

Oct. 20, 1959

R. K. SHEWMON ET AL

2,909,333

DOMESTIC APPLIANCE

Filed Sept. 29, 1955

3 Sheets-Sheet 1

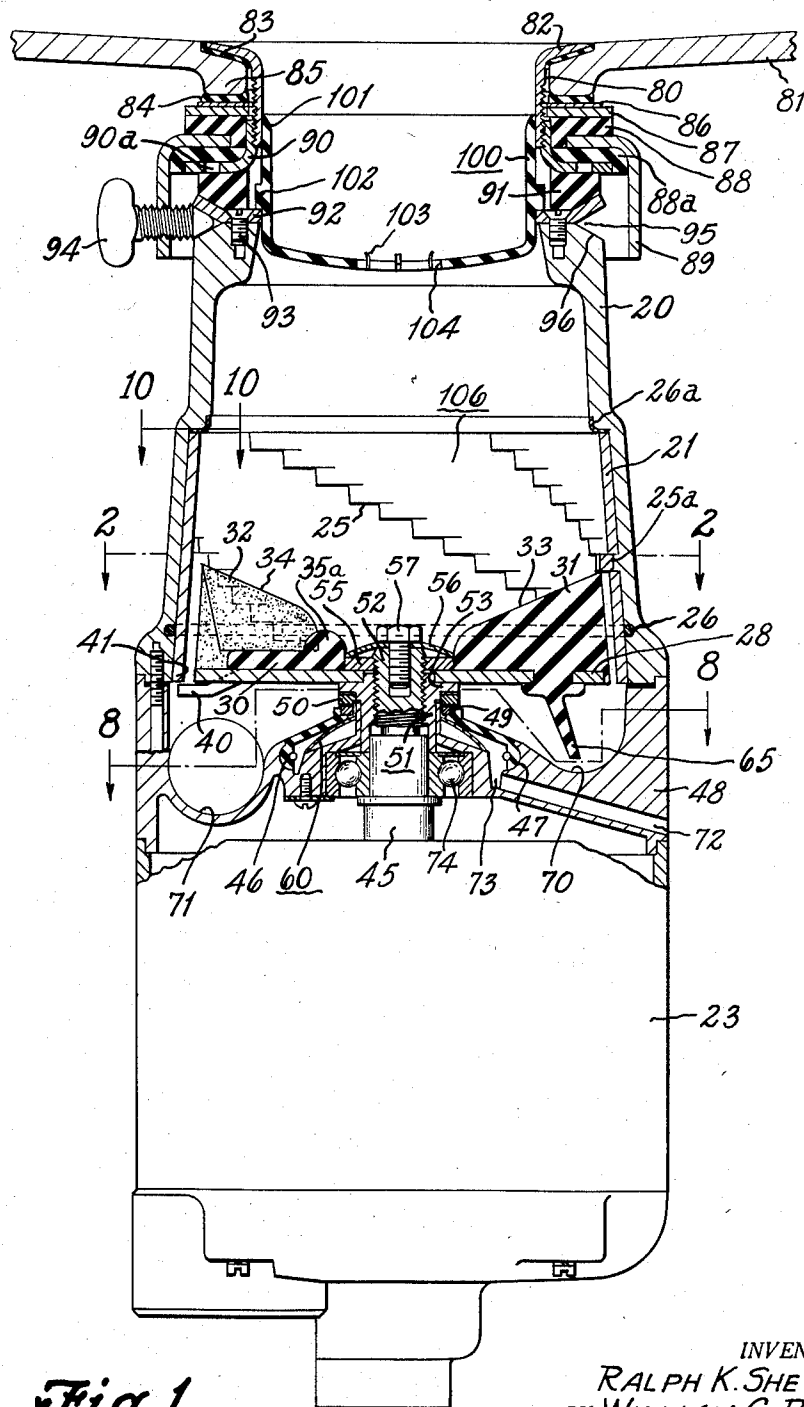


Fig. 1.

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3 Sheets-Sheet 2

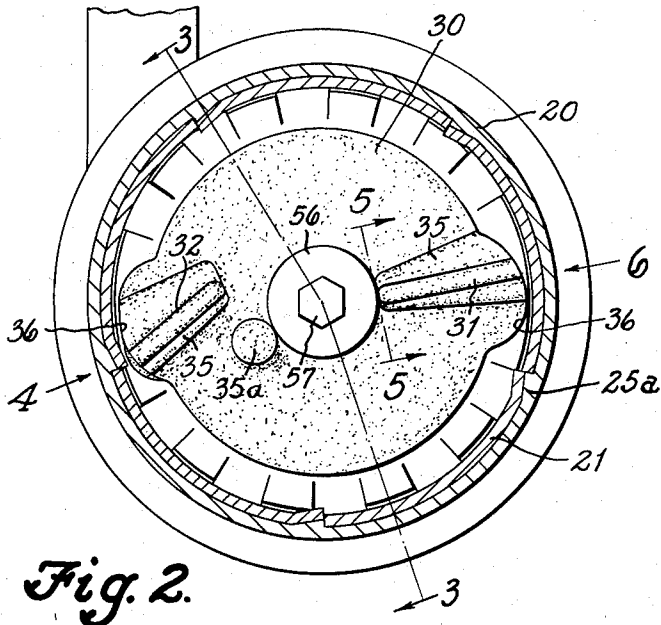


Fig. 2.

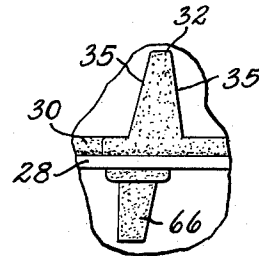


Fig. 4.

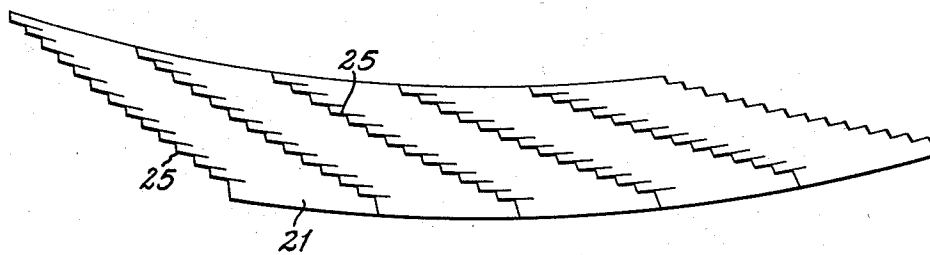


Fig. 7.

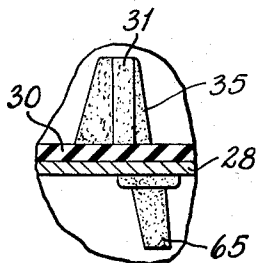


Fig. 5.

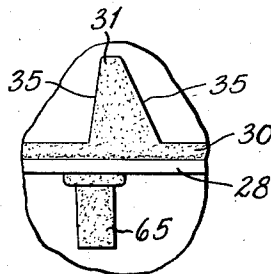


Fig. 6.

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3 Sheets-Sheet 3

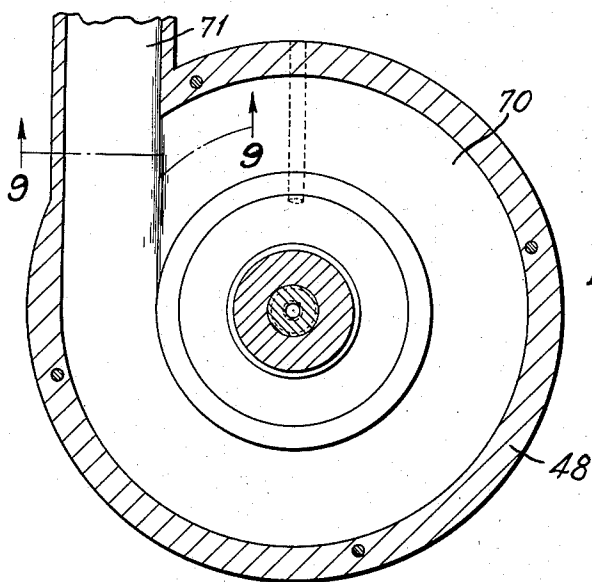


Fig. 8.

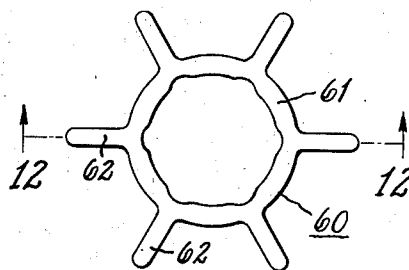


Fig. 11.

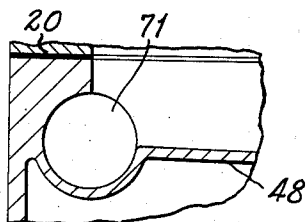


Fig. 9.

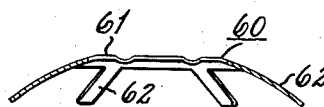


Fig. 12.

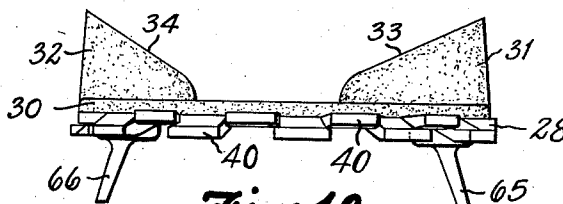


Fig. 13.

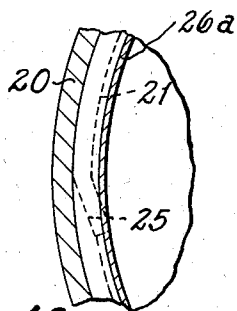


Fig. 10.

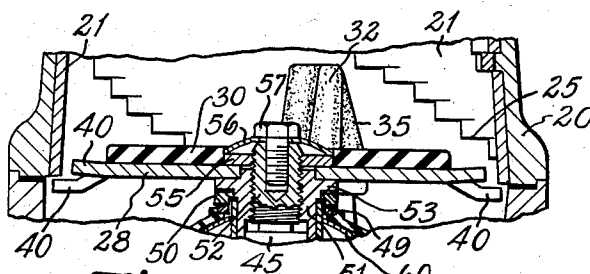


Fig. 3.

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DOMESTIC APPLIANCE

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Application September 29, 1955, Serial No. 537,357

5 Claims. (Cl. 241—46)

This invention relates to domestic appliances and more particularly to a garbage disposer.

An object of this invention is to provide a garbage disposer, or the like, having a stationary grinding member, a rotating grinding member, one of said grinding members being made of an elastomeric material, such as rubber or rubber-like material.

Another object of this invention is to provide a disposer or the like having a generally cylindraceous casing containing a generally cylindraceous stationary grinding member and a generally circular rotating grinding member having an elastomeric grinding element, made of rubber or rubber-like material, which is adjacent the stationary grinding member.

Another object of this invention is to provide an improved construction for securing a garbage disposer to the drain opening of a sink.

Another object of this invention is to provide an improved stationary grinding member for a disposer or the like in which a serrated steel liner is placed within and is secured to an aluminum die casting during the die casting operation.

Another object of this invention is to provide a rotating grinding member for a garbage disposer or the like provided with means for sweeping out the ground material from the pump casing.

Another object of this invention is to provide a rotary grinding member for a garbage disposer or the like including a metal disk on which an elastomeric or rubber-like grinding surface has been bonded by a vulcanizing or similar process.

Another object of this invention is to provide a rotating grinding member having an elastomeric grinding element which is radially and circumferentially yieldable to effect unloading in the event of jamming.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings wherein a preferred form of the invention is clearly shown.

In the drawings:

Figure 1 is a vertical cross-section partly in elevation showing the disposer.

Figure 2 is a horizontal cross-section taken along the line 2—2 of Figure 1.

Figure 3 is a vertical cross-section taken along the line 3—3 of Figure 2.

Figure 4 is a fragmentary vertical elevation looking in direction of arrow 4 of Figure 2.

Figure 5 is a cross-section taken along the line 5—5 of Figure 2.

Figure 6 is a vertical fragmentary elevation looking in direction of arrow 6 of Figure 2.

Figure 7 is a steel liner for the stationary grinding member prior to its incorporation in the disposer.

Figure 8 is a horizontal cross-section taken along line 8—8 of Figure 1.

Figure 9 is a cross-section taken along the line 9—9 of Figure 8.

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Figure 10 is a cross-section taken along the line 10—10 of Figure 1.

Figure 11 is a plan view of the spring member used in the water seal.

Figure 12 is a cross-section along the line 12—12 of Figure 11.

Figure 13 is an elevation of the rotary grinding member.

A garbage disposer, according to this invention, may include a generally cylindraceous casing 20 for receiving waste material or the like. A generally cylindraceous stationary grinding member is constructed within said casing by placing a steel liner 21 within the aluminum die casting of the member 20 prior to the die casting operation and securing it thereto during the die casting operation. A generally circular rotating grinding member is placed within and near the lower end of the stationary grinding member and it is rotated by the motor 23 at the lower end of the disposer.

The stationary grinding member is constructed by forming a steel sheet blank 21 on which the teeth 25 are deformed by a press or the like. The inward teeth 25 are not struck sufficiently to make openings in the blank 21 but do form cavities into which the aluminum may flow during the die casting operation to lock the sheet 21 securely in place. The sheet 21 is curved into cylindraceous form and held in such form by a wire ring 26 so that the casing 20 may be cast by an aluminum die casting process which simultaneously secures the steel sheet 21 in the die casting, as illustrated. Preferably, the sheet 21 is curved into cylindraceous form, with the wire ring 26 slipped down over it to hold it temporarily, and then it is held in the die by flanged ring 26a, after which the aluminum shell 20 is die cast over it. The cavities 25a are staggered both horizontally and vertically to lock the sheet 21 in both directions within the die casting.

The generally circular rotating grinding member includes a steel plate 28, of generally disk shape, upon which an elastomeric, rubber or rubber-like grinding element is secured by a vulcanizing process or the like. This grinding element may include an elastomeric disk 30 on which the elastomeric teeth or protuberances 31 and 32 are formed. Preferably, these teeth are directed somewhat along radial lines, but one such tooth 32 is at an inclined angle to such radius, such as a 30° angle, while the other 31 is substantially radial. This is for the purpose of preventing the material being ground from forming into symmetrical masses during the grinding operation. The teeth are of general triangular shape in vertical transverse cross-section, as indicated in Figures 3, 4, 5 and 6, and have rising surfaces 33 and 34 in their generally radial direction as indicated in Figure 1. They also have side, upwardly inclined sides 35 and have ends 36 with their leading edges forming an angle with the inner surface of the stationary member 21.

If desired, an elastomeric dome 35a is also provided on the disk 30 which is unsymmetrically placed with respect to the teeth 31 and 32, and this dome 35a aids in stirring the material to be ground and presents it from balling up near the center of the rotary grinding member.

The rotating grinding member 28 is driven by the motor 23 through the medium of rotary shaft 45. A seal construction is provided to prevent any material amount of water from flowing into the motor. Such seal construction includes a rubber cone 46 outwardly secured to the groove 47 in the aluminum die casting 48 which is of generally plate-like construction. The upper end of the cone 46 is provided with the generally stationary ring 49 which contacts the rotating ring 50 held by the hub 51, which is threaded onto the threaded end 52 of the shaft 45. The hub 51 is provided with disk-like extension 53 upon which the disk 28 rests and on

which the disk 28 is held by the threaded nut 55 in cooperation with the lock washer 56 and bolt 57. A spring spider 60 is placed underneath the cone 46 and includes a ring 61 engaging the bottom of the cone 46 and fingers 62 which engage the upper surface of the aluminum die casting 48 at 49.

The combined pump and cleaning device is formed by the fingers or protuberances 65 and 66 formed of rubber and secured to the disk 28 at the same time that the other rubber members are secured thereon. These fingers 10 rotate around the circular groove 70 formed on the top of the die casting 48 to form a pump construction such that the ground material and liquid are discharged through the pipe 71 into the usual sewer connection.

A drain channel 72 is formed in the die casting 48 to drain any liquid which may flow past the water seal into the cavity 73 and thus prevent it from flowing past the ball bearing 74 into the motor housing.

The disposer is secured to the sink opening 80 in the sink 81 by a downwardly directed cone 82 resting on a gasket 83. A yielding gasket 84 is placed underneath the flange 85 in the sink opening together with the polished steel rings 86, 87 and the rubber-like rings 88 and 88a which are held by the downwardly and laterally directed flange 89. These members are secured together by a threaded engagement with the upwardly directed cone 90 which engages the downwardly directed cone 82 with a threaded engagement permitting these parts to form a compressing action on the gaskets 83 through 88a. Openings 90a are provided in cone 90 to permit the use of a suitable toothed wrench to draw the parts firmly together. The steel rings 86 and 87 have a relatively free slipping action with each other, which prevents any injurious twisting action on the rubber or yielding gasket when the members 82 and 90 are being threaded together. A rubber ring 91 is placed between the cone 90 and the steel plate 92 which is secured to casting 20 by screws 93.

A plurality of screws 94, preferably three, are radially mounted within the flange 89 and are directed into the groove 95 formed by the cone-shaped upper end 96 of the die casting 20 and a plate 92. The screws 94 may be turned to force the plate 92 onto the sink connection after the sink connection has been secured to the sink. This makes a tight connection between the disposer and the sink, which may be easily assembled.

A rubber cup 100 has an upper edge 101 fitting snugly against the cone 82, has an outward flange 102 resting on the plate 92 and has radially inward fingers 103 at the bottom terminating in circular opening 104. The cup 100 permits easy insertion of garbage and the like into the grinding cavity 106. The cup 100 may be easily removed for inspection of the cavity 106. In the operation of the disposer, garbage and the like are inserted into the grinding cavity 106. The teeth 31 and 32 throw the garbage outwardly against the stationary cylindrical sheet 21 where the garbage is cut and ground between the teeth 25 and the ends 36 of the teeth 31 and 32. Any long shreds passing downwardly are cut by the radial teeth 40 in cooperation with the bottom teeth of the stationary cutter 21. The ground material and the water being fed into the grinder in the usual manner fall into the groove 70 and are swept and forced into the pipe 71 and into the sewer connection.

The teeth 31 and 32 are radially inwardly yieldable and are concurrently bendable in the direction of the circumference of the cylindrical sheet 21 to effect unloading of the disposer in the event of accidental jamming.

While the form of embodiment of the invention as herein disclosed constitutes a preferred form, it is to be understood that other forms might be adapted as may come within the scope of the claims which follow.

What is claimed is as follows:

1. A disposer comprising: a generally cylindraceous

vertical casing for receiving waste material or the like; a generally cylindraceous vertical stationary grinding member within said casing with inwardly struck teeth along its inner surface; said inwardly struck teeth forming cavities which cooperate with said casing to affix said grinding member; a metal disk rotatably driven adjacent the lower end of said grinding member; an elastomeric plate bonded to said metal disk; and a plurality of elastomeric protuberances on said elastomeric plate, at least one of said protuberances having its longitudinal axis at an angle to a line drawn radially from the center of said disk and having its leading edge somewhat less than vertical.

2. A disposer comprising: a generally cylindraceous vertical casing for receiving waste material or the like; a generally cylindraceous vertical stationary grinding member within said casing with inwardly struck teeth along its inner surface; said inwardly struck teeth forming cavities which cooperate with said casing to affix said grinding member; a metal disk rotatably driven adjacent the lower end of said grinding member; an elastomeric plate bonded to said metal disk; and a plurality of elastomeric protuberances in said elastomeric plate, one of said protuberances above said disk having its longitudinal axis at an angle to a line drawn radially from the center of said disk and having its leading edge somewhat less than vertical, and another of said protuberances below said disk for cleaning said waste material from said casing.

3. A grinding member for a disposer comprising: an inner cylindraceous metal sheet and an outer cylindraceous metal casing, said cylindraceous metal sheet having grinding teeth inwardly struck thereon to form universal retention cavities therebehind, and said cylindraceous metal casing die cast to and surrounding said cylindraceous metal sheet, whereby said universal retention cavities receive protuberances formed on said casing during said die casting to prevent relative movement in any direction between said sheet and said casing.

4. In combination, a waste disposer having a generally cylindrical casting forming a comminuting chamber, a generally cylindrical sheet metal grinding member in juxtaposition to said casting, said grinding member having a plurality of lanced out teeth projecting into said comminuting chamber, said teeth defining with said grinding member radially inner cutting edges and radially outer grinding member retention cavities into which an integral portion of said casting extends for holding said grinding member against any movement relative to said casting and for supporting said teeth.

5. In combination, a waste disposer having a casting forming a comminuting chamber, a grinding member in side by side relationship with said casting, said grinding member having a lanced out tooth projecting into said comminuting chamber, said tooth defining with said grinding member an inner cutting edge and an outer grinding member retention cavity into which an integral portion of said casting extends for holding said grinding member against any movement relative to said casting.

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