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D. RODGERS

2,133,756

DISINTEGRATOR

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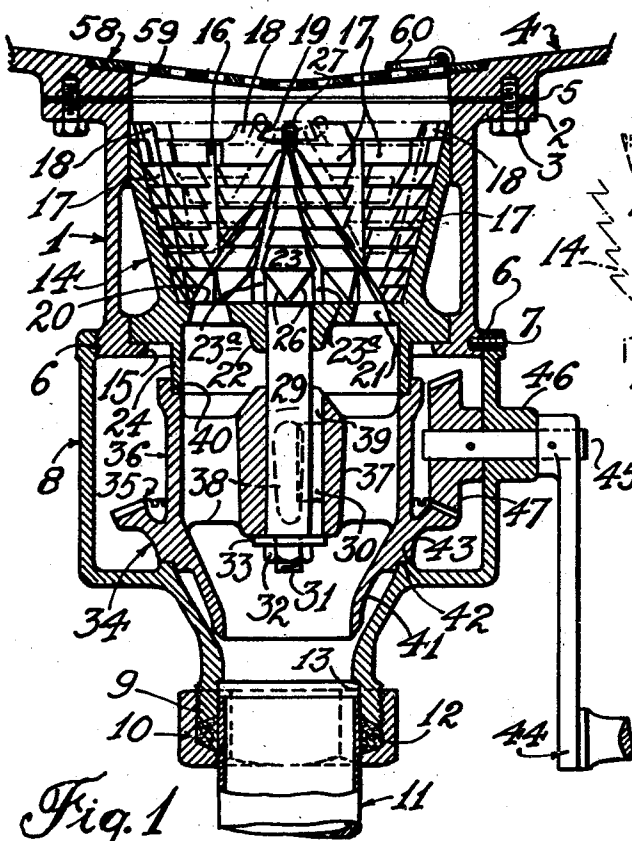


Fig. 1

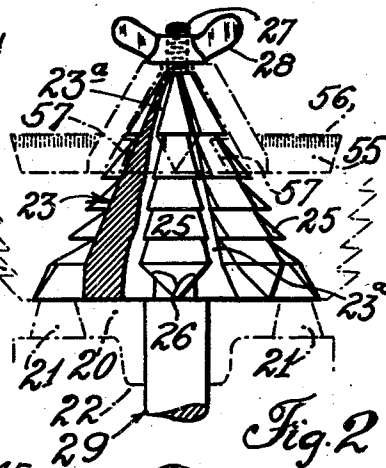


Fig. 2

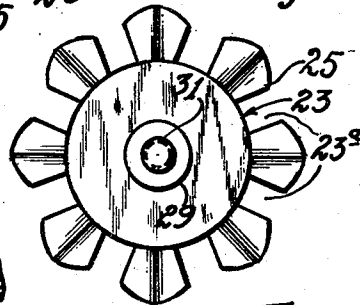


Fig. 3

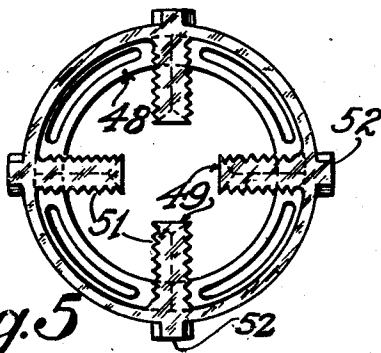


Fig. 4

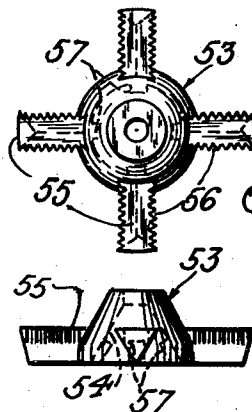


Fig. 5

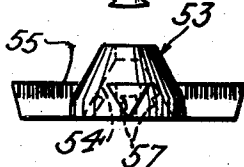


Fig. 6

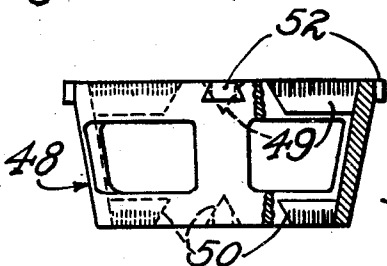


Fig. 7

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DISINTEGRATOR

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7 Claims. (Cl. 83—13)

This invention relates to disintegrators and more in particular to garbage disintegrators to be used in combination with kitchen-sinks for the purpose of readily disposing of most of the kitchen refuse by way of the sewer system.

One of the primary objects of this invention is to provide a disintegrator which may be applied to kitchen-sinks and the like and which when so applied may be considered as an integral part of the drain system thereof.

Another object of this invention is to provide such disintegrator having detachable means whereby long bones or the larger pieces of garbage may be first broken down to smaller sizes suitable for further trituration by the disintegrator proper.

Still another object is the provision of a disintegrator of this character which may be operated in either direction and which has means whereby the refuse is forced into the drainage duct, as fast as reduced to the required size.

Additional features and advantages of this invention will appear in the course of the following description considered in connection with the accompanying drawing forming a part of this application.

In the drawing:

Fig. 1 is a longitudinal sectional view through a manually operated disintegrator, as applied to an ordinary kitchen-sink.

Fig. 2 is a fragmentary side elevation of the disintegrator-cone, used in Fig. 1.

Fig. 3 is a bottom plan view of Fig. 2.

Fig. 4 is a side elevation, partly in section, of a removable disintegrator-basket.

Fig. 5 is a top plan view of Fig. 4.

Fig. 6 is a side elevation of the removable disintegrator-spider used in combination with the disintegrator-basket.

Fig. 7 is a top-plan view of Fig. 6.

Reference being had to the drawing, the present embodiment of my garbage disintegrator comprises the upper housing 1, provided at the top with a circular flange 2 whereby the device may be secured, by means of screws 3, to the underside of a kitchen-sink 4, partly indicated in Fig. 1. A gasket 5 is also shown to insure a leakproof assembly between the sink and the upper housing. Formed integrally with the latter, or secured thereto by any desired and suitable means, such as by the thread-connection 6 and the set-screw 7, is the lower housing 8, the lower end of which is reduced and provided with outward threads 9 which receive a packing-nut 10 by means of which the drain-pipe 11 of the sink may be secured and

the connection made leakproof by means of the packing 12 clamped between said nut and the suitably chamfered lower end of said lower housing. The latter is preferably counterbored, as at 13, to produce a close fitting slip-connection for the drain-pipe.

Fitting closely within the upper housing is the disintegrator-bowl 14, the lower end of which rests upon an internal flange 15 formed in the housing. As shown in Fig. 1, the bowl is conical internally, with the sides converging downwardly, and is provided with longitudinal grooves 16 and the sharp-edged teeth 17, the axial length, or pitch, of which is preferably reduced gradually downwardly. At the upper end of the bowl there are provided lugs 18, having dovetail-slots 19 converging upwardly, for a purpose to be described later. In the bottom 20 of the bowl there are provided concentrically disposed and downwardly flaring holes 21 through which the comminuted garbage may pass without clogging. At the center of the bottom there is a hub 22 which acts as a bearing and guide for the shaft of the disintegrator-cone 23, and a cylindrical depending sleeve 24 is cast integrally with the bowl.

The disintegrator-cone 23 has upwardly converging sides in which are cut lateral grooves 23^a which are wider and deeper at the bottom than at the top, so that all comminuted matter may flow downwardly without clogging said grooves. This cone is also, preferably, provided with tapered teeth 25 which are gradually shorter, downwardly in the direction of the axis of the cone. Near the lower end of the latter, the bottoms of the lateral slots are made substantially parallel with the axis of the cone, so as to fully uncover the outlet-holes 21 in the bottom of the bowl. Also, both sides 26 of the lowermost teeth are cut at an angle, preferably less than 45°, with the horizontal plane, to thereby force the triturated matter downwardly into and through the holes 21, as will be readily understood, when the cone revolves in either direction.

At the upper end of the cone there is a threaded stud 27 provided with a nut 28, whereby the disintegrator-spider may be removably fastened. The shaft 29 of the cone extends downwardly and is supplied with a key 30, a threaded shank 31 on which the nut 32 and the washer 33 are assembled, for the purpose of securing the special drain-gear 34.

This gear comprises a bevelled toothed crown 35, a cylindrical body 36 having a hub 37 and the arms 38 which are preferably tapered downwardly to facilitate the flow of the reduced garbage. The

hub is suitably slotted, as at 39, to accommodate the key which secured the gear and cone-shaft together. The upper end of the body 36 is counterbored, as at 40, to fit snugly about the extension 24 of the bowl, and the lower end of said gear-body is formed into a downwardly converging conical skirt 41 which serves to direct the flow of the mixture of comminuted garbage and water into the drain-pipe 11. The drain-gear is supported for rotation in the lower housing 8 by means of the bearing-ring 42 provided in the bottom of said housing and cooperating with the correspondingly machined recess 43 in the gear. It will be noted that the latter, being guided at both ends, serves also to hold the disintegrator-cone in proper operative position within the bowl.

The device may be operated by means of a crank 44, secured to a shaft 45 rotatably mounted in a bearing 46 formed on the lower housing. At the inner end of this shaft there is secured in any desired manner the bevel gear pinion 47 which meshes with the drain-gear teeth 35.

Of course, if desired, another source of power, such as an electric motor, could be used instead of the crank 44, which motor would be mounted on a special base (not shown) provided on the housing of the device and connected to the shaft 45 either directly or by means of a suitable set of gears, in a manner that will be readily understood by persons versed in the art.

When larger pieces of garbage, such as long chicken bones, etc., are to be disposed of, it is preferable to first break them up into smaller pieces that will be readily handled by the disintegrator, which latter, owing to its place of application, should be made as small as practical for the purpose. To this end, provisions are made in the disintegrator for the addition thereto of the specially constructed disintegrator-basket and spider, shown especially in Figs. 4 to 7.

As shown therein, the disintegrator-basket consists of a conical body 48 having at the top and bottom inwardly directed radial arms 49 and 50, preferably of triangular cross-section with sharp lateral edges. These arms are of proper length to clear the disintegrator-cone, and their lateral cutting edges may be serrated, as at 51, if desired, to better grip and penetrate into the bones to be broken. At the upper end of the basket there are provided radial, outwardly directed lugs 52, the radial sides of which are tapered to co-act with the slots 19 in the lugs 18 of the bowl. These lugs 52 are, of course, of such width as to be insertable from above in said slots. As will be understood, any slight rotation of the basket, in either direction, will cause the tapered edges of the lugs 52 to wedge themselves against the bevelled sides of the dove-tail slots 19, and thus the more tighten the basket on the bowl.

The disintegrator-spider, Figs. 6 and 7, comprises a conical hub 53 with a conical bore 54 shaped to fit over the upper part of the disintegrator-cone 23 and is secured thereon by the wing-nut 28. At the lower end of said hub, and integral therewith, are the radial spider-arms 55 which, like the basket-arms, are preferably of triangular cross-section and serrated, as at 56, along their cutting edges. These arms 55, as shown in broken lines in Fig. 1, are placed halfway between the two sets of arms 49 and 50 of the basket, so that bones or larger pieces of garbage will be more readily broken into suitably small pieces by the revolving arms 55. Lugs 57,

adapted to engage the slots 23^a in the disintegrator-cone, are provided in the spider-hub to establish a positive connection between same and the disintegrator-cone.

The manner of operating the device may be succinctly described as follows: The perforated cover 58 of the drain opening 59 in the sink 4 is first removed by pulling on the lifting-ring 60, and the garbage to be disintegrated and disposed of is then dumped into the bowl 14. The disintegrator is now operated by turning the crank 44, at the same time allowing a copious supply of water to run into the bowl, to thus facilitate the flow of the comminuted garbage. It will be noted that the pieces of garbage are reduced gradually in size as they move downward into the restricted area of the bowl by the disintegrating teeth 17 and 25. When the finally disintegrated garbage reaches the bottom of the bowl, the bevelled sides 26 will force it through the apertures 21, thence between the arms 38 of the revolving drain-gear 34 and into the usual drain-pipe 11 which leads to the sewer system.

As apparent in Fig. 1, the purpose of the downwardly directed skirt 41 on the drain-gear is to better conduct the mixture of water and garbage into the drain-pipe 11, and to prevent said mixture from entering the larger part of the lower housing, past the bearing surface 43, and thus clog the teeth of the bevel-gears 35 and 47.

While I have illustrated and described herein one embodiment of my invention, it may be found desirable after continued experience to make slight changes in the construction, arrangement of the details of my invention, and I intend to include in this application all such changes as fall within the scope of the herewith appended claims.

I claim:

1. In a disintegrator of the character described, a conical disintegrator-bowl having downwardly converging sides and a flat bottom provided with outlets for the disintegrated matter; disintegrating teeth positioned inwardly on the bowl, the length of said teeth along their converging axes being gradually reduced from the top to the bottom of said bowl; a disintegrator-cone having upwardly converging sides and rotatably mounted in said bowl; means to rotate said cone; disintegrating teeth positioned on said cone, the lowermost teeth having sides converging downwardly toward said bottom to force said matter through said outlets during the rotation of the cone in either direction.

2. In a disintegrator of the character described, a conical disintegrator-bowl having downwardly converging sides and a flat bottom provided with outlets for the disintegrated matter; disintegrating teeth positioned inwardly on the bowl; a disintegrator-cone having upwardly converging sides and rotatably mounted in said bowl; means to rotate said cone; disintegrating teeth positioned on said cone; the length of said teeth along their converging axes being gradually reduced from the top to the base of the cone and the lowermost teeth adjacent the bottom of said bowl having sides converging downwardly toward said bottom to force said matter through said outlets during the rotation of the cone in either direction.

3. In a disintegrator of the character described, a conical disintegrator-bowl having downwardly converging sides and a flat bottom provided with outlets for the disintegrated matter; disintegrating teeth positioned inwardly of 75

the bowl; a disintegrator-cone rotatably mounted in said bowl and having upwardly converging sides; means to rotate said cone; disintegrating teeth positioned on the cone, the lowermost teeth
 5 having sides converging downwardly toward said bottom to force said matter through said outlets during the rotation of the cone in either direction, the length of the disintegrating teeth along their converging axes of said cone and bowl being
 10 gradually reduced from the top downward.

4. In a disintegrator of the character described, a conical disintegrator-bowl having downwardly converging sides and a flat bottom provided with outlets for the disintegrated matter; disintegrating teeth positioned inwardly on
 15 the bowl; a disintegrator-cone rotatably mounted in said bowl and having upwardly converging sides provided with longitudinal lateral grooves; means to rotate said cone; disintegrating teeth
 20 positioned on the cone, the lowermost teeth having sides converging downwardly toward said bottom to force said matter through said outlets during the rotation of the cone in either
 25 direction, the length of the disintegrating teeth along their converging axes of said cone and bowl being gradually reduced from the top downward.

5. In a disintegrator of the character described, a conical disintegrator-bowl having downwardly converging sides provided with longitudinal grooves; a flat bottom for the bowl
 30 provided with outlets for the disintegrated matter; disintegrating teeth positioned inwardly on the bowl; a disintegrator-cone rotatably mounted in said bowl and having upwardly converging
 35 sides provided with longitudinal lateral grooves wider and deeper at the bottom than at the top of the cone; means to rotate said cone; disintegrating teeth positioned on the cone, the lowermost teeth having sides converging downwardly
 40 toward said bottom to force said matter through said outlets during the rotation of the cone in either direction, the length of the disintegrating teeth along their converging axes of said cone

and bowl being gradually reduced from the top downward.

6. In a disintegrator of the character described, an upper housing; a lower housing secured thereto and having a reduced drain connection; a stationary disintegrator-bowl positioned in the upper housing and comprising a flat
 5 bottom having outlets for the disintegrated matter; a cylindrical sleeve depending from said bottom; a disintegrator-cone rotatably mounted
 10 in said bowl; a shaft for the cone; cooperating disintegrating teeth on said bowl and cone; a drain-gear comprising a hub secured on said shaft, a hollow cylindrical body and arms securing same to the hub in concentric spaced relation, the upper end of said body peripherally
 15 engaging said depending sleeve and the lower end of the body protruding within said drain connection, and means to rotate said drain-gear and cone.

7. In a disintegrator of the character described, an upper housing; a lower housing secured thereto and having a reduced drain connection; a stationary disintegrator-bowl positioned in the upper housing and comprising a flat
 25 bottom having outlets for the disintegrated matter; a cylindrical sleeve depending from said bottom; a disintegrator-cone rotatably mounted in said bowl; a shaft for the cone; cooperating disintegrating teeth on said bowl and cone; a
 30 drain-gear comprising a hub secured to said shaft, a hollow cylindrical body and arms securing same to the hub in concentric spaced relation; a crown with gear-teeth positioned on said body and surrounding same; the upper end of
 35 said body peripherally engaging said depending sleeve and the lower end of the body protruding within said drain connection; a drive gear in mesh with the teeth of the drain-gear; a shaft for the drive-gear rotatably mounted in the
 40 lower housing, and means to rotate said shaft.

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