

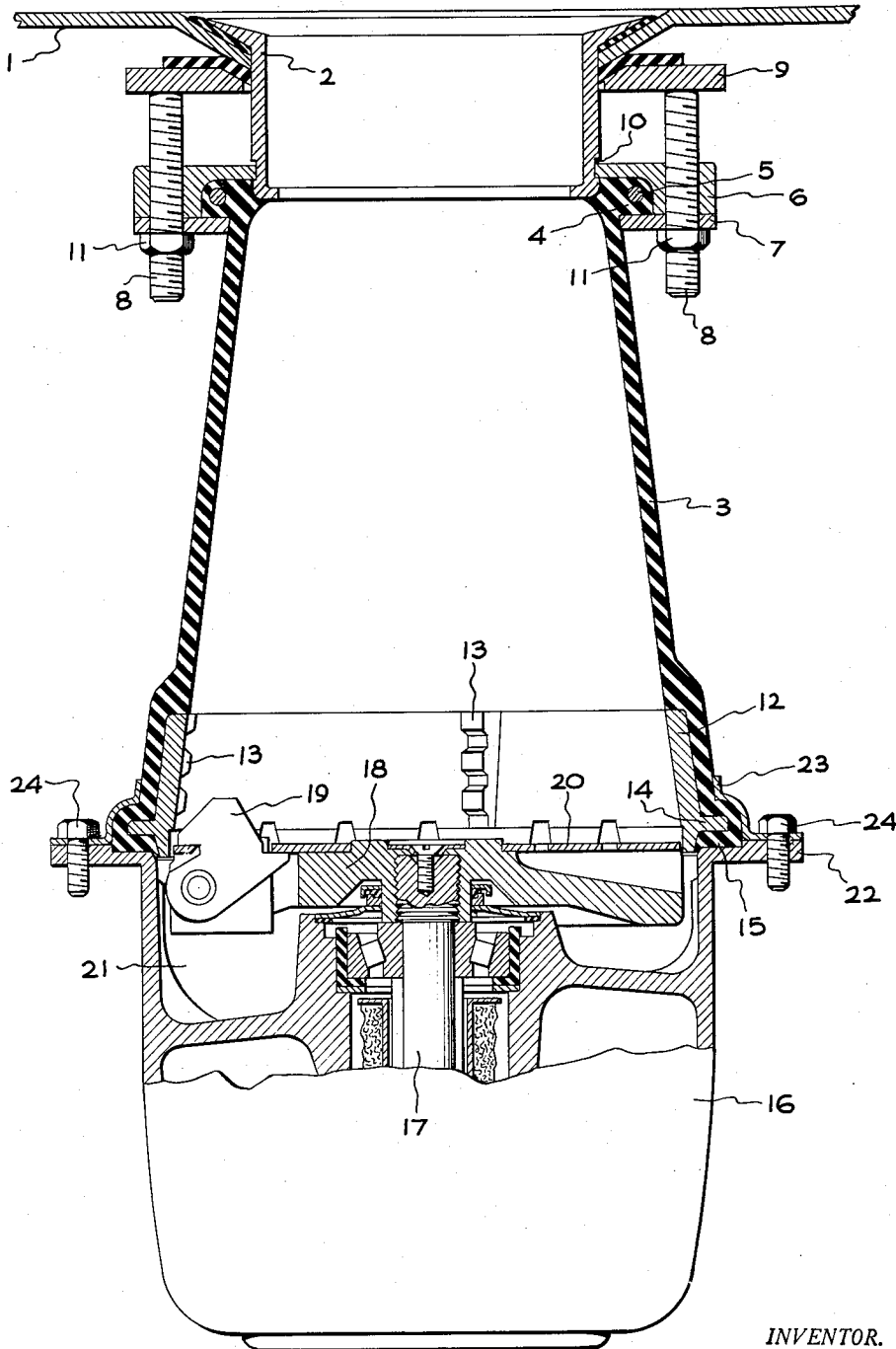
May 1, 1956

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2,743,875

WASTE DISPOSAL APPARATUS

Filed Dec. 16, 1954



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WASTE DISPOSAL APPARATUS

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Application December 16, 1954, Serial No. 475,626

4 Claims. (Cl. 241—100.5)

This invention relates to food waste disposers and has as its principal object the provision of improved apparatus of this character in which the noise and vibration incident to its operation is reduced to a minimum.

Further objects and advantages of the invention will become apparent as the following description proceeds, and the features of novelty which characterize our invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

Briefly stated, in accordance with one aspect of our invention, we provide a waste food grinder in which the comminuting chamber is enclosed by a housing formed of rubber and arranged to resiliently support stationary shredding elements adjacent the bottom of the chamber, whereby the impact of hard waste particles such as bones and the like against the housing walls is cushioned and absorbed so as to reduce the noise level incident to grinding operations.

For a better understanding of our invention reference may be made to the accompanying drawing in which the single figure is a vertical elevation view, partly in section, of a kitchen waste disposer embodying our invention.

Referring to the drawing, the numeral 1 designates the bottom wall of a kitchen sink or the like having a drain opening in which a drain flange 2 is supported and which customarily forms the inlet opening for waste disposers of the type to which this invention pertains, the apparatus being secured to the bottom wall of the sink. The waste disposer of the present invention comprises a generally tubular housing 3 which, as shown, may be tapered slightly from bottom to top so that the opening at its bottom end is somewhat larger than the top opening. The upper end of housing 3 is provided with a flanged portion 4 in which is embedded a metal ring 5 which provides the rigidity needed to insure firm connection with the bottom wall 1 of the sink. Flange 4 is secured between a support ring 6 and a retaining ring 7 by a plurality of studs 8 which bear against a clamping ring 9. Each stud 8 is threaded through an opening in support ring 6, and since the inner edge of this ring engages a groove 10 formed in the outer surface of drain flange 2, tightening of the studs against clamping ring 9 firmly secures all of these parts in fixed relation to each other. Retaining ring 7, which is in direct engagement with flange 4 of housing 3, is secured in place by a plurality of nuts 11 threaded on studs 8.

Housing 3 encloses a comminuting or grinding chamber at the bottom of which are located stationary and rotary comminuting elements hereinafter described. In accordance with the present invention housing 3 is formed of an elastomeric material, such as natural rubber or one of the various synthetic rubber-like materials, for example. Molded or otherwise formed adjacent the lower end of housing 3 is an annular recessed area or portion having a configuration corresponding to the configuration of the outer surface of shredding ring 12 supported therein. Formed on the inner surface of shredding ring 12 are a plurality of inwardly projecting shredding elements 13, while the outer surface of the ring is formed with an out-

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wardly projecting annular flange 14. Shredding ring 12 is locked in place in housing 3 by an inwardly directed flange 15 formed on the lower end of housing 3 so as to underlie flange 14 on the shredding ring.

Secured to the lower end of housing 3 is a motor casing 16 in which is mounted an electric motor (not shown) connected by means of shaft 17 to a rotary grinding flywheel 18 on which is mounted at least one impeller element 19. Also secured to flywheel 18 is a perforated top plate 20 which rotates therewith and which forms the bottom wall of the comminuting chamber enclosed by housing 3. Formed in casing 16 is an annular drainage chamber 21 connected to a drainage outlet (not shown) adapted for connection to a sewer line or the like. Casing 16 is provided at its upper end with an annular flange 22 which is secured to the lower end of housing 3 by an annular clamping member or ring 23 which engages the housing above and inwardly spaced with respect to flange 14 on shredding ring 12. Clamping member 23 and flanges 14, 15 and 22 are secured together in fixed relationship by suitable fastening devices such as cap screws 24, as shown in the drawing.

In operation, waste material deposited in the grinding chamber enclosed by housing 3 is rotated in the chamber and impelled by impeller 19 against shredding element 13 so as to grind or reduce all of the material to very small particles which are carried by water supplied through the drain opening into drainage chamber 21 and thereafter discharged into the sewer system. It is evident that much of the material circulated by impeller 19 is at one time or another thrown against the walls of housing 3 as well as shredding ring 12, this being particularly true of bones and other hard material which are thrown about the chamber at relatively high speed. We have determined that much of the noise associated with the operation of waste food grinders is caused by such hard particles striking the walls of the housing and have found that this noise may be substantially reduced by forming the housing 3 of elastomeric or rubber-like material. Thus the impact of waste material thrown against the housing during comminution operations is cushioned and absorbed by deformation of the rubber-like material and hence the noises ordinarily resulting from such impact are greatly reduced. Furthermore the housing 3 is highly corrosion resistant and provides a convenient and simplified mounting arrangement for resiliently supporting shredding ring 12 at the bottom of the chamber. Also, noises resulting from vibrations of all types originating within the grinding mechanism are effectively isolated from the sink structure and the necessity of using separate sealing gaskets at the top and bottom of the housing is eliminated.

While we have shown and described a particular embodiment of our invention, we do not desire the invention to be limited to the particular construction disclosed and we intend by the appended claims to cover all modifications within the true spirit and scope of the invention.

What is claimed is:

1. Waste disposal apparatus comprising a housing providing a comminuting chamber having a top opening for the admission of waste material, said housing being adapted to be supported with said opening in alignment with a sink drain opening, a stationary shredding element secured to the inner surface of said housing adjacent the bottom of said chamber, a rotary impeller element mounted at the bottom of said chamber and arranged for co-operation with said stationary element in the comminution of waste material, said housing being formed of elastomeric material whereby the impact of waste material thrown against said housing by said impeller element is cushioned and absorbed by deformation of said elastomeric material.

2. Waste disposal apparatus comprising a generally

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tubular housing providing a comminuting chamber having a top opening for the admission of waste material, a stationary shredding ring having a plurality of inwardly projecting shredding elements mounted in said housing adjacent the bottom of said chamber, said shredding ring being located in an annular recessed portion of said housing, an impeller element mounted for rotation at the bottom of said chamber and arranged for cooperation with said shredding elements in the comminution of waste material, said housing being formed of elastomeric material whereby said shredding ring is resiliently supported in said chamber and the impact of waste material thrown against said housing by said impeller element is cushioned and absorbed by deformation of said elastomeric material.

3. Waste disposal apparatus comprising a generally tubular housing adapted to be mounted below a sink with one end secured thereto in alignment with the drain opening in the sink so as to form a comminuting chamber for waste material, a stationary shredding ring having a plurality of inwardly projecting shredding elements mounted in an annular grooved portion of said housing adjacent the other end thereof, means enclosing said other end of said housing including rotary comminuting means arranged for cooperation with said shredding elements in the comminution of waste material, said housing being formed of elastomeric material whereby said shredding ring is resiliently supported in said housing and the impact of waste material thrown against said housing by said comminuting means is cushioned and absorbed by deformation of said elastomeric material.

4. Waste disposal apparatus comprising a generally tubular housing adapted to be mounted below a sink with

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its upper end secured thereto in alignment with the drain opening in the sink so as to enclose a comminuting chamber having an opening accessible through said drain opening, said upper end of said housing having formed thereon a flange adapted to be clamped between a pair of mounting members engageable with said sink, a stationary shredding ring having a plurality of inwardly projecting shredding elements and an outwardly projecting annular flange, said shredding ring being snugly mounted within an annular recessed portion of the inner surface of said housing adjacent its lower end, said recessed portion having a configuration corresponding to the configuration of the outer surface of said shredding ring, said lower end of said housing having formed thereon an inwardly directed flange underlying said flange on said shredding ring, a motor casing having an annular mounting flange secured to said lower end of said housing by an annular clamping member engaging said housing above and inwardly spaced with respect to said flange on said shredding ring, and a rotary motor driven impeller carried by said casing and arranged to impel waste material against said shredding ring, said housing being composed of rubber whereby said shredding ring is resiliently supported in said housing and the impact of waste material thrown against said housing is cushioned and absorbed by deformation of said housing.

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