structure form no part of the present invention but are disclosed and claimed in detail in my copending application Serial No. 238,706, filed July 26, 1951, assigned to the same assignee as the present invention.

At the bottom of the vertical shaft 40 is secured the rotor 44 of the motor for the unit. The stator 45 of the motor surrounds the rotor and is secured to the bottom of the supporting member in any suitable removable fashion. I have indicated the bottom ends of supporting studs 46, upper portions of which engage suitable lugs or supporting structures on the stator and which are threaded directly into portions on the bottom of the supporting member 22. Obviously other means may be provided for firmly but removably securing the motor stator to the supporting body and therefore I have made no attempt to show details of this construction.

Completing the principal outer visible part of the housing and covering the motor as well as the bottom supporting member, I have provided a cup-shaped bottom casing or housing member 47. This casing has an upper outer diameter large enough to seat outside of the main body portion as in an annular recess or notch 48 provided around the main body for that purpose. However, I have also provided a notch 49 in the upper edge of this cup-shaped casing, the notch fitting around the outside of the drain outlet 27 so that the casing can be slipped upwardly over the supporting member from the bottom. Note that this casing extends to cover the joint and the clamping bolts which secure the joint between the main body and the supporting member. At the notched portion of this casing, there is provided an extension 50 on the tailpiece clamping plate which covers the notch above the drain outlet and also fits into one segment of the annular recess 48 surrounding the main body. The cup-shaped bottom casing 47 is suitably detachably secured to the supporting member and I have shown a preferred construction in which this is accomplished by "acorn" nuts 51 threaded onto the ends of the motor stator supporting studs 46. Of course, these studs are threaded and extended through holes in the bottom of the casing to receive the nuts 51.

A suitable electric power source is required for operating the motor, and this is controlled through the combined control and stopper head 13 previously described. All of the electrical wiring and electrical parts between the control head and the motor are preferably concealed according to the present invention, these being housed in a connection box 52 formed as a vertically elongated compartment on the outside of the main body portion 1. This compartment contains a control switch 53 which is operated by a lever 54 engaged by the cam surface 17 on the control head when it is turned to proper position, the lever 54 extending through a seal 55 in the wall of the chamber 2 on which the wiring compartment is built. Also contained in this compartment may be a motor starting and overload relay 56, a motor starting capacitor 57, and any other desired electrical equipment for the unit, the control switch, relay and capacitor and other structures being connected by suitable wiring 58, also located in the compartment. Obviously the incoming power cable is connected to the devices in the wiring compartment through a knockout or cable entrance hole (not shown) located in a wall of the compartment.

Covering the open side of the wiring compartment is a cover **59** with an inner flanged edge **60** which seats inside the edges of the top and side walls of the compartment **52** as shown, this flange being discontinued at the bottom end of the compartment at the joining line between the main housing and the bottom casing. However, the rest of the cover is continued down beyond this joining line so that it overlaps and is fitted to the outside of the bottom casing for a short distance, as at **61**. This extension promotes a graceful appearance of the combined parts of the casing, avoids a double joining line at the junction of the bottom casing and the main housing, and conceals a small aperture (not shown) through the bottom outer edge of the main housing through which the wires **58** pass from the wiring compartment down to the motor. A machine screw **62**, or other structure for holding in place a clip for the motor leads passing through the wiring aperture in the bottom of the main housing, may also be concealed by this extension of the cover for the wiring compartment.

The cover **59** for the wiring compartment is preferably removably held in place as by machine screws passing through internal ears **63** on the edges of the cover, and passing through holes in the sides of the wiring compartment itself as at the hole indicated at **64**. The flanges on the cover prevent it from shifting and, when the screws are in place, they prevent withdrawal of the cover from the wiring compartment.

From the above, it will be seen that except for the heads of bolts holding the tailpiece clamping plate to the bottom support, the nuts **51** which are hidden under the bottom casing to the support, and the heads of the machine screws holding the wiring compartment cover in place, the whole unit below the sink flange has no visible means for connecting the various parts together. These exposed fastening elements are all that are needed to make a quick inspection of various important parts of the machine. Furthermore, by removing the tailpiece clamping plate, the unit may be quickly disconnected from the sewage drain line. By removing the wiring compartment cover, access may be had to the electrical wiring and its connection to the power supply. Removal of the bottom casing affords access to the motor and to the connection bolts which hold the bottom support to the main casing. These features make the installation and servicing of the unit extremely easy. No separate frame or housing for the motor is required, these parts being provided by the support **22** and the bottom casing **47**.

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

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

1. A waste comminuting device including a vertical, substantially cylindrical tubular main body open at its top and bottom and providing a waste receiving chamber with a substantially circular bottom, an annular recess in the bottom edge of said main body, a shredding ring seated in said annular recess with waste shredding structures on its walls near the bottom thereof, a supporting member having a radially outwardly projecting annular flange on its top edge mating with the bottom of said main tubular body, and said member being rotatable with respect to said body about its vertical axis, means readily detachably securing the top flanged edge of said supporting member to the bottom of said main body in any selected degree of relative rotation therewith, motor driven comminuting mechanism carried on the top of said supporting member for cooperation with said shredding structure in said main body, said supporting member having a discharge chamber leading from said mechanism and a radially directed discharge confining passage leading from said discharge chamber to the outside of said supporting member, a motor carried by said supporting member for driving said mechanism, an electrical control wiring compartment extending from the top of said main body to the motor supporting member with wires therein extending to the motor on said supporting member, a cover for said wiring compartment extending outside said main body from near the top to a point below the bottom of said main body, and a bottom cup-shaped casing member removably secured to said supporting member, rotatable therewith with respect to said main body, said bottom casing enclosing said motor and said supporting member and extending to cover the joint between said main body and said supporting member, said bottom casing having a notch in its upper edge fitting around said radially directed discharge confining passage, and said casing extending up under the bottom end of said control wiring compartment cover.

2. A waste comminuting device of the type including a vertical tubular main body open at its top and bottom and providing a waste receiving and comminuting chamber, said body being of circular configuration at the bottom edge thereof, a supporting member having a circular top edge mating with the bottom of said main body and said member being rotatable with respect to said body about its vertical axis, means securing the top edge of said supporting member to the bottom edge of said main body in any selected degree of relative rotation therewith, waste comminuting mechanism mounted on the top of said supporting member, a motor stator and rotor supported by said supporting member with said rotor connected to drive said comminuting mechanism, said supporting member having a discharge chamber in the upper face thereof below said comminuting mechanism and a radially directed discharge confining passage leading from said discharge chamber to the outside of said supporting member, motor control and electrical wiring means for said motor secured externally on said main body, and enclosing means for said motor, motor control and wiring means, said enclosing means comprising a bottom cup-shaped casing enclosing the motor and supporting member and extending into merging relation with the exterior wall of said main body adjacent its bottom edge, said bottom casing having a notch in its upper edge fitting around said radially directed discharge confining passage, means securing said casing to said supporting member, and a cover secured to said main body having edge portions contoured to seat against the exterior surface of said main body and enclosing in conjunction with said main body said motor control and electrical wiring means.

3. In waste comminuting apparatus of the type having a vertical tubular main body defining a

waste receiving and comminuting chamber, the bottom portion of said main body being of cylindrical configuration, a supporting member having a circular top edge mating with the bottom of said main body, means securing the top edge of said supporting member to the bottom edge of said main body in any selected degree of relative rotation therewith, a vertical shaft rotatably mounted in said supporting member, a waste comminuting mechanism secured to the upper end of said shaft, a motor rotor secured to the lower end of said shaft, a motor stator secured to said supporting member in operative relation with said rotor, said supporting member having internal walls defining a discharge chamber below said comminuting mechanism in liquid flow relation thereto and a radially directed discharge confining passage leading from said discharge chamber to the outside of said supporting member, a discharge tail piece secured to said

supporting member in liquid flow relation to said discharge passage, a protective casing of cup-shape enclosing said motor stator and extending over said supporting member into merging relation with the bottom portion of said main body, means securing said casing to said supporting member, and said casing having a notch in its upper edge fitting around said discharge tail piece, whereby said motor and operating mechanism are totally enclosed by said casing.

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UNITED STATES PATENTS

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2,421,014	Coss et al.	May 27, 1947
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