Aug. 28, 1956 H. JORDAN 2,760,728

GARBAGE DISPOSER WITH PROTECTIVE INLET

Original Filed April 15, 1948

Fig. 1

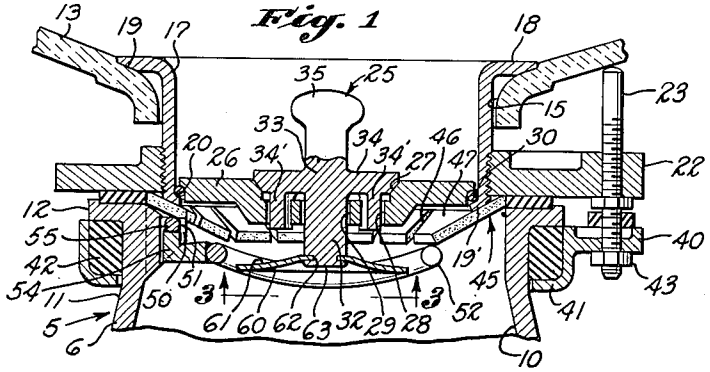


Fig. 2

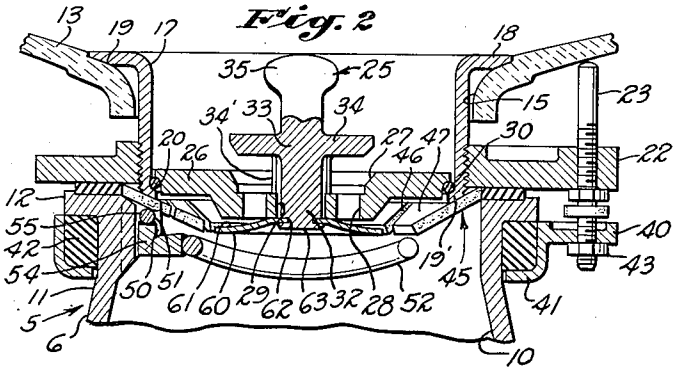


Fig. 3

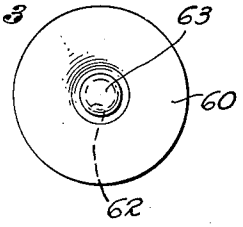


Fig. 4

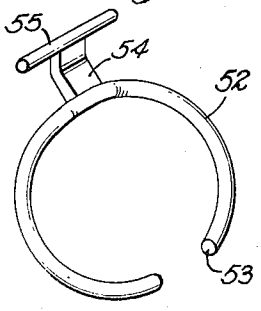
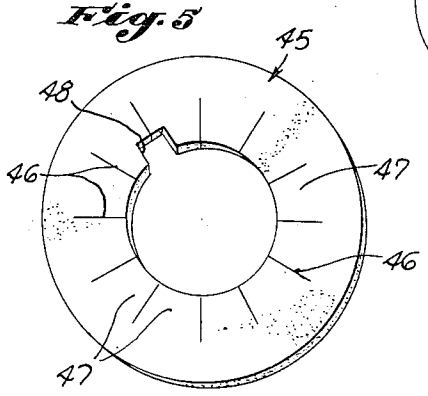


Fig. 5



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GARBAGE DISPOSER WITH PROTECTIVE INLET

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Original application April 15, 1948, Serial No. 21,153. Divided and this application August 9, 1951, Serial No. 241,105

11 Claims. (Cl. 241—46)

This invention relates to the waste disposal art and, more particularly, to a device adapted for the comminution and disposal of garbage or other waste materials and which is suitable for home and restaurant use where only relatively small volumes of such materials are normally passed through the device. The present invention is directed to improvements in waste disposal devices of the general type disclosed in my patent on Garbage Disposal Device, No. 2,442,812, dated June 8, 1948.

This application is a continuation-in-part of my application Serial No. 190,927, now abandoned, and a division of my parent application, Serial No. 21,153, filed April 15, 1948, now abandoned. Specifically the present application is concerned with means adapted to deflect liquid wherein such deflection means in the specific form is carried by a stopper, such means being employed in conjunction with protecting and guard means which reduce splashing of the liquid upwardly and serve as safety means for normally guarding against the insertion of the human hand into the device during comminuting operations. The guard means and splash-reducing means are more particularly claimed in the parent case.

It has been determined that the comminuting of waste material can be expedited if the material is flushed from the sides of the comminuting chamber and carried downwardly to the cutters. It is therefore an object of the invention to provide means for cleaning the walls of the comminuting chamber and carrying particles of the waste material downwardly to the comminuting means. This object is attained by providing a deflector plate disposed in the throat of the waste disposal device and operative to divert flushing water introduced into the device through the throat radially outward so as to direct the water against the circular wall of the device. Through this means, a film of the water is caused to flow downwardly along the wall to clean the same by washing away particles of waste material, such particles being carried by the water to the comminuting means.

It is another object to mount the water deflector plate centrally of the throat and this is readily accomplished by connecting the plate to the lower end of the plug member of the stopper device.

It has also been determined that during operation of waste disposal devices, when the stopper means is removed from the upper inlet opening of the device, there is a tendency for the flushing water contained in the comminuting chamber to splash upwardly through the opening due to agitation thereof and, as will be readily apparent, such a condition is objectionable. It is also an object of my invention to employ deflector means to provide in conjunction therewith splash guard means which will function to divert, back into the comminuting chamber, flush water rising within the device, and to so arrange such splash guard means that it will cooperate with the deflector means and will also permit ready removal of the deflector means with the stopper device to which it is attached. Another object is to attach the splash guard means so that it is conveniently positioned by the means which attaches the waste disposal device to the sink on which the present improvements are installed.

It is highly desirable in waste disposal devices that means be provided for guarding against insertion of a human hand into the comminuting chamber during the operation of the device so as to prevent injury to the hand. It is therefore an object of my invention to provide such safety means and to arrange the same to cooperate with and permit ready movement of the deflector means in the stopper. Such an object is attained by providing a protector or blocking element disposed in the upper opening or throat of the disposal device and forming an obstruction against which a human hand engages when an attempt is made to insert the hand into the comminuting chamber. At the same time the deflector is to be movable through the protector. In a preferred embodiment of the invention, the protector element is annular and is pivotally mounted within the throat and normally arranged to extend across the throat to block the insertion of the hand into the comminuting chamber, but adapted to be pivoted upwardly to inoperative position so as to effect an unobstructed passage to the chamber, thus permitting the utilization of the entire width of the throat when it is desired to place relatively large objects of waste material in the chamber for disposal or when it is necessary to insert the hand into the chamber to retrieve uncomminutable objects inadvertently placed in the device. It is found that the presence of the blocking means in the throat has the effect of calling to the operator's attention that the operation of the device should be stopped before his or her hand is inserted into the comminuting chamber and thus effectively safeguards against serious injury to the operator.

Further objects of my invention will become apparent from the following description and the following drawing in which:

Fig. 1 is a vertical sectional view of the upper throat portion of a waste disposal device incorporating the features of my invention, and showing a water deflecting means applied to use therewith and carried by the under side of the stopper means;

Fig. 2 is a view similar to that of Fig. 1 showing the stopper means raised and the water deflecting means operative to deflect flushing water;

Fig. 3 is a bottom plan view of the deflecting means as indicated by the line 3—3 of Fig. 1;

Fig. 4 is a perspective view of the hand protecting or blocking element; and

Fig. 5 is a perspective view of the splash guard element used in the device.

Referring to the drawing in detail, the illustrated waste disposal device **5** may be more or less conventional in design but is herein shown as constructed in accordance with my prior application, previously referred to. The disposal device **5** includes a housing **6** having an annular inner wall providing a comminuting chamber in which cutters or similar means (not shown) are located and adapted to comminute waste material when operated. The housing **6** is reduced in diameter at its upper end to define an inlet passage or throat **10** through the waste material and flushing water can be inserted into the comminuting chamber. The upper reduced portion **11** of the housing **6** is provided with an annular flange **12**. The disposal device **5** is adapted for attachment to a household sink **13** of conventional type having a flanged discharge opening **15** in its bottom.

A sleeve member **17** is adapted to be inserted in the discharge opening **15** and has an annular flange **18** at its upper end which is adapted to rest upon a seat **19** formed in the bottom wall of the sink and surrounding the opening. The lower end of the sleeve member **17** is bent inwardly to a slight extent to provide an inclined, annular, internal flange **19'**, the upper surface

of which forms a seat 20. The lower end of the sleeve member 17 also has external screwthreads to adapt an annular connecting member 22 to be screwed thereon. A plurality of screws or studs 23 are screwed through tapped holes in the member 22 and their upper ends engage the bottom surface of the sink 13 to force the member 22 and sleeve member 17 downwardly so as to maintain the flange 18 firmly engaged in the seat 19.

Adapted for insertion in the sleeve member 17 is a stopper means 25 which includes a circular plate-like element 26 having a depressed central seat portion 27 provided with discharge openings 28 and a central hole 29. Held in a peripheral groove of the element 26 is a sealing ring 30 which is adapted to rest upon the tapered seat 20. Slidable and rotatable in the hole 29 is the lower spindle 32 of a plug element 33 which has a head 34 adapted to rest upon the seat portion 27, when the plug element is lowered, so as to prevent fluid flow through the openings 28 of the plate element 26. The plug element 33 has a pair of projections 34' and also has a knob 35, by means of which the element can be raised and turned to cause its projections to rest upon the plate element and to thus permit fluid flow through the openings 28. It will be apparent that by raising the knob 35 sufficiently the entire stopper assembly can be removed completely from the sleeve member 17 so that pieces of waste material can be inserted into the throat 10 of the disposal device.

The waste disposal device 5 is attached to the sink 13 by means to be next described. An annular mounting member 40 has its central portion 41 underlying the flange 12 of the housing member 6 and a resilient ring 42 is interposed therebetween. The lower ends of the connecting screws 23 extend through holes in the member 40 and by screwing nuts 43 onto these ends the member 40 is caused to draw the housing member 6 upwardly toward the connecting member 22, the resilient ring 42 being compressed therebetween. By this means, the waste disposal device 5 is resiliently suspended from the bottom of the sink 13.

In accordance with my invention, a splash guard means is provided for reducing splashing of the liquid out of the upper end of the disposal device when the stopper means 25 is removed from the sleeve member 17. The splash guard means consists of an annular baffle element 45 which is shown in detail in Fig. 5. The baffle element 45 is made from resilient material, such as rubber, and has an inside diameter which is somewhat smaller than the inner diameter of the sleeve member 17. The inner portion of the baffle element 45 is slit radially at spaced points, as indicated at 46 in Fig. 5 so as to provide a plurality of segments 47. The element 45 is also provided with a clearance slot 48 which is used for the purpose to be later explained.

The baffle element 45 is adapted to be clamped in position between the flange 12 of the housing member 6 and the lower surface of the connecting member 22, as shown in Figs. 1 and 2, so that it extends transversely of the throat 10 beneath the stopper means 25. It will be noted that by means of the resilient element 45 and the resilient ring 42, the housing 6 is floatingly mounted so that vibration of the disposal unit and accompanying noise are reduced to a minimum.

It will be observed that the inner baffle segments 47 contact the bottom of the tapered flange 19' of the sleeve member 17 so that they assume a downwardly inclined position. It is apparent, therefore, that if liquid splashes upwardly from the comminuting chamber during operation of the waste disposal device, the segments 47 will act to deflect the liquid outwardly and downwardly against the inner wall of the housing 6 so that it will drain back into the comminuting chamber. Thus, when the stopper means 25 is removed to permit the insertion of waste material into the device, reverse flow of liquid from the chamber into the sink 13 is reduced considerably.

It will also be observed that the resilient baffle segments 47 are adapted to be flexed downwardly by a human hand inserted into the throat 10 so as to enlarge the central opening of the baffle element 45 and thereby enable the hand to be passed into the comminuting chamber 8 when it is desired to do so for any reason. When the hand is withdrawn from the throat 10, the baffle segments 47 spring upwardly to first or operative position.

Formed within the upper reduced end portion 11 of the housing 6 is a pair of spaced ears 50 (one of which is shown) having recesses or notches 51 in their upper portions. The ears 50 are provided for the purpose of supporting a protector or blocking member 52 which is shown in detail in Fig. 4. The member 52 is preferably made from stiff wire stock of circular cross-section and is of substantially annular shape but having an opening or slot 53 therein so that any hair, threads or the like which might wrap around the member can be easily stripped off through the slot. At its side opposite the slot 53, the blocking member 52 has an angular projection 54 which may be welded thereto. The vertical portion of the projection 54 is adapted to fit between the ears 50 of the housing 6, and the ends of a cross-pin 55 carried by the projection are adapted to be received in the notches 51 of the ears so as to pivotally mount the blocking member within the throat 10 beneath the splash guard element 45.

Downward pivotal movement of the blocking member 52 under the force of gravity is limited by the engagement of the projection 54 with the wall of the throat 10 so that the member is normally retained in a substantially horizontal position. Because the blocking member 52 is of smaller diameter than the diameter of the throat 10, passage of a human hand through the throat, while the member is in horizontal position, is prevented. However, when the stopper means 25 is removed from the sleeve member 17, the blocking member 52 can be pivoted upwardly through the splash guard element 45 and sleeve member 17 with the projection 54 passing through the slot 48. With the element 45 thus pivoted to inoperative position, the passage leading to the comminuting chamber is unobstructed so that the hand can be passed downwardly into the chamber.

The presence of the blocking member 52 within the throat 10 indicates to the operator that the waste disposal device might be in operation so that to avoid injury to a hand inserted through the throat, the operation of the comminuting means must be arrested. In other words, the blocking member 52 precludes the possibility of the operator's inadvertently or unconsciously placing his or her hand into the comminuting chamber during operation of the device.

My invention also provides deflector means within the throat 10 for deflecting water introduced through the sleeve member 17 radially against the annular internal surface of the housing 6 so as to clean the walls and thus wash waste material therefrom downwardly to the comminuting means. The deflector means consists of a circular plate 60 of substantially inverted dish shape provided with an upper conical surface 61. The deflector plate 60 has a central aperture 62 to adapt the plate to be mounted on the lower reduced end 63 of the spindle 32 of the plug element 33. The plate 60 may be retained on the plug element 33 by any suitable means, the present drawing showing the lower extremity of the reduced end 63 as headed over against the lower surface of the plate to hold the latter in place.

As will be observed, the deflector plate 60 is of a diameter slightly smaller than the internal diameter of the blocking member 52 so that when the plug element 33 is raised to permit the flow of water into the disposal device the deflector plate can readily pass through the blocking

member 52 and through the splash guard or baffle element 45 as shown in Fig. 2. When the plug element 33 is in raised position, water flowing from the sink faucet and through the sleeve 17 passes downwardly through the openings 28 and, upon striking the deflector plate 60, is diverted radially outward against the circular inner surface of the wall of the housing 6 and flows downwardly along this surface to clean the same by washing or flushing therefrom particles of waste material and carrying the particles downwardly into the comminuting chamber.

While I have herein shown and described the improvements as embodied in preferred forms of construction, by way of example, it will be apparent that modifications might be made therein without departing from the spirit of the invention. Consequently, I do not wish to be limited in this respect, but desire to be afforded the full scope of the patent claims.

I claim as my invention:

1. A waste disposal device, comprising: housing means having walls defining a comminuting chamber and having an open end provided with a seat and through which waste material and flushing liquid can be introduced into said chamber; stopper means including a plate element normally disposed on said seat in alignment with and closing said open end, said element having an opening therein through which the liquid can flow into said chamber, said stopper means also including a plug member slidable on said plate element and normally closing said opening but adapted to be slid to a position to open said opening, said plug member having an end projecting through said element; and a deflector plate carried by said end of said plug member and disposed beneath said plate member, said deflector plate underlying at least a major proportion of said opening and thereby being operative to divert liquid introduced through said opening radially outward against said walls.

2. A device as in claim 1 wherein said deflector plate extends beyond said opening.

3. A device as in claim 1 wherein said deflector plate is conical.

4. In combination in a stopper mechanism for a liquid passage: a movable closure plate member to be disposed removably in said passage to close the same, said plate member having closable passage means therein through which liquid may flow and also having an axial bearing hole; a plug member having a spindle slidable vertically in and permanently closing said bearing hole and having a head normally resting upon said plate member and overlying said closable passage means to close the same, upward sliding movement of said plug member uncovering said closable passage means to allow passage of liquid therethrough, said plate member being free from non-closing passages; and a deflector plate mounted on the lower end of said spindle beneath said plate member and underlying at least the greater portion of said closable passage means to deflect radially liquid flowing through said closable passage means, the entire stopper mechanism being removable from said liquid passage.

5. In combination in a stopper mechanism for a liquid passage: a movable plate member to be disposed removably in said passage to close the same, said plate member having an opening therein through which liquid may flow and also an axial bearing hole; a plug member having a spindle slidable vertically in said bearing hole and having a head normally resting upon said plate member and overlying said opening to close the same, upward sliding movement of said plug member uncovering said opening to allow passage of liquid therethrough; a deflector plate secured to the lower end of said spindle below said plate member and directed radially outward to underlie at least a major portion of said opening to deflect radially outward liquid flowing through said opening; and a projection extending downward from the under side of said head to enter said opening of said plate member when

said head rests upon said plate member and closes said opening, said projection having a bottom portion to rest upon said plate member at the side of said opening upon elevation and rotation from alignment with said opening for supporting said plug member in elevated position to clear said opening for passage of liquid therethrough, the entire stopper mechanism being removable from said liquid passage.

6. A combination as in claim 5 wherein said deflector plate extends beyond said opening.

7. A combination as in claim 5 wherein said deflector plate is conical.

8. Closure means for a waste disposal instrumentality including: a vertically disposed sleeve to be connected with said instrumentality and having at its lower end an annular seat; stopper means carried by said seat within said sleeve, said stopper means including horizontal plate means removably engaging said seat, said plate means having a central spider in a central liquid discharge opening, said spider having a vertical bearing hole; a spindle slidable vertically in said hole and permanently closing said hole; a plug member carried by the upper end of said spindle to close said discharge opening in a lowered position and to uncover said discharge opening in an elevated position, said plate means and said plug member being free from non-closing passages; and a deflector plate mounted on the lower end of said spindle below said spider and extending laterally beyond said discharge opening to deflect laterally liquid passing through said discharge opening.

9. Closure means for a waste disposal instrumentality including: stopper means having horizontal plate means whose peripheral portion is to be removably carried upon a seat, said plate means having a central spider in a central liquid discharge opening through said plate means said spider having a vertical bearing hole; a spindle slidable vertically in said hole and permanently closing said hole; a plug member carried by the upper end of said spindle to close said discharge opening in a lowered position and to uncover said discharge opening in an elevated position, said plate means and said plug member being free from non-closing passages; and a deflector plate mounted on the lower end of said spindle below said spider and extending laterally to underlie the greater proportion of said discharge opening and thereby deflecting laterally liquid passing through said discharge opening.

10. Means as in claim 9 wherein said deflector plate underlies all of said discharge opening.

11. Means as in claim 9 wherein said deflector plate is conical.

References Cited in the file of this patent

UNITED STATES PATENTS

809,617	Jackson	Jan. 9, 1906
831,767	Boden	Sept. 25, 1906
1,028,374	McGuire et al.	June 4, 1912
1,071,627	Reenstierna	Aug. 26, 1913
2,156,075	Alexay	Apr. 25, 1939
2,169,896	Gazey	Aug. 15, 1939
2,225,171	Hammes	Dec. 17, 1940
2,236,885	Zinhil *et al.*	Apr. 1, 1941
2,421,014	Coss et al.	June 8, 1948
2,428,420	Green	Oct. 7, 1947
2,442,812	Jordan	June 22, 1948
2,443,649	Behre	June 22, 1948
2,476,630	Schindler	July 19, 1949
2,477,686	Coss	Aug. 2, 1949
2,509,242	Miller	May 30, 1950
2,536,930	Hammell	Jan. 2, 1951
2,629,558	Miller	May 24, 1953

FOREIGN PATENTS

224,395	Switzerland	July 16, 1943