Sept. 6, 1960 R. E. GOULD 2,951,650

GARBAGE GRINDER

Filed Aug. 30, 1956 2 Sheets-Sheet 1

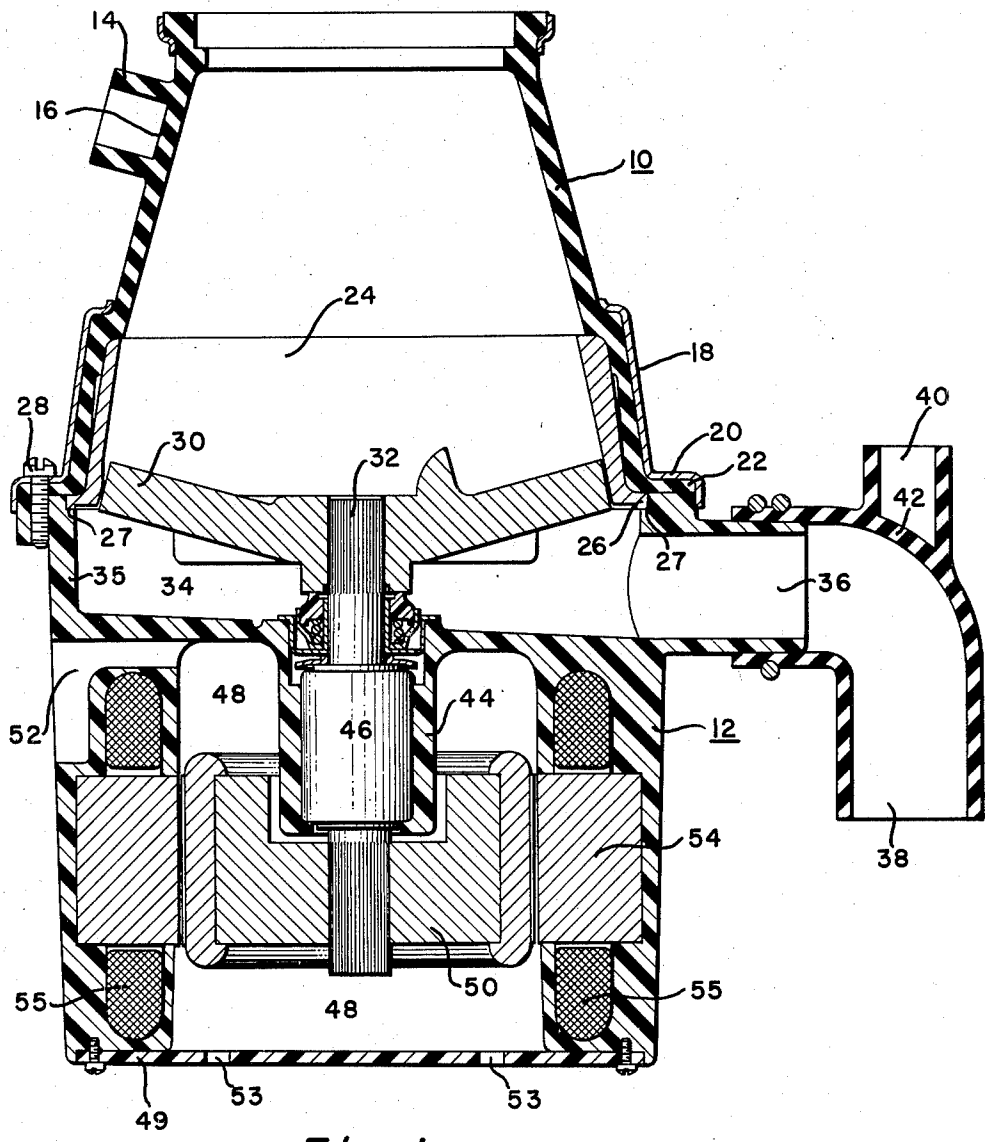


Fig. 1

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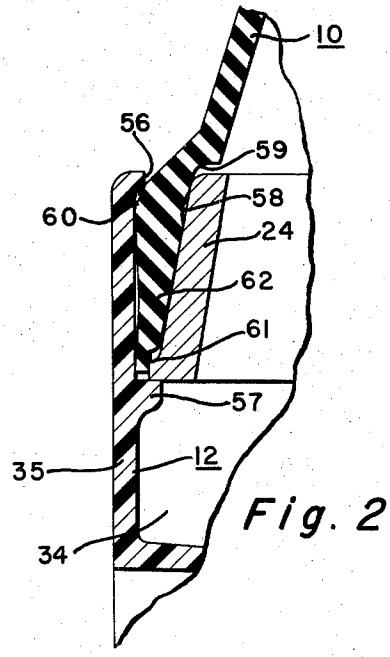


Fig. 2

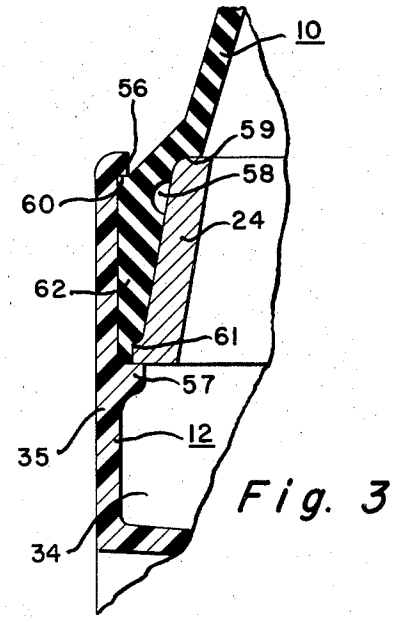


Fig. 3

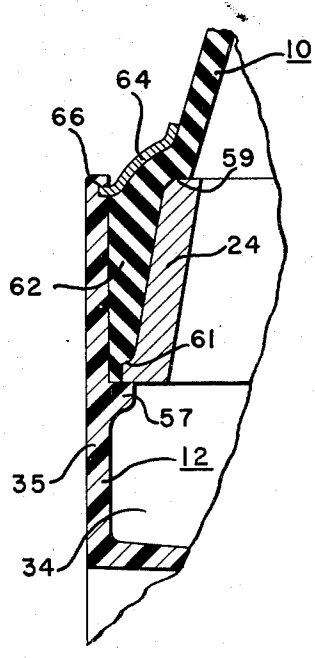


Fig. 4

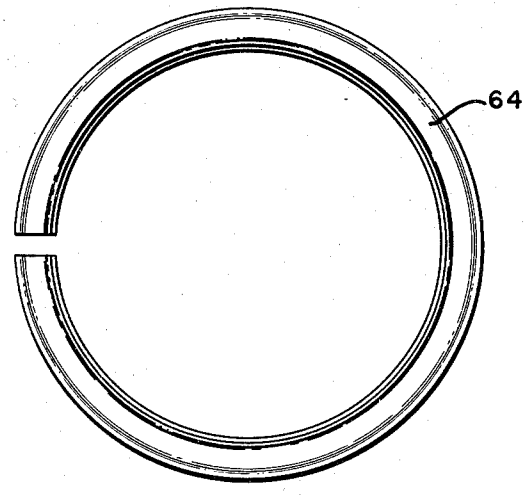


Fig. 5

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2,951,650

Patented Sept. 6, 1960

2,951,650

GARBAGE GRINDER

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Filed Aug. 30, 1956, Ser. No. 607,119

5 Claims. (Cl. 241—286)

This invention relates to a domestic appliance and more particularly to a waste disposal unit for grinding waste material.

An object of the invention is to provide a waste disposal unit having a lower impeller housing and an upper waste receiving housing, one or both housings being formed of a plastic or elastomeric material.

Another object is to provide an electric motor driven waste disposal unit with a lower housing of resilient plastic material, the stator of the motor being embedded in the plastic material.

A further object is to provide a waste disposal unit with an upper elastomeric waste receiving housing that is secured to the lower housing of the disposal unit by snapping a lower portion of the upper housing into a space formed by the lower housing and the shredder ring of the disposal unit, the lower portion of the upper housing holding the shredder ring in fixed relation to the disposal unit.

Still another object is to provide a snap ring that engages the lower housing and upper elastomeric housing of a waste disposal unit for holding the upper housing and shredder ring of the unit in fixed relation to the lower housing of the unit.

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 present invention is clearly shown.

In the drawings:

Figure 1 is a sectional view of a waste disposal unit made in accordance with this invention;

Figures 2 and 3 are sectional views of a modified waste disposal unit progressively showing the connection being made between the lower and upper housings of the unit;

Figure 4 is a sectional view of still another modified waste disposal unit showing the connection between the upper and lower housings thereof; and

Figure 5 is a top view of the snap ring shown in Figure 4.

The waste disposal unit of this invention as shown in Fig. 1 comprises an upper waste receiving housing generally denoted by the reference numeral 10 and a lower impeller housing generally denoted by reference numeral 12. The upper housing 10 is preferably made of an elastomeric material such as rubber and is provided with an integral conduit portion 14 that may be connected with the drain connection of a dishwasher or the like. The conduit connection 14 may be opened to the interior of upper housing 10 by punching out the portion 16 located in alignment with the interior of conduit portion 14. The upper and lower housing sections are held together by means of a cylindrically shaped metal clamping ring 18 which engages the outer periphery of upper housing 10 and conforms to the contour of the housing. The clamping ring 18 has a flanged portion 20 that overlies a flanged portion 22 of the housing 10. A shredder ring generally denoted by reference numeral 24 is secured between the upper housing 10 and lower housing 12. The shredder

ring has an annular flanged portion 26 that abuts a circumferential ledge 27 formed in the lower housing 12 of the disposal unit, as shown. The upper housing 10 and the shredder ring 24 are held in tight engagement with lower housing 12 by means of a plurality of cap screws 28 that are threaded into the lower housing 12 and which engage the clamping ring 18. It is to be understood that the shredder ring is provided with a plurality of cutting faces (not shown) that cooperate with an impeller 30 to grind waste material deposited within upper housing 10 in accordance with conventional practice. The impeller 30 is press-fitted or otherwise secured to a drive shaft 32 and rotates therewith when the drive shaft is rotated.

The lower housing 12 is preferably formed of any suitable moldable plastic or resilient material having the property of withstanding the heat generated in operation of the disposal. The housing may be formed of a polyethylene or epoxy resin or may be formed by reinforcing the resin with glass fibers. The housing might also be formed of rubber or similar moldable material. The moldable material used is molded to the shape shown in Fig. 1.

The housing 12 has an upper impeller chamber 34 defined in part by a side wall 35, the impeller chamber communicating with an outlet conduit 36. The outlet pipe 36 is provided with a rubber conduit 38 that is connectable with a drain connection that is in turn connected to a sewer line. The conduit 38 has an integral conduit portion 40 and is similar to conduit portion 14 described hereinbefore. The conduit portion 40 may be connected with a dishwasher or the like and may be punched out at 42 in order to connect the interior of conduit 38 with the interior of conduit portion 40. The lower housing 12 is formed with a bearing supporting portion 44 that supports a conventional bearing 46 that in turn carries the drive shaft 32 of the disposal unit. The lower housing 12 also has a rotor chamber 48 that houses a rotor 50 of an electric motor, the chamber being closed at its lower end by a plastic cap 49 suitably secured to housing 12. The rotor chamber 48 communicates with the atmosphere by means of one or more passages 52 formed in the lower housing 12 and by passages 53 formed in plastic cap 49. The stator of the electric motor generally denoted by reference numeral 54, and having windings 55 is embedded in the moldable plastic material of lower housing 12. The passages 52 provide an air path between the rotor chamber 48 and the atmosphere which serves to cool the stator winding of the electric motor.

The upper housing 10 of the garbage disposal unit is preferably attached to the bottom wall of a sink with the sink drain member in alignment with the top opening of the housing 10. The provision of an elastomeric upper housing and a lower housing of plastic material affords a substantially vibrationless mounting for the disposal unit.

The connection between the lower and upper housings of the waste disposal unit shown in Fig. 1 may be modified to take the form shown in Figs. 2, 3, 4 and 5 wherein the same reference numerals as used in Fig. 1 denote the same or similar parts. As shown in Figs. 2 and 3 the side wall of the lower housing 12 is extended upwardly to substantially the same height as that of the shredder ring 24. The top portion of the housing 12 is provided with a circumferentially extending flange 56 that operates to hold the shredder ring 24 and upper housing 10 in fixed relation with the lower housing 12. The lower portion 62 of upper housing 10 is provided with a circumferentially extending groove 58 and with a horizontally disposed annular wall portion 60. The lower portion 62 of the upper housing 10 is forced between the shredder ring 24 and the lower housing 12 as shown in Fig. 2 when the lower and upper housings are assembled. The

forcing of the portion 62 into the space between housing 12 and shredder ring 24 flattens out the circumferentially extending groove 58 and flattens the shoulder 60 on the lower portion 62 of upper housing 10. By applying sufficient downward force on the upper housing 10 the shoulder 60 snaps under the flanged portion 56 and the groove 58 returns to its normal or unflattened position. In the assembled position as shown in Fig. 3 the shredder ring 24 is tightly held between the annular portion 59 of rubber housing 10 and the flanged portion 57 of lower plastic housing 12, the lower portion 62 of the housing 10 conforming to the outer contour of shredder ring 24 and to the inner contour of lower housing 12. The shredder ring 24 is further held in place by the lower portion 62 of housing 10 bearing down on shoulder 61 of the shredder ring.

In Fig. 4 the shredder ring 24 and lower portion 62 of rubber housing 10 are held in fixed relation with lower housing 12 by means of a spring metal snap ring 64 that fits within a circumferentially extending slot 66 formed on the inner wall of lower housing 12. The lower and upper housings, and shredder ring in the embodiment of Fig. 4, are held together by the snap ring 64 which may be compressed and fitted into circumferentially extending slot 66. With the snap ring 64 compressed, the ring is allowed to expand so that the outer edge of the snap ring tightly engages the inner walls of slot 66. With the arrangement shown in Figs. 2, 3 and 4 the shredder ring and lower and upper housings are secured together without the use of conventional cap screws as shown in Fig. 1. Moreover, with the arrangement of these figures the shredder ring is supported in a radial direction by reason of the fact that the lower housing 12 extends upwardly to substantially the same height as the shredder ring.

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 adopted, as may come within the scope of the claims which follow.

What is claimed is as follows:

1. A waste disposer comprising, an upper housing formed of an elastomeric material having a waste receiving chamber, shredder means associated with said disposer, an impeller cooperating with said shredder means for grinding waste material, and a lower housing snap connected with said upper housing, said lower housing being formed of a resilient moldable material and enclosing an electric motor drivably connected with said impeller.

2. A waste disposer comprising, a lower housing formed of a resilient moldable material, an electric motor stator embedded in said resilient material, a rotor for said motor within said housing, an upper housing formed of an elastomeric material snap connected to said lower housing, said upper housing having a waste receiving chamber, stationary shredder means in said chamber, and an impeller cooperating with said shredder means for grinding waste material, said impeller being mounted in a chamber of said lower housing and drivably connected with said electric motor rotor.

3. A waste disposer comprising, a lower housing enclosing an electric motor, a shaft connected with the rotor of said electric motor, an impeller connected with said shaft, a shredder ring having a portion supported by said lower housing and cooperating with said impeller in the grinding of waste material, said lower housing forming an annular space with said shredder ring, an upper waste receiving housing formed of an elastomeric material having a lower portion fitting within said space, and a snap ring engaging said lower housing and the lower portion of said upper housing for holding said upper and lower housings and said shredder ring in fixed relationship with one another.

4. A waste disposer comprising, a lower housing enclosing an electric motor, a drive shaft connected with the rotor of said electric motor, an impeller connected with said drive shaft, a shredder ring having a portion supported by said lower housing, said lower housing forming an annular space with said shredder ring and having an annular flanged portion, and an upper housing formed of an elastomeric material having a lower portion press-fitted within said space and partially overlying a portion of said shredder ring, said lower portion having a circumferentially extending shoulder engaging said lower housing flanged portion, the lower portion of said upper housing forming the sole means for holding said upper and lower housings and said shredder ring in fixed relationship with one another.

5. A waste disposer comprising, a lower housing enclosing an electric motor, an impeller chamber formed in said lower housing, an impeller connected with said motor and rotatable within said impeller chamber, a shredder ring resting on a portion of said lower housing and cooperating with said impeller in the grinding of waste material, the outer surface of said shredder ring being spaced from the inner surface of said lower housing with the shredder ring and housing extending upwardly to substantially the same height, and an upper waste receiving housing formed of an elastomeric material having a lower portion tightly fitting between said shredder ring and said lower housing, said lower portion having a shoulder fitting under an inwardly extending flanged portion of said lower housing and having a circumferentially extending groove adapted to be flattened during the insertion of said lower portion between said lower housing and shredder ring.

References Cited in the file of this patent

UNITED STATES PATENTS

2,280,090	Humphreys	Apr. 21, 1942
2,477,686	Coss	Aug. 2, 1949
2,548,133	Treat	Apr. 10, 1951
2,743,875	Brezosky	May 1, 1956
2,785,864	Jordan	Mar. 19, 1957
2,828,083	Macemon	Mar. 25, 1958