

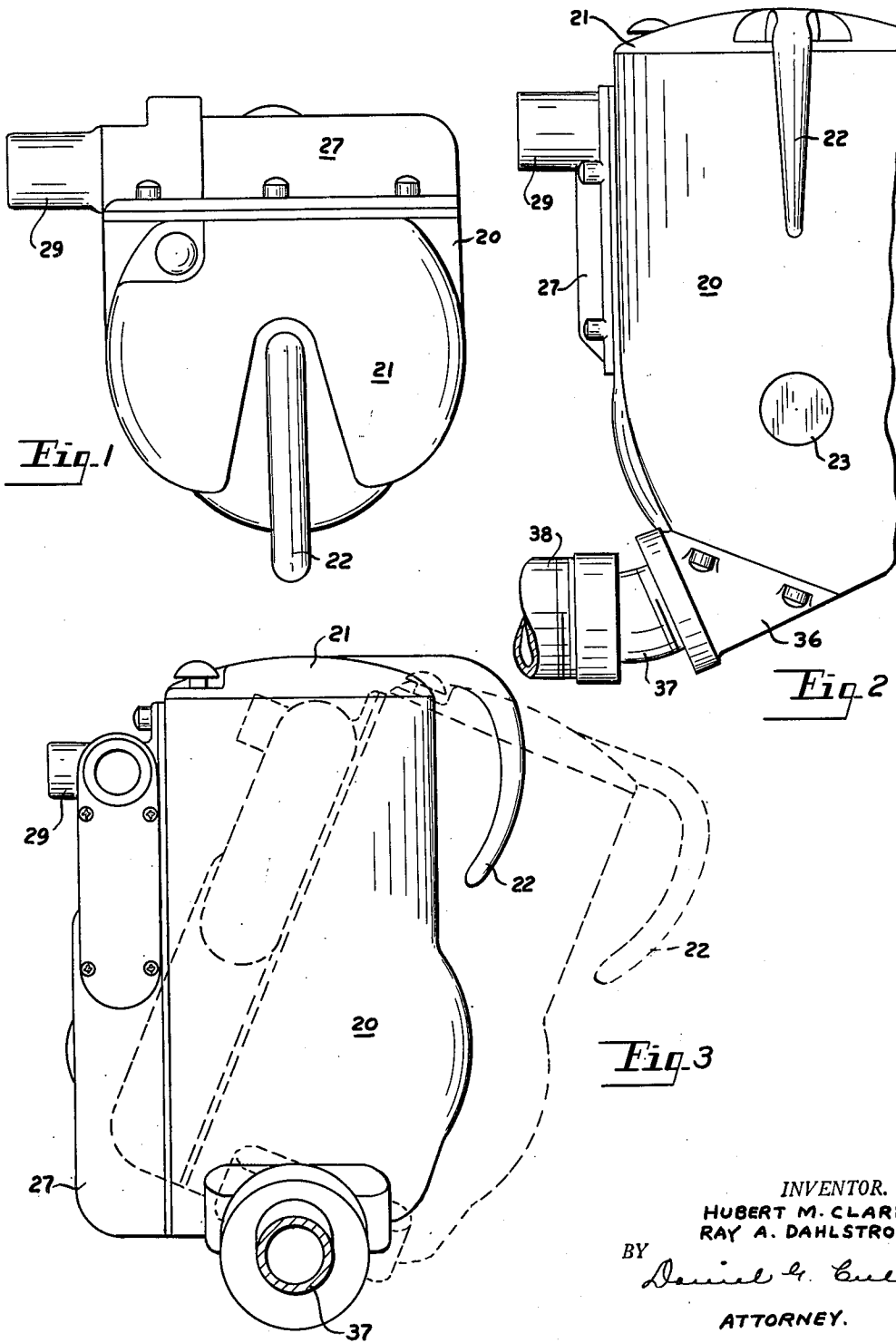
March 17, 1953

H. M. CLARK ET AL
GARBAGE DISPOSAL DEVICE

2,631,297

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3 Sheets-Sheet 1



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3 Sheets-Sheet 2

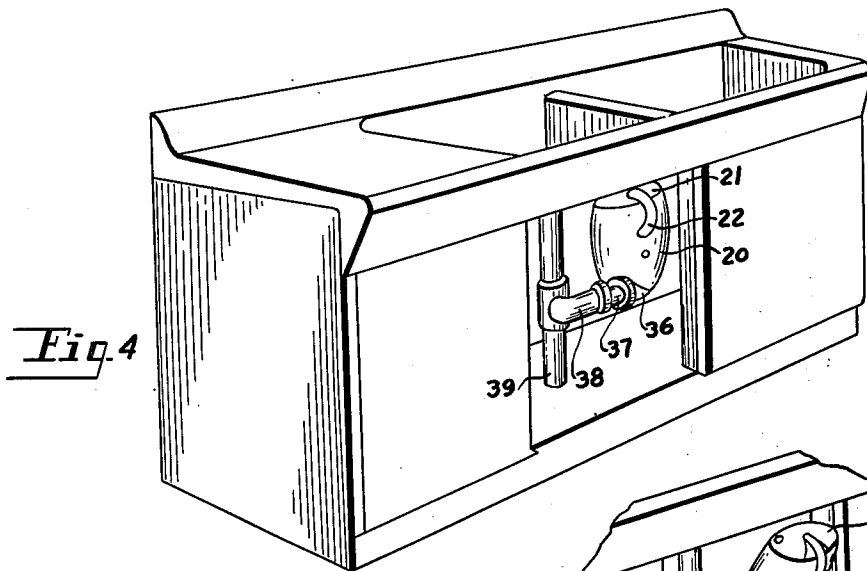


Fig. 4

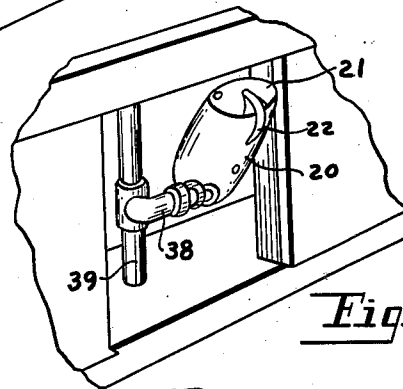


Fig. 5

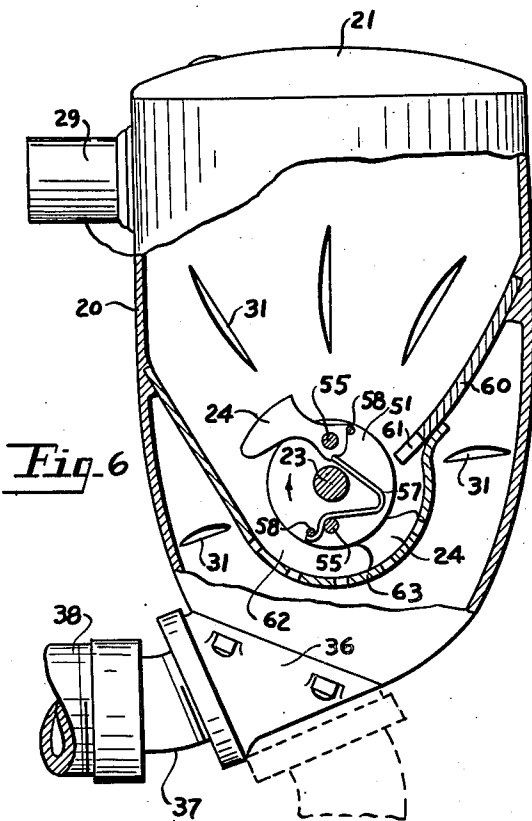


Fig. 6

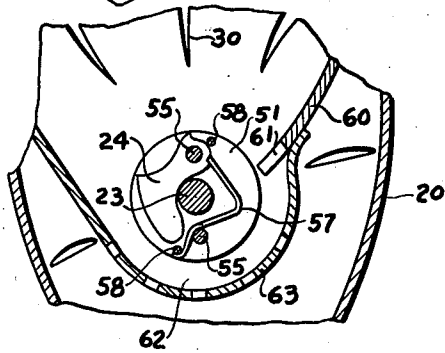


Fig. 7

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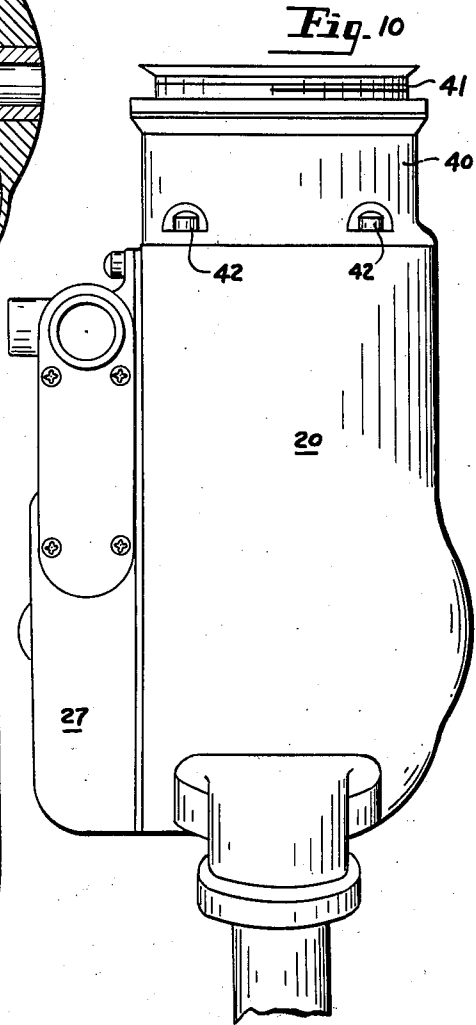
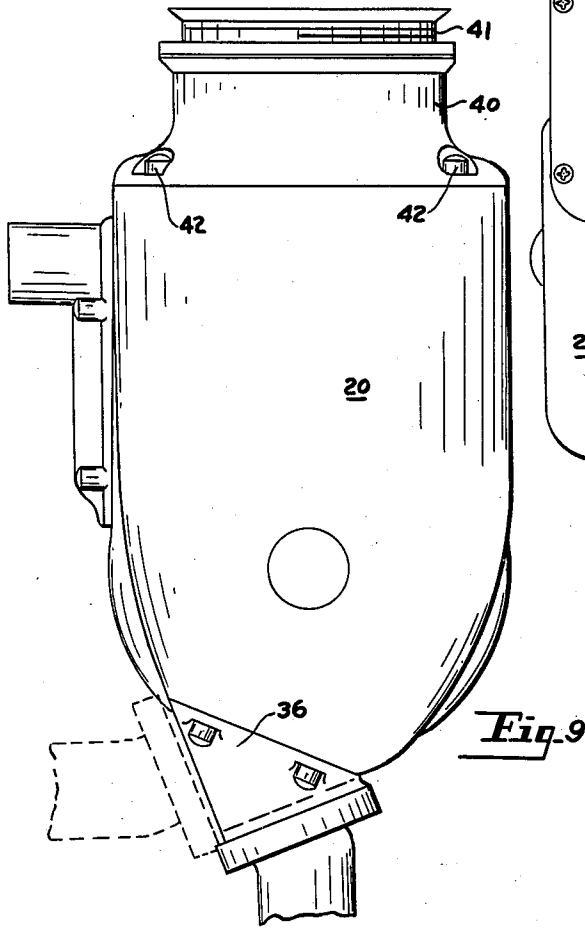
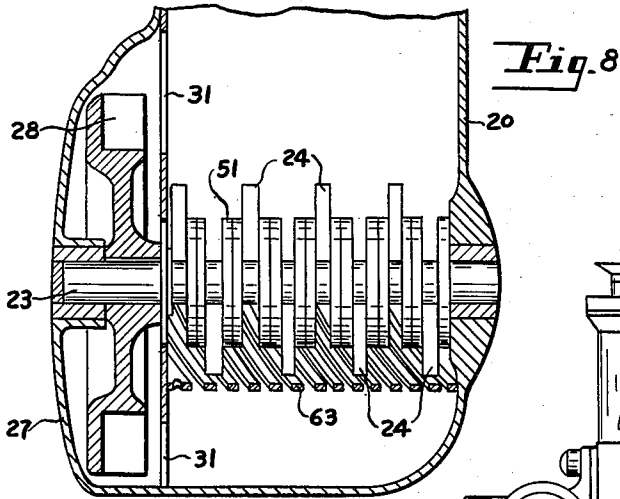
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UNITED STATES PATENT OFFICE

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GARBAGE DISPOSAL DEVICE

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2 Claims. (Cl. 4—187)

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Be it known that the undersigned have invented certain new and useful improvements in garbage disposal devices of which the following is a specification.

This application relates to garbage disposal devices and aims to provide certain new and useful improvements in such devices.

One aim and object of the present invention is to provide a garbage disposal device of the garbage cutting or disintegrating type which is adapted to be movably positioned under a sink without being coupled to the sink drain opening, whereby the disposal device can be utilized not only with modern sinks having large drain openings, but with old-fashioned sinks having drain openings too small to be acceptable for use as garbage disposal outlets. This object is obtained by forming the garbage disposal device in the form of a receptacle having an open top adapted to be closed by a movable cover, with the device being mounted to move from under the sink to a position where its top is exposed conveniently to receive garbage for disposal. In the preferred embodiment, the device is mounted upon a horizontal branch of a vertical drain pipe under the sink to swivel on a horizontal axis perpendicular to such pipe and expose its top for receiving garbage, with water being used to flush through the disposal device and with such pipe serving as a drain pipe for such device.

A second aim and object of the present invention is to provide a novel form of garbage cutting arrangement whose details and characteristics will later be described.

Still further aims and objects of the present invention are to provide novel details of construction of garbage disposal devices, all as will later be described in this specification, for an understanding of which reference should be had to the appended drawings.

In these drawings:

Fig. 1 is a top plan view of one form of garbage disposal device.

Fig. 2 is a front view.

Fig. 3 is a side view as if looking from the left of Fig. 1 with full lines showing the device as if in position under a sink for operation, and with dotted lines showing the device as if swung out for receiving garbage for disposal.

Fig. 4 is a fragmentary view of a kitchen sink showing the garbage disposal unit in place for operation.

Fig. 5 is a similar view, but showing the unit swung out for receiving garbage.

Fig. 6 is a vertical sectional view of the unit

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showing the details of construction of the interior of the unit, and particularly of the cutting arrangement within the unit.

Fig. 7 is a fragmentary view, similar to a part of Fig. 6, but showing cutters of the cutting arrangement in withdrawn or inoperative position.

Fig. 8 is a fragmentary cross-section view.

Figs. 9 and 10 are views like Figs. 2 and 3, respectively, but showing a modified form of the garbage disposal device modified for coupling to the large size drain opening of a modern sink, satisfactory for use as a disposal outlet in disposing of garbage.

Referring to the drawings, it will be observed that the garbage disposal device herein disclosed generally includes a main housing 20 having an open top closed by a cover 21 provided with a handle 22, enabling the cover to be swung and rotated in a generally horizontal plane to close or open the open top of the housing 20. Suitable pivoting and latching arrangements for the cover are incorporated in the device, but since these are of a character that can be chosen by any skilled mechanic from the related art and form no part of the present invention, they are not here disclosed or referred to in this specification.

Within the housing 20 is the cutting arrangement generally in the form of a horizontal shaft 23 mounted at its ends in the housing 20, and having movable cutters or blades 24 rotating in vertical planes.

A supplementary housing 27 contains a water turbine 28 supplied with water under pressure through an inlet pipe 29 which enters the supplementary housing 27 and causes the turbine 28 to rotate, the water thereupon being discharged through discharge openings 31 into the interior of the housing 20 in which the cutter means is located.

Inasmuch as the details of construction of the water turbine and of the valve which controls the flow of water into the housing 27 to power the turbine are well within the province of the skilled mechanic in this art and form no part of the present invention, such details will not here be disclosed nor referred to, it being understood that any suitable arrangement for feeding water under pressure into the turbine housing 27 to power the turbine 28 and to discharge into the housing 20 through the openings 31 for flushing past the cutter means is to be employed.

For safety sake, a suitable interlocking arrangement may be employed whereby the closing of the cover 21 on the housing 20 is a pre-

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requisite to the opening of the valve which controls the flow of water under pressure into the turbine housing 27, but since such interlock means are well known, and its details form no part of the present invention, such details will not here be disclosed.

The bottom of the housing is normally open, but is adapted to be closed by a closure cap 36 connected through an elbow 37 and a pipe 38 to a suitable drain pipe as, for example, the vertical drain pipe 39 under a sink. When the cap is in the position shown in full lines in Fig. 6 and elsewhere in the drawings, and particularly in Figs. 3, 4, and 5, the elbow 37 permits the housing 20 to be swung on a horizontal axis forwardly and downwardly from the position of Fig. 4 under a sink to the position of Fig. 5 where the cover 21 is accessible and may easily be rotated to expose the interior of the housing 20 for the receiving of garbage scraped from dishes. Thus, it can be seen that the garbage disposal device, when so mounted, may be utilized without its being coupled to a drain opening in the sink above the unit, adapting the unit for use with old-fashioned sinks having a drain opening too small to meet modern requirements.

If desired, however, cap 36 may be rotated with respect to housing 20 to the dotted line position shown in Fig. 6 so that the discharge from the housing 20 will not be at right angles to the vertical axis of that housing but will be through a bottom connected vertical drain pipe shown in the dotted line position. The selective positioning of the cap 36 with respect to the housing 20, therefore, enables the housing to be connected selectively to a horizontal axis pipe 38, as shown in Figs. 4 and 5, or to a bottom connected vertical drain pipe, as shown in dotted lines in Fig. 6.

Figs. 9 and 10 disclose a modification wherein the cap 21 of the form of Figs. 2 and 3 is replaced by a collar 40 and a threaded sleeve 41, which enable the housing 20 to be connected and coupled to the large size drain opening of the modern sink, in accordance with conventional practice with garbage disposal units now known. The connection of the collar 40 to the housing 20 is established through screw bolts 42, whereby the same unit housing 20 may receive either a cap 21, to enable the device to be used interchangeably without coupling to the sink drain opening, or with a collar 40 and sleeve 41 to enable a unit to be connected, if desired, to a drain opening of a sink. Thus, with one basic unit, housing 20 and its cutting means 23—24 and its turbine 28, the unit may be formed for connection to a sink drain opening, as in Figs. 9 and 10, or independent of a sink drain opening, as in Figs. 2 and 3. Similarly, a unit may be converted from the construction of Figs. 2 and 3 to that of Figs. 9 and 10 and reverse, simply by replacing a cap 21 by a collar and sleeve 40—41, or reverse.

The cutting arrangement

On shaft 23 are spaced discs 51 which define slots in which are alternately positioned the cutting blades or hammers 24, these being mounted on pins 55, which connect the hammers and the discs 51 in a unitary assembly on the shaft.

There are in each slot one hammer and one hammer-detaining overcenter spring 57. All the springs are mounted on transverse pins 58, and these pins also serve as hammer stops to limit outward travel of the hammers. The springs about pins 55.

Inasmuch as each spring 57 is of the over-

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center type, it will operate to hold or detain the hammer in the position of Fig. 7, where it cannot function for cutting. However, when shaft 23 is rotating at high speed, the hammer will be moved outwardly by the shaft, having attained a speed sufficient to impart a centrifugal force to the hammers large enough to overcome the holding effect of the spring 57. Not until a very high speed is obtained and maintained, and only so long as that speed is maintained, will these hammers move outwardly for hammering or cutting position and move the springs overcenter to bias the hammers outwardly. In the event the hammers strike garbage pieces too hard to be overcome, the hammers will then be moved backwardly or retracted automatically, sufficient to clear these obstructions and to throw the springs 57 overcenter, at which time the springs will complete the movement of the hammers inwardly or retracted to enable the hammers to clear the obstructions, and the springs will again hold the hammers retracted. This is a very important feature of the cutter arrangement herein shown.

It is, of course, well known to use hammers which swing outwardly in cutter arrangements under centrifugal force, but the arrangement herein disclosed incorporates an overcenter spring for holding the springs retracted and for maintaining them retracted at all times except when the speed of the shaft reaches or maintains a very high level. Upon the hammers encountering obstructions which they cannot overcome, the hammers not only are withdrawn, but also throw the springs overcenter to hold the hammers against moving outwardly until the shaft speed again picks up to its high level, at which time centrifugal force throws the hammers outwardly and also throws the springs overcenter so that the hammers again reach cutting position.

An upper baffle plate 60 has slots 61 in its lower edge through which the hammers 53 pass and the cooperation of these hammers with such slots 61 enables the hammers to chew off from the mass of garbage above the cutters and held above them by the plate 60, bit by bit in particles small enough to enter the annular space 62 between the discs 51 and a lower perforated cutter plate 63 through which fine particles of garbage may be passed to be flushed out through the cap 36, the elbow 37, and the pipe 38, to be drained to a sewer.

Cutters 53 will first chew off the mass of garbage above the cutter arrangement as the cutters pass through the slots 61. The small bits thus chewed off the mass will then be reduced in size by the cooperation of the cutters 53 and the lower cutter plate 63. No particles too large for the annular space 62 can enter that space because of the barrier interposed by the teeth between the slots 61 of the plate 60, and thus the size of the particles which enter the lower cutter area are determined only by the action of the hammers 53 which break off pieces from the mass of garbage and subject these pieces to the action of the hammers in the lower cutting area 62.

Summary

It will be observed that the drawings disclose a garbage disposal device which is movably mounted under a sink without connection to the sink drain opening, and that it is so designed as to be convertible at will from the construction just described to a construction wherein the unit is connected to a large size sink drain opening, and vice versa.

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It will also be observed that the construction herein disclosed incorporates a double action cutter which will act upon a mass of garbage, first to chop it into small particles, small enough to enter a second cutting area, wherein the small particles are reduced in size by the action of the cutters and a lower cutting plate.

It will also be observed that the cutter blades are biased by overcenter springs which normally retain the cutter blades in inoperative or retracted position, releasing their restraint upon these cutter blades only when the cutters are rotating at a sufficiently high predetermined speed, with the springs operating to hold the cutters retracted in the event the cutters are retracted by encountering obstacles which they cannot pass and in the event of a consequent reduction of speed of the cutting arrangements below the predetermined high speed.

Now having described the garbage disposal unit herein disclosed, reference should be had to the claims which follow:

We claim:

1. For use with an installed sink having a bottom drain opening, and a vertical waste pipe below said sink and connected at its upper end to said opening, garbage comminuting and disposal device including a housing formed with a bottom outlet, a swivel type conduit connecting said device at its outlet to said waste pipe at a point below said sink to provide means for draining water and garbage from said device into said pipe and for swivelly mounting said device thereon to be movable to and from a position under said sink, and a water supply line inlet on said housing, said housing having an open top.
2. For use with an installed sink having a bottom drain opening, and a vertical waste pipe

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below said sink and connected at its upper end to said opening, garbage comminuting and disposal device including a housing formed with a bottom outlet, a swivel type conduit connecting said device at its outlet to said waste pipe at a point below said sink to provide means for draining water and garbage from said device into said pipe and for swivelly mounting said device thereon to be movable to and from a position under said sink, and a water supply line inlet on said housing, said housing having an open top, said swivel connection being of a character which swivels on a horizontal axis and thus enables said device to be tilted from a vertical position under said sink forwardly and downwardly on a horizontal axis to a position exposing said housing top below and forward of said sink.

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