Oct. 21, 1958 I. E. HAEUSSLER 2,857,109

PORTABLE GARBAGE DISPOSAL UNIT

Filed June 8, 1956 3 Sheets-Sheet 1

Fig. 1

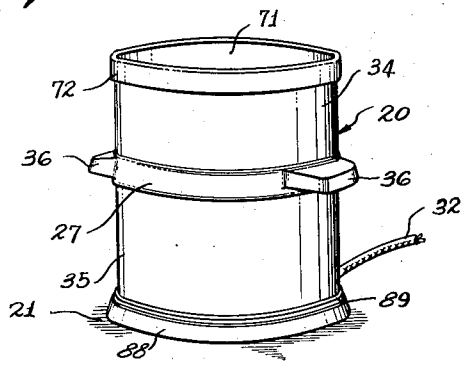


Fig. 2

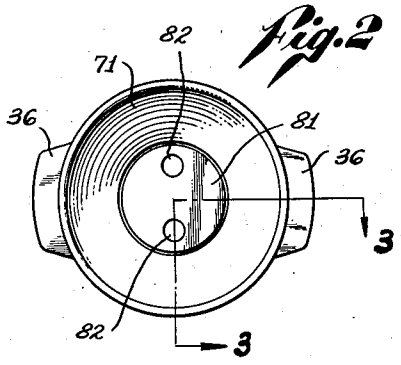


Fig. 3

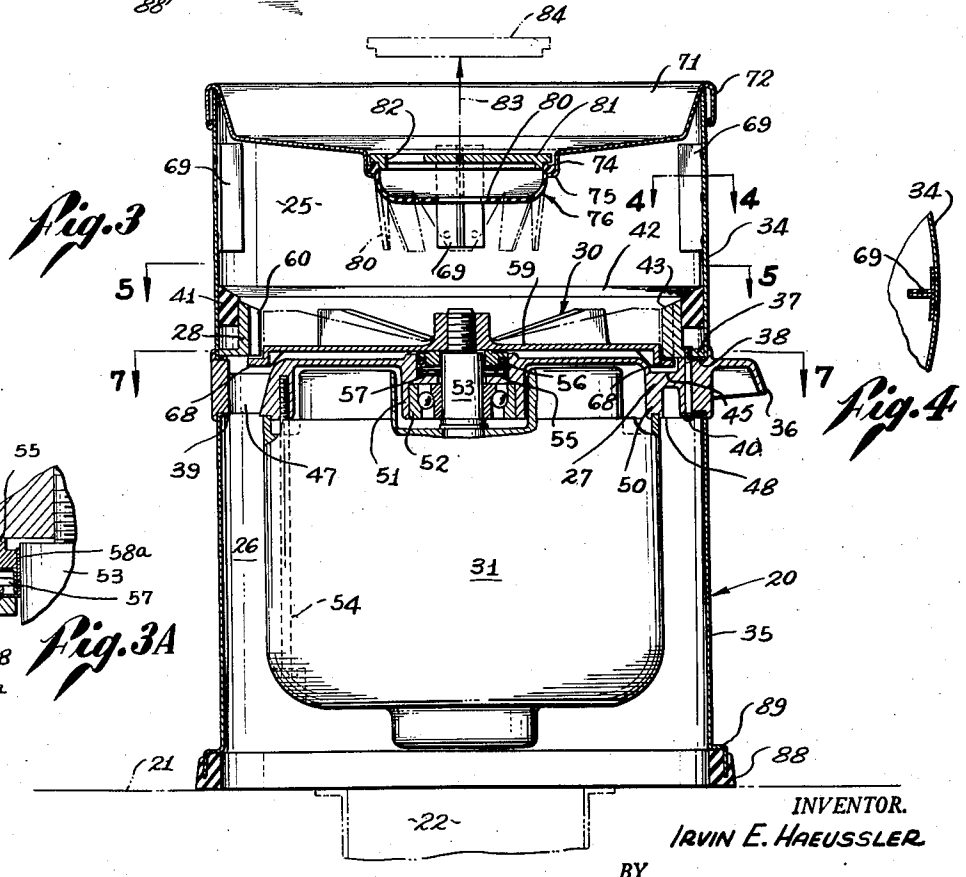


Fig. 4

Fig. 3A

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Filed June 8, 1956 3 Sheets-Sheet 2

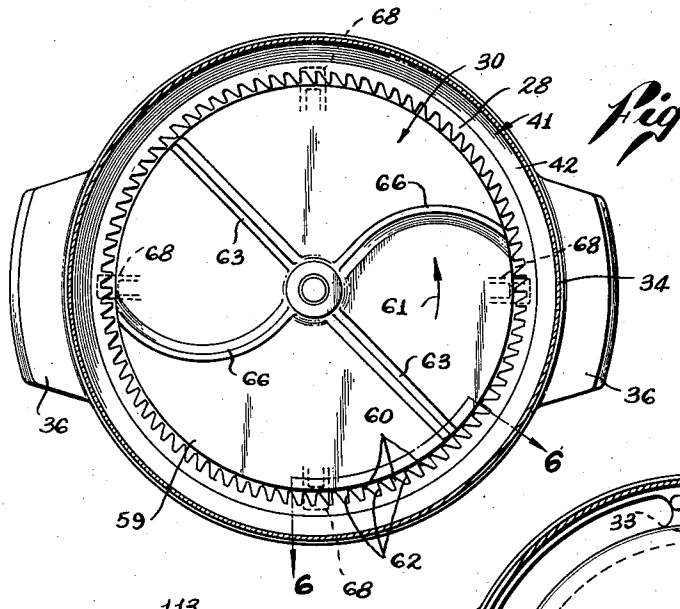


Fig. 5

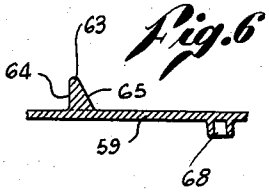


Fig. 6

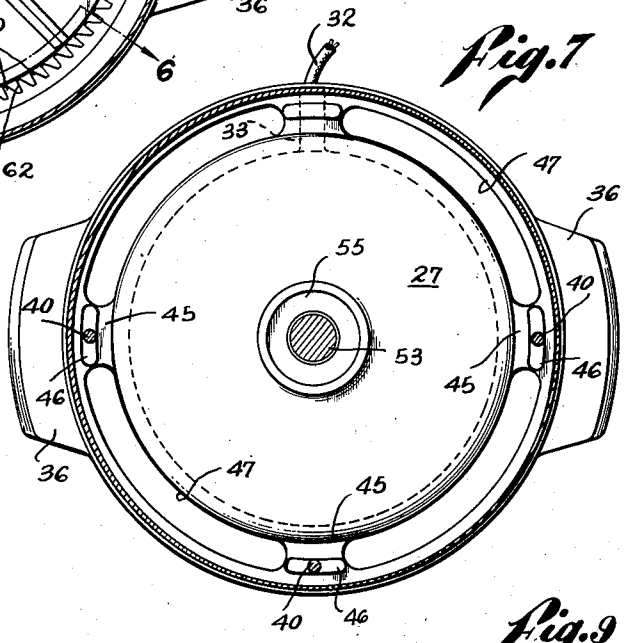


Fig. 7

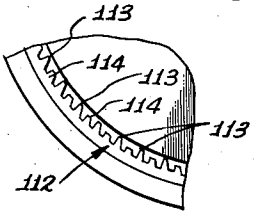


Fig. 10

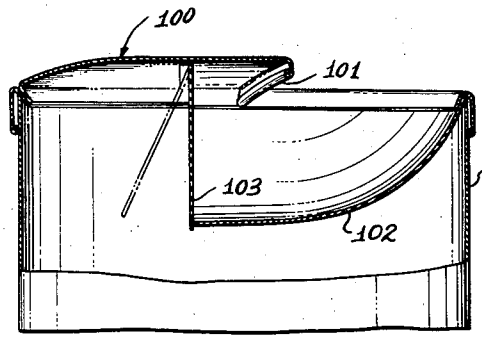


Fig. 8

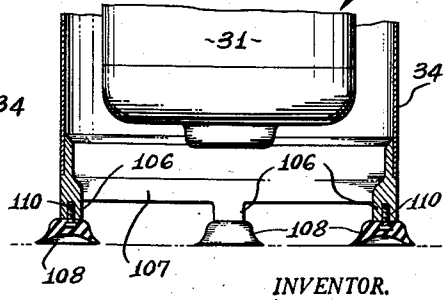


Fig. 9

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PORTABLE GARBAGE DISPOSAL UNIT

Filed June 8, 1956 3 Sheets-Sheet 3

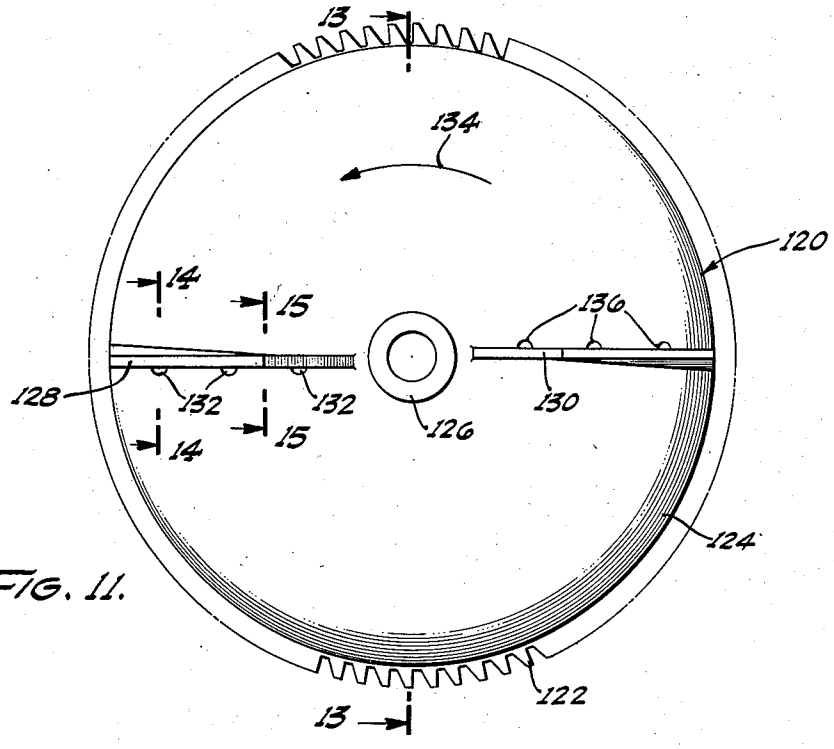


FIG. 11.

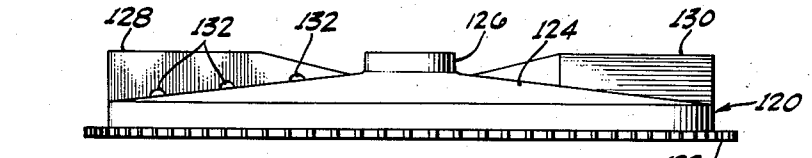


FIG. 12.

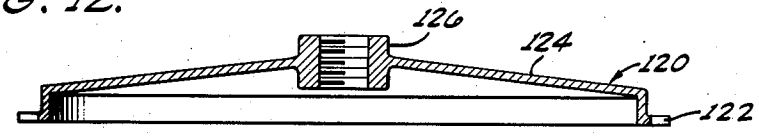


FIG. 13.

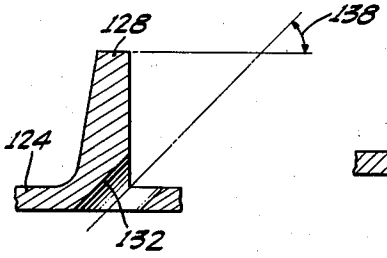


FIG. 14.

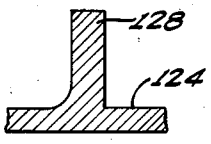


FIG. 15.

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2,857,109

PORTABLE GARBAGE DISPOSAL UNIT

Irvin E. Haeussler, Encino, Calif., assignor to Apsco Products, Inc., Los Angeles, Calif., a corporation of Illinois

Application June 8, 1956, Serial No. 590,267

12 Claims. (Cl. 241—46)

This invention relates to garbage disposal devices of the type that reduce kitchen waste to a finely divided state for discharge through a sink drainage system. The general object of the invention is to provide a compact, portable, self-contained unit of this character that requires no plumbing connections whatsoever and merely requires casual positioning in the sink to be ready for service.

This application is a continuation in part of copending application Serial No. 337,148 entitled "Portable Garbage Disposal Unit," filed February 9, 1953, by Irvin E. Haeussler, now abandoned.

One of the objects of the invention is to provide such a unit that is of highly convenient portability in the sense that it is easy to handle, and not only may be readily maneuvered from one position to another in a sink but also may be easily lifted into and out of the sink as desired. This object is accomplished in part by weight-saving structural configurations in the design of the unit, and in part by the use of suitable light-weight material. An important feature of the invention in this regard, however, is the concept of using the normal flow of fluids through the unit to cool the actuating motor so that a relatively light-weight motor of inexpensive construction can be employed to operate the grinding mechanism. In the absence of such cooling action a heavier motor would be necessary to avoid excessive heating of the unit.

A further feature of the invention with respect to convenient portability is the concept of shaping the unit to the configuration of an upright cylinder so that a housewife with very little effort may simply tilt and roll the unit from one position to another in the sink. Suitable handles positioned at a convenient height on the periphery of the unit not only facilitate such maneuvering but also provide convenient hand grips for lifting the unit bodily when desired.

Another object of the invention is to provide a portable waste disposal unit of inexpensive construction that may be readily cleaned. For this purpose the preferred embodiment of the invention comprises an upper chamber and a lower chamber separated by a transverse wall, which wall is associated with the grinding mechanism and is apertured to permit the processed material to drop therethrough into the lower chamber. With the lower chamber completely open on its bottom side and with the upper chamber spanned by a removable closure, the interior of the unit is readily accessible. The unit may be conveniently flushed out with water, and since the motor is waterproof the unit may even be completely immersed in water if desired. An added advantage of such a construction is that the open bottom is substantially larger in diameter than the conventional outlet of a sink so that no special care on the part of the housewife is required to place the unit in an operative position relative to the drainage outlet.

A portable power driven unit of this character should, of course, be inherently safe to use, and therefore careful consideration should be given to the accessibility of the

grinding mechanism to the user's hands while the unit is in operation. The provision of a large opening for the upper chamber normally spanned by a removable cover is advantageous in this respect, because the cover is necessary to confine the violently agitated materials in process and thus precludes inadvertent operation of the unit without the cover in place. Safety is furthered also by providing a feed opening into the upper chamber constructed and arranged to prevent the user's hand from extending therethrough into contact with the cutting mechanism.

Further objects of the invention relate to certain problems arising from the use of high-speed, motor driven grinding mechanism in such a unit, especially since the motor and mechanism have a common vertical operating axis. One of these problems arises from the fact that the power-driven mechanism tends to create vibration both in the sonic range and outside the sonic range and the usual sink structure tends to augment the generated vibration. Another of these problems is to prevent the unit from rotating bodily about the operation axis in response to the reaction torque of the motor. The tendency of the unit to rotate in this manner is increased, of course, by the characteristically smooth surface of the usual kitchen sink.

A salient feature of the invention is that these further problems of vibration, noise and rotary slippage are solved by the simple expedient of providing the unit with an elastomer base. In the preferred practice of the invention the unit is provided with a rubber-like base ring for this purpose that serves both to damp vibration and to engage the smooth surface of the sink in a frictional slippage-resistant manner to preclude reaction rotation of the unit.

The invention also contemplates the use of a motor in a water-tight housing, the motor being mounted below and connected to a disc shaped grinding rotor. No matter with what angle the top of the housing is constructed, solid refuse material tends to become stuck thereto, after it has been ground, between the rotor and stationary grinding teeth positioned adjacent thereto for that purpose. After the refuse material has dried, this subsequently causes the disposal unit to have a very disagreeable odor. However, in accordance with the invention, the rotor is provided with radially and upwardly extending ribs, and holes are additionally provided through the rotor adjacent the ribs and on the sides of the ribs in the direction the rotor is moved. Hence, water is forced through the holes at a substantial velocity because three forces act upon it. The first force is the pressure-head of the water above the rotor. The second force is due to the movement or turbulence of the water caused by the movement of the rotor ribs. The last force is the centrifugal force imparted to the water when the spinning rotor with its ribs causes the water to swirl. Hence, in accordance with this feature of the invention, the top of the motor housing may be kept perfectly clean.

The various objects and advantages of the invention may be readily understood from the following detailed description considered with the accompanying drawings.

In the drawings, which are to be regarded as merely illustrative:

Fig. 1 is a perspective view of one embodiment of the invention;

Fig. 2 is a plan view of the unit shown in Fig. 1;

Fig. 3 is an enlarged sectional view taken as indicated by the angled line 3—3 of Fig. 2;

Fig. 3*a* is an enlarged detail of Fig. 3;

Fig. 4 is a fragmentary section taken as indicated by the line 4—4 of Fig. 3;

Fig. 5 is a horizontal section taken as indicated by the line 5—5 of Fig. 3;

Fig. 6 is a fragmentary section taken as indicated by the curved line 6—6 of Fig. 5;

Fig. 7 is a horizontal section taken as indicated by the line 7—7 of Fig. 3;

Fig. 8 is a fragmentary view partly in side elevation and partly in section showing a modified form of cover that may be used;

Fig. 9 is a view partly in section showing how the unit may be mounted on legs provided with suction cups;

Fig. 10 is a fragmentary view similar to Fig. 5 illustrating a modification of the invention;

Fig. 11 is a plan view of an alternative rotor construction illustrating another feature of the invention;

Fig. 12 is a side elevational view of the rotor shown in Fig. 11;

Fig. 13 is a sectional view taken on the line 13—13 shown in Fig. 11; and

Figs. 14 and 15 are sectional views of the rotor taken on the lines 14—14 and 15—15 respectively shown in Fig. 11.

The principal parts of the embodiment of the invention shown in Figs. 1 to 7 include: a casing generally designated 20 that is adapted to rest on the surface 21 of a kitchen sink (Fig. 3) over the drainage outlet 22 of the sink; an upper chamber 25 and a lower chamber 26 formed by the casing; a transverse wall member 27 which separates the two chambers and is apertured for the passage of reduced material therethrough; a stator grinding ring 28 in the upper chamber 25; a rotor generally designated 30 surrounded by the grinding ring; and a waterproof motor 31 for actuating the rotor. An electric cord 32 (Fig. 7) for plugging the motor 31 into a circuit extends through a radial opening 33 in the transverse wall member 27.

It is contemplated that the upper chamber 25 will be provided with at least one opening for the introduction of kitchen waste and running water and that the lower chamber 26 will be provided with a suitable discharge opening to release the reduced material and accompanying water to the sink drainage outlet. It will be apparent to those skilled in the art that the unit may be constructed in various ways and may have various configurations to provide these openings and to carry out its purpose.

In the particular construction shown in the drawing, the casing 20 comprises an upper cylindrical shell 34 and a lower cylindrical shell 35 interconnected by the transverse wall member 27. A feature of this arrangement is that the transverse wall member 27 not only serves as means to assemble the two shells 34 and 35 together, but also serves an ornamental purpose in providing the appearance of a circumferential band around the unit as may be seen in Fig. 1. In addition, the wall member 27 preferably forms two diametrically positioned handles 36.

A further feature of the construction shown in the drawings is that the transverse wall member 27 serves as means to mount the stator grinding ring 28 and also cooperates with the grinding ring to engage the upper shell 34. For this last purpose the stator grinding ring 28 is formed with a radial circumferential flange 37 and the upper cylindrical shell 34 is formed with an inwardly turned radial flange 38 that is gripped between the flange 37 and the wall member 27. In like manner the lower shell 35 is formed at its upper end with an inwardly turned radial flange 39. Suitable screws 40 engage the flange 39 of the lower shell to secure the lower shell to the transverse wall member 27 and also thread into the radial flange 37 of the stator grinding ring to secure the upper shell.

Preferably a suitable sealing ring 41 closes the annular space between the stator grinding ring 28 and the surrounding upper shell 34. This sealing ring may be formed with a tapered upper face 42 to direct material inward to the grinding ring 28, the grinding ring having a similar tapered upper face 43 to direct material radially inward into the region of the rotor 30. The sealing ring 41 may be made of any suitable material but preferably is made of a suitable elastomer or rubber-like material.

Preferably, as best shown in Figs. 3 and 7, the transverse wall member 27 has a shallow circular groove 45 with elongated bosses 46 extending upward from the groove around the screws 40. In the bottom of the circular groove 45 is a circular series of arcuate apertures 47. In the particular construction shown in the drawings the transverse wall member 27 is also formed with a downwardly extending cylindrical flange 50 (Fig. 3) for cooperation with the housing of the motor 31 and, in addition, has an inner cylindrical flange 51 to house a bearing 52 for the motor shaft 53. Long screws 54 anchor the motor housing to the cylindrical flange 50 of the transverse wall member in a waterproof manner and suitable sealing means surround the motor shaft to make the water-proofing complete. The shaft sealing means, as best shown in Fig. 3*a*, may comprise a wellknown, commercially available assembly that includes a carbon ring 55, an O-ring 56 embracing the carbon ring, and a coiled spring 57. The spring is confined between a thin washer 57*a* and the radial flange 58 of a sheet metal bushing 58*a*.

The rotor 30 may be in the form of a disc 59 suitably formed to engage and move material along the inner circumference of the stator grinding ring 28 and the grinding ring may be formed with suitable teeth 60 to abrade and shred the moving material. It is contemplated that the rotor will turn in the direction indicated by the arrow 61 in Fig. 5 and that the teeth 60 will be slightly inclined counter to the direction of rotation as viewed in plan, the teeth being formed with relatively sharp edges by virtue of abrupt faces 62 directed against the travel of the periphery of the rotor.

The rotor may be formed with at least two upper impelling blades, ribs or the like to cause the material on the disc 59 to move along the stator teeth 60. For example, the rotor may be formed with two straight radial ribs or blades 63 positioned diametrically opposite each other. Preferably the ribs or blades 63 are shaped with substantially vertical leading faces 64 and inclined trailing faces 65, as may be seen in Figs. 5 and 6. Preferably the rotor 30 is also provided with a second diametrical pair of ribs or blades 66, the outer ends of which are swept back with respect to the direction of rotation, as may be seen in Fig. 5, for the purpose of forcing material against the teeth 60 of the stator grinding ring 28 with a wedging action. The second set of ribs or blades 66 may be of the same cross-sectional configuration as the first set of ribs or blades 63 and either of the two sets may be omitted if desired.

Preferably the rotor 30 is also provided with shearing blades or projections 68 on the underside of the disc positioned to extend radially outward immediately under the stator grinding ring 28. As may be seen in Fig. 3, these shearing projections may be relatively short members dimensioned to extend into the circular groove 45 to travel across the arcuate apertures 47.

It is desirable to add stationary vanes or ribs on the inner surface of the upper shell 34 to cooperate with the rotor 30. As shown in Figs. 3 and 4, such vanes or ribs may be in the form of sheet metal members 69 of T-shaped cross-sectional configuration spot welded to the shell. Any large piece or mass of material riding on the rotor 30 will be urged centrifugally against the stationary members 69 to be broken or abraded thereby and, on the other hand, any such mass held against rotation by the stationary members will be subjected to the disintegrating action of the rotating blades 63 and 66.

Any suitable feed opening may be provided for the upper chamber 25 of the unit. Preferably the upper chamber is covered by a suitable removable closure member and the feed opening is in the closure member. For example, as shown in Fig. 3, the upper end of the upper cylindrical shell 34 may be spanned by a cover 71 that

is formed with a circumferential skirt or flange **72** adapted to releasably embrace the rim of the shell. The cover **71** which is inwardly dished for drainage, has a central cylindrical portion **74** forming the feed opening and the cylindrical portion terminates in a lower radially inward flange adapted to seat a flexible baffle member **76**. The baffle member **76**, which is made of rubber or of other suitable elastomer material, is cup-shaped and is slit radially to form a plurality of inwardly directed tongues **80**. The tongues **80** are normally closed together to keep the agitated material in process from flying out of the feed opening when the unit is in operation, but readily flex open as shown by dotted lines in Fig. 3 to admit kitchen waste and are sufficiently flexible also to yield to the impact of running water from an open faucet. If desired, a small auxiliary cover plate **81** may be provided to span the feed opening when the unit is not in operation. The particular auxiliary cover plate **81** shown in Figs. 2 and 3 has small finger openings **82** by means of which it may be handled and lifted away from the feed opening as indicated by the arrow **83** and dotted outline **84** in Fig. 3.

As heretofore stated, preferably the unit has a base or supporting means made of a suitable elastomer or rubber-like material for the dual purpose of absorbing vibration and of resisting any tendency of the unit to rotate in response to the reaction motor torque. In the present embodiment of the invention such a base member may be in the form of a rubber ring **88** that is sufficiently soft for the purpose. As best shown in Fig. 3, the lower end of the lower shell **35** of the casing may be formed with an offset **89** to rest on the upper surface of the rubber ring **88** and the lower edge of the shell may be embedded in the ring.

It is contemplated that the unit will be relatively light in weight so that it may be readily lifted into and out of a kitchen sink as desired. It is apparent that the simplicity of the construction favors lightness of weight and that weight may be minimized by using relatively light materials as much as possible.

The operation of this embodiment of the unit may be readily understood from the foregoing description. For service the unit is simply placed in a kitchen sink in a position to surround the drainage opening of the sink as indicated in Fig. 3. Since the open bottom of the unit is substantially larger than the drainage outlet of the sink, being preferably of at least three times the area of the drainage outlet, no particular care or attention is required to place the unit in an operative position relative to the drainage outlet of the sink. The relatively large diameter of the open bottom of the described unit also has the advantage of permitting the use of a large diameter rubber base ring **88** for highly effective resistance to any tendency of the unit to rotate in response to the motor torque.

With the motor **31** plugged into the house circuit for energization of the rotor **30** and with the auxiliary cover plate **81** removed, it is merely necessary to direct running water from the sink faucet into the unit through the feed opening in the cover and to introduce the waste material by hand through the rubber baffle member **76**. The waste material, together with the running water, is received by the rotor **30** and at least the lower portion of any body of material that is introduced is engaged by the upper rotor blades **63** and **66**. The rotor blades cause the waste material engaged thereby to rotate with sufficient centrifugal force to cause the material to be driven radially outward against the teeth **60** of the stator grinding ring **28** and the rotor blades sweep the material along the teeth thereby causing the material to be reduced by the abrading and shredding action of the teeth. As heretofore explained, any rotating mass of material extending substantially above the rotor **30** will be subject to disintegration by the fixed vanes or ribs **69** and if the mass of material is immobilized by the members **69** it will be disintegrated by the rotor blades.

As a result of the described operation of the mechanism, the waste material is disintegrated and reduced to sufficiently small particles to pass downward through the clearance between the periphery of the rotor **30** and the inner circumference of the stator grinding ring **28**. Any elongated particles of waste material such as shreds of leaves or pieces of string that may extend downward through the clearance space between the rotor and the stator grinding ring will be sheared by the rotating shearing blades **68** that extend under the grinding ring. The running water entraining the reduced waste material is discharged through the arcuate apertures **47** of the transverse wall member **27** and is thereby directed against the circumference of the motor **31** with consequent highly important cooling effect on the motor. Finally, the water and finely divided material reach the surface **21** of the sink to drain into the sink drainage outlet **22**.

The cylindrical configuration of the unit makes it a very easy matter for the housewife to tilt the unit and roll it along the sink bottom to a standby position away from the drainage outlet **22**. With the unit in such a standby position the sink may be used for other purposes, for example, to wash dishes.

An important advantage of making the motor of the unit waterproof is that the unit may be left in the sink between periods of operation without danger of damage by water even if the sink is filled with water to a relatively high level. The waterproof construction also makes it a simple matter to flush out the whole unit when desired. Usually the cover **71** is removed for this purpose. With the cover removed the unit may, if desired, be turned on its side for immersion in water to permit thorough cleaning of both the upper and lower chambers.

As heretofore stated, an important feature of the invention is the concept of using the normal flow of fluids through the unit to cool the actuating motor. In this regard it will be noted that the outside diameter of the motor is nearly as large as the inside diameter of the surrounding casing so that the motor cooperates with the casing to form a relatively thin annular passage. As may be seen in Fig. 1, the outside diameter of the motor in the drawings is approximately ⅘ of the inside diameter of the casing. This annular passage being relatively thin spreads out of the stream of the downwardly flowing waste-entraining water to cause the water to make intimate contact with the periphery of the motor. It will also be noted that the vertical dimension of the motor is relatively long, being at least on the order of ½ the total inside height of the casing so that the contact between the downwardly flowing liquid and the motor is prolonged and a relatively large peripheral area of the motor is subject to the cooling action of the water.

Fig. 8 shows the construction of a modified form of removable cover **100** that may be substituted for the previously described cover **71** to provide a different type of feed opening. The cover **100** is cut away as shown and formed with a rolled edge **101** to provide the desired feed opening. In this construction the cover **100** is equipped with an inner scoop-shaped baffle **102** which, in effect, serves as an inner extension of the feed opening and is so constructed and arranged as to prevent the user's hand from making contact with the rotary grinding mechanism. Preferably a flexible sheet member or baffle **103** of suitable material such as elastomer normally rests against the inner edge of the baffle **103** to close the feed opening and thereby prevent the violently agitated material in process from being thrown outward through the feed opening when the unit is in operation. The flexible baffle **103** readily yields to the dotted position shown in Fig. 8 to permit the introduction of waste material by hand and to admit running water.

Fig. 9 indicates how, if desired, the unit may be con-

structed to stand on four short legs **106**. The legs **106** are integral with a base ring **107** that fits into the lower open end of the casing. Suitable suction cups **108** are mounted on the lower ends of the legs **106**, the suction cups being provided with embedded screws **110** for that purpose. The suction cups **108** are not only resilient for the absorption of vibration, but also, by virtue of their suction action, effectively engage the smooth surface of the sink with sufficient tenacity to resist any tendency for the unit to rotate in response to the motor torque. One advantage of this modification of the invention is that if the device is used in a sink having a relatively small drainage outlet of restricted flow capacity, any material that tends to accumulate in the sink because of the reduced outlet capacity will accumulate below the inner wall surfaces of the unit. Thus the inner wall surfaces will be above the level of the accumulated waste and will be continually flushed by the downwardly flowing effluent.

Fig. 10 shows a modified form of stator grinding ring **112** which may be substituted for the previously described stator grinding ring **43**. The grinding ring **112** has a series of alternate teeth **113** shaped and dimensioned as heretofore described and a second series of alternate teeth **114** that are cut back or shortened as shown. The shortened teeth permit the larger pieces of material to enter freely the paths of the longer teeth thus permitting an effective grinding action that is especially desirable for reducing pieces of bone.

Very frequently ground refuse material is deposited on the transverse wall member **27**. Water generally is not circulated over the external surface of the member **27**. Hence refuse material deposited thereon generally dries and subsequently causes a very disagreeable odor to emanate from the disposal unit. In order to eliminate this condition, an alternative rotor construction is provided to continuously clean the outer surface of the member **27**. Such an alternative rotor construction **120** is shown in Fig. 11 comprising radially extending teeth **122**, the frusto-conical body portion **124** having a threaded flange **126** to connect to a threaded shaft of a driving motor. A pair of ribs **128**, **130** are fixed or cast integrally with the body **124** and extend radially from the flange **126** and upwardly from the body **124**. Three holes **132** are provided on the side of the rib **128** in the direction of the intended movement of the rotor **120** as indicated by an arrow **134**. Similarly, three holes **136** are provided on the side of the rib **130** in the direction of the arrow **134**. The holes **132**, **136** are preferably disposed at an angle **138** approximately equal to 45° as illustrated in Fig. 14. It will be obvious that the size of the holes **132**, **136** is not particularly critical. It will also be evident that they may be made of any convenient cross-section and only one need necessarily be employed. Furthermore, the holes may be slanted at any convenient angle through the body **124**. However, as shown, preferably more than one hole is employed on the whole body **124**, and preferably holes are provided adjacent both of the ribs **128**, **130**.

It is thus seen that water may be forced out at a substantial velocity through the holes **132**, **136**, and the upper surface of the member **27** may be effectively cleaned continually. In the operation of the unit it will be seen water is in fact urged through the holes **132**, **136** by virtue of three existing forces.

In the first place, water will generally stand several inches above the body **124**. A pressurehead of water is thus created which forces water through the holes **132**, **136**. By virtue of the fact that the rotor **120** will spin in the direction of the arrow **134**, substantial turbulence will be created by the ribs **128**, **130**. Thus, water will be forced through the holes **132**, **136** at a still greater velocity. Lastly, rotation of the rotor **120** in the direction of the arrow **134** will cause the water itself to swirl so that it will be subjected to a centrifugal force which will urge it through the holes **132**, **136**. The total force on water emanating from one of the holes **132** or **136** will then be primarily in a radial direction although some motion will be imparted to the water in a circumferential direction opposite the direction of rotation of the rotor **120**. The upper and outer surface of the member **27** thus is effectively and continually cleaned of any solid waste materials deposited thereon.

My description in specific detail of presently preferred practices of the invention for the purpose of the disclosure and to illustrate the principles involved will suggest to those skilled in the art various changes, modifications and other departures from my disclosure that properly lie within the spirit and scope of the appended claims.

What is claimed is:

1. A portable waste disposal unit for use in a sink, over the drainage outlet of the sink, said unit having in combination: a lower upright shell open at the bottom for discharge of material therefrom; a transverse wall member spanning the upper end of said shell to form therewith a lower chamber, said wall member being apertured for flow of material therethrough into said lower chamber; an upper shell mounted on said wall member to form therewith an upper chamber, said upper shell having at least one upper opening to receive kitchen waste and water; a waterproofed motor mounted within and spaced from the walls of said lower chamber to be cooled peripherally by materials flowing between them, said motor being carried by said wall member; a shaft extending upwardly from said motor through said wall member; means including a rotor mounted on said shaft in said upper chamber to grind material therein; and resilient means at the lower end of said lower shell to engage the surface of the sink in a slippage-resistant manner to prevent rotation of the unit by the reaction torque of the motor.

2. A portable waste disposal unit for use in a sink, over the drainage outlet of the sink, said unit having in combination: a lower upright cylinder open at its lower end for escape of material therefrom; a transverse wall member spanning the upper end of said lower cylinder to form therewith a lower chamber, said wall member having external handles united therewith for lifting the unit, said wall member having a circular series of openings near its periphery for the passage of material therethrough into said lower chamber; an upper cylinder mounted on said wall member to form therewith an upper chamber; a removable cover for said upper chamber having at least one opening for the introduction of water and kitchen waste; a stator ring in the bottom of said upper chamber mounted on said wall member above said series of openings; a motor mounted on the lower side of said wall member substantially concentrically within and spaced from said lower cylinder, said motor having a waterproofed housing including said wall member to permit cooling without damage by fluid material flowing through the lower chamber around the periphery of the motor; a shaft extending upwardly from said motor through said wall member; a rotor on said shaft surrounded by said stator ring, said rotor having radial blades on its upper side extending close to the inner circumference of said ring and having at least one blade on its under side extending under said ring; and elastomer means on the lower end of said lower cylinder to support the unit in a resilient manner for absorption of vibration and to engage the sink surface in a slippage-resistant manner to prevent rotation of the unit by the reaction torque of said motor.

3. A portable waste disposal unit for use in a sink over the drainage outlet of the sink, said unit having in combination: an upright casing having a bottom discharge opening to communicate with said drainage outlet and at least one upper opening to receive kitchen waste and water; a transverse wall inside said casing between said two openings dividing the casing into an upper and a

lower chamber; means including a rotor in said upper chamber to grind material therein; and a motor to energize said rotor, said motor being waterproofed and being mounted within and spaced from the walls of said lower chamber in a position to be cooled peripherally by water and ground material passing through the lower chamber around said motor to said discharge opening, said transverse wall being provided with a plurality of apertures positioned to release fluid from the upper chamber around the periphery of the motor to cool the motor by downward movement of material therethrough from said upper chamber into said lower chamber.

4. The invention defined in claim 3 wherein said motor is mounted centrally in said lower chamber.

5. A portable waste disposal unit for use in a sink over the drainage outlet of the sink, said unit having in combination: an upright casing having a bottom discharge opening to communicate with said drainage outlet and at least one upper opening to receive kitchen waste and water; a grinding rotor including a disc with upper blades terminating adjacent the inner circumference of said ring and with lower blades projecting under said ring, said rotor being positioned inside said casing at an intermediate level thereof; fixed grinding means including a stationary grinding ring surrounding said rotor and carried by said casing adjacent the periphery of said rotor for grinding cooperation therewith; a waterproofed motor mounted in said casing below said rotor in a position to be cooled peripherally by flow of said waste and water between said casing and said motor, said motor serving as means to actuate the rotor; and an upwardly extending shaft driven by said motor and carrying said rotor, the outside diameter of said motor being nearly equal to the inside diameter of said casing but spaced therefrom, whereby the motor forms a relatively thin annular space with the casing for the downwardly flowing stream of waste and water to promote intimate contact of said stream with the periphery of the motor for effective cooling of the motor.

6. A portable waste disposal unit for use in a sink over the drainage outlet of the sink, said unit having in combination: an upright casing having a bottom discharge opening to communicate with said drainage outlet and at least one upper opening to receive kitchen waste and water; a grinding rotor including a disc with grinding blades, said rotor being positioned inside said casing at an intermediate level thereof; fixed grinding means including a stator grinding ring surrounding said rotor blades, said grinding ring having a first series of inwardly directed teeth and an alternate series of inwardly directed teeth shorter than the teeth of the first series, said fixed grinding means being carried by said casing adjacent the periphery of said rotor for grinding cooperation therewith; a waterproofed motor mounted in said casing below said rotor in a position to be cooled peripherally by flow of said waste and water between said casing and said motor, said motor serving as sole means to actuate the rotor; and an upwardly extending shaft driven by said motor and carrying said rotor, the outside diameter of said motor being nearly equal to the inside diameter of said casing but spaced therefrom, whereby the motor forms a relatively thin annular space with the casing for the downwardly flowing stream of waste and water to promote intimate contact of said stream with the periphery of the motor for effective cooling of the motor.

7. A portable waste disposal unit for use in a sink over the drainage outlet of the sink, said unit comprising: an upright casing having a bottom discharge opening to communicate with said drainage outlet and at least one upper opening to receive kitchen waste and water; grinding means including a stator fixed to the interior wall of said casing in a horizontal plane intermediate the ends of said casing; a waterproofed motor mounted centrally within said casing below said stator spaced from the wall of said casing in a position to be cooled peripherally by flow of said waste and water downwardly between said casing and said motor; and a vertical drive shaft for said motor extending upwardly therefrom; said grinding means also including a disc-shaped rotor fixed to said shaft to rotate in a horizontal plane inside said casing and having a circumferential edge adjacent said stator, said grinding means being constructed to comminute materials by cooperation of the circumferential edge of said rotor and said stator, at least portions of the circumferential edge of said rotor and said stator being spaced apart around the circumference of said rotor to permit flow of water and waste downwardly therethrough and uniformly around said motor between said motor and the wall of said casing, rotation imparted to said rotor thereby uniformly distributing waste and water completely around the circumference of said motor to cool it peripherally.

8. A portable waste disposal unit for use in a sink over the drainage outlet of the sink, said unit comprising: an upright casing having a bottom discharge opening to communicate with said drainage outlet and at least one upper opening to receive kitchen waste and water; grinding means including a stator fixed to the interior wall of said casing in a horizontal plane intermediate the ends of said casing; a waterproofed motor mounted centrally within said casing below said stator spaced from the wall of said casing in a position to be cooled peripherally by flow of said waste and water downwardly between said casing and said motor; and a vertical drive shaft for said motor extending upwardly therefrom; said grinding means also including a disc-shaped rotor fixed to said shaft to rotate in a horizontal plane inside said casing and having a circumferential edge adjacent said stator, said grinding means being constructed to comminute materials by cooperation of the circumferential edge of said rotor and said stator, at least portions of the circumferential edge of said rotor and said stator being spaced apart around the circumference of said rotor to permit flow of water and waste downwardly therethrough and uniformly around said motor between said motor and the wall of said casing, rotation imparted to said rotor thereby uniformly distributing waste and water completely around the circumference of said motor to cool it peripherally, said stator being a stationary grinding ring surrounding said rotor in spaced relation thereto; said rotor having at least one blade projecting under said ring to remove ground material from the underside thereof.

9. A portable waste disposal unit for use in a sink over the drainage outlet of the sink, said unit comprising: an upright casing having a bottom discharge opening to communicate with said drainage outlet and at least one upper opening to receive kitchen waste and water; grinding means including a stator fixed to the interior wall of said casing in a horizontal plane intermediate the ends of said casing; a waterproofed motor mounted centrally within said casing below said stator spaced from the wall of said casing in a position to be cooled peripherally by flow of said waste and water downwardly between said casing and said motor; and a vertical drive shaft for said motor extending upwardly therefrom; said driving means also including a disc-shaped rotor fixed to said shaft to rotate in a horizontal plane inside said casing and having a circumferential edge adjacent said stator, said grinding means being constructed to comminute materials by cooperation of the circumferential edge of said rotor and said stator, at least portions of the circumferential edge of said rotor and said stator being spaced apart around the circumference of said rotor to permit flow of water and waste downwardly therethrough and uniformly around said motor between said motor and the wall of said casing, rotation imparted to said rotor thereby uniformly distributing waste and water completely around the circumference of said motor to cool it peripherally; said rotor being provided with at least one hole completely through it in a position over the top of said motor to jet waste and water radially outwardly over the top of said motor to keep it clean.

10. A portable waste disposal unit for use in a sink over the drainage outlet of the sink, said unit comprising: an upright casing having a bottom discharge opening to communicate with said drainage outlet and at least one upper opening to receive kitchen waste and water; grinding means including a stator fixed to the interior wall of said casing in a horizontal plane intermediate the ends of said casing; a waterproofed motor mounted centrally within said casing below said stator spaced from the wall of said casing in a position to be cooled peripherally by flow of said waste and water downwardly between said casing and said motor; and a vertical drive shaft for said motor extending upwardly therefrom; said grinding means also including a disc-shaped rotor fixed to said shaft to rotate in a horizontal plane inside said casing and having a circumferential edge adjacent said stator, said grinding means being constructed to comminute materials by cooperation of the circumferential edge of said rotor and said stator, at least portions of the circumferential edge of said rotor and said stator being spaced apart around the circumference of said rotor to permit flow of water and waste downwardly therethrough and uniformly around said motor between said motor and the wall of said casing, rotation imparted to said rotor thereby uniformly distributing waste and water completely around the circumference of said motor to cool it peripherally; said motor including means to rotate said rotor in a predetermined direction over the top of said motor, said rotor being provided with at least two diametrically opposite upwardly and radially projecting ribs, said rotor having at least one hole extending completely through it on a side of each of and adjacent to said ribs in said predetermined direction to jet waste and water over said rotor radially outwardly through said holes over the top of said motor to keep it clean.

11. A portable waste disposal unit for use in a sink over the drainage outlet of the sink, said unit comprising: an upright casing having a bottom discharge opening to communicate with said drainage outlet and at least one upper opening to receive kitchen waste and water; grinding means including a stator fixed to the interior wall of said casing in a horizontal plane intermediate the ends of said casing; a waterproofed motor mounted centrally within said casing below said stator spaced from the wall of said casing in a position to be cooled peripherally by flow of said waste and water downwardly between said casing and said motor; and a vertical drive shaft for said motor extending upwardly therefrom; said grinding means also including a disc-shaped rotor fixed to said shaft to rotate in a horizontal plane inside said casing and having a circumferential edge adjacent said stator, said grinding means being constructed to comminute materials by cooperation of the circumferential edge of said rotor and said stator, at least portions of the circumferential edge of said rotor and said stator being spaced

apart around the circumference of said rotor to permit flow of water and waste downwardly therethrough and uniformly around said motor between said motor and the wall of said casing, rotation imparted to said rotor thereby uniformly distributing waste and water completely around the circumference of said motor to cool it peripherally; said motor including means to rotate said rotor in a predetermined direction over the top of said motor, said rotor being provided with at least two diametrically opposite upwardly and radially projecting ribs, said rotor having at least one hole extending completely through it on a side of each of and adjacent to said ribs in said predetermined direction to jet waste and water over said rotor radially outwardly through said holes over the top of said motor to keep it clean; each of said holes being disposed downwardly and rearwardly through said rotor in a direction opposite said predetermined direction.

12. A portable waste disposal unit for use in a sink over the drainage outlet of the sink, said unit having in combination: a lower shell having a bottom discharge opening; a transverse wall member spanning said shell to form therewith a lower chamber, said wall member having external handles for use in lifting the unit, said wall member being apertured for flow of material therethrough into said lower chamber; an upper shell mounted on said wall member to form therewith an upper chamber, said upper shell having at least one opening to receive kitchen waste and water; a stator grinding ring in the bottom of said upper chamber supported by said wall member; a waterproofed motor mounted within and spaced from the walls of said lower chamber to be cooled peripherally by water and ground material passing therethrough and around said motor to said discharge opening; a shaft extending upwardly from said motor through said wall member; and a disc-shaped rotor on said shaft in said upper chamber surrounded by said stator ring to cooperate therewith for grinding material, said rotor having upper blades terminating adjacent the inner surface of said ring and at least one lower blade projecting under said ring.

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