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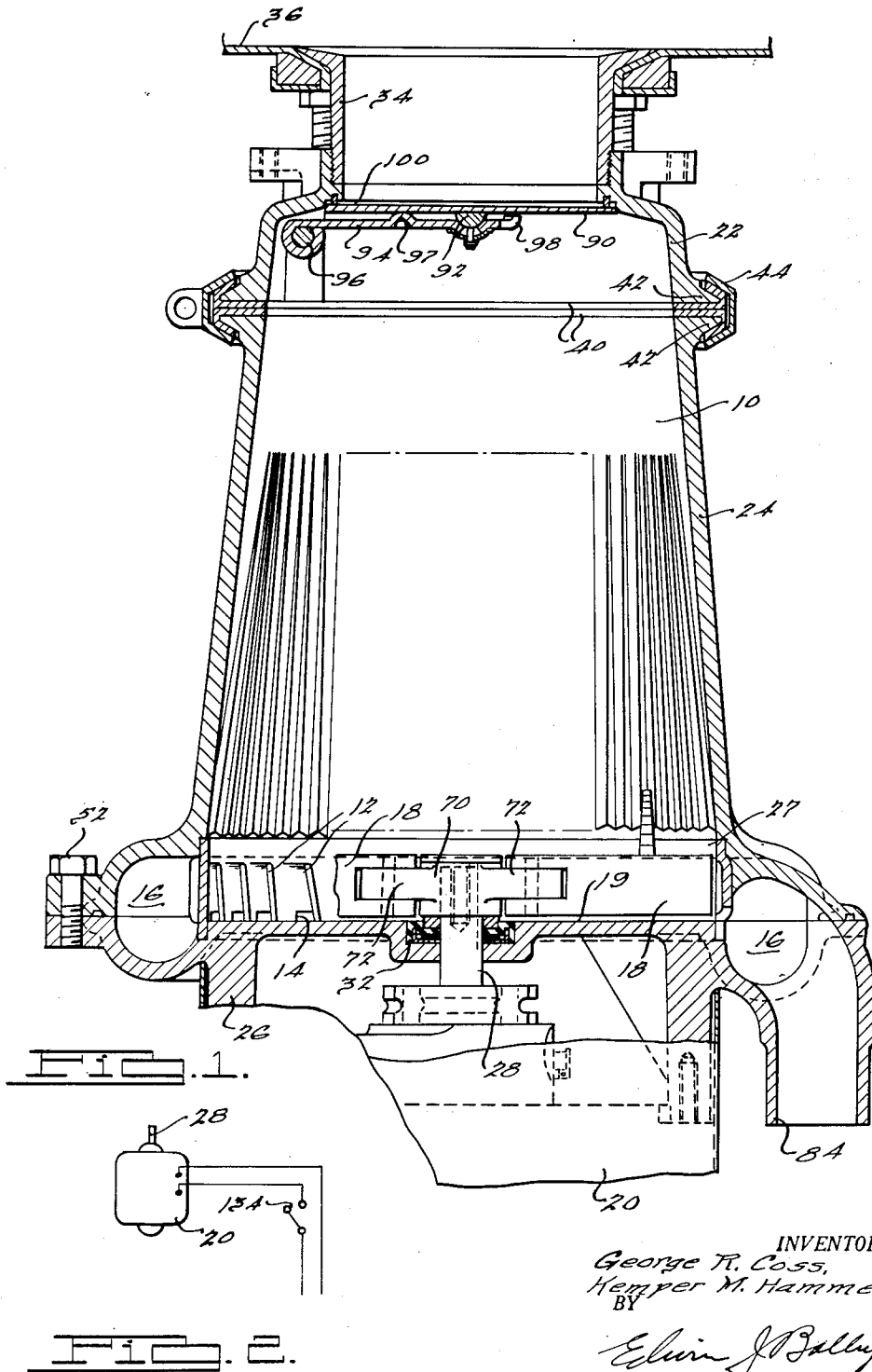
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2,567,992

GARBAGE GRINDER

Filed Oct. 29, 1945

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

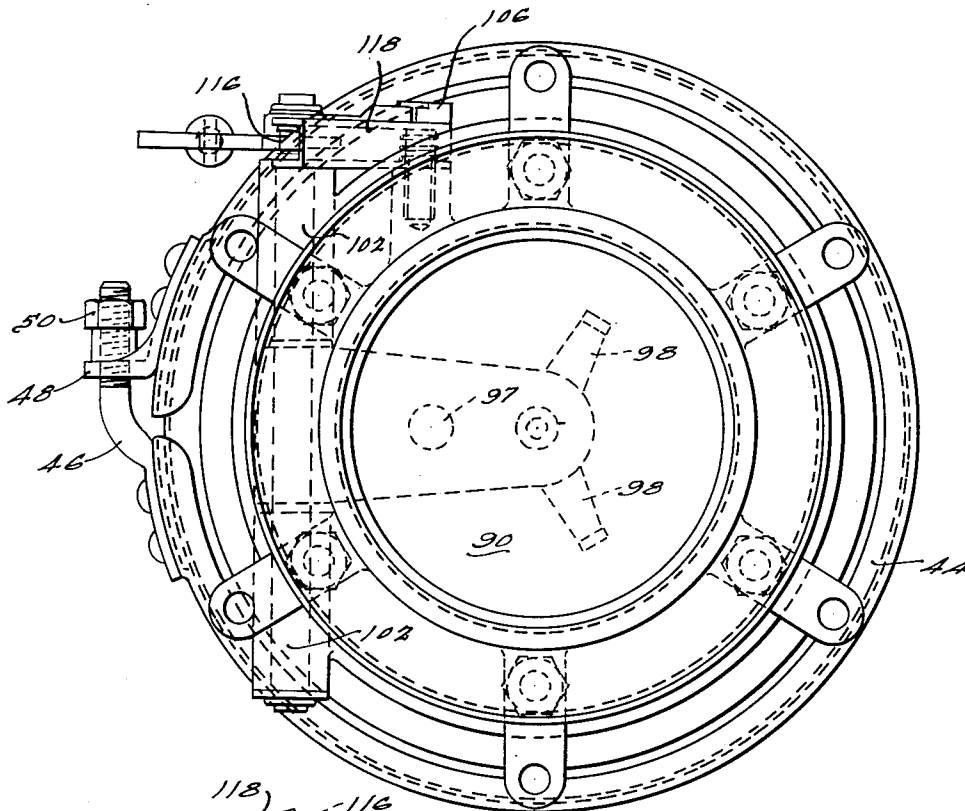
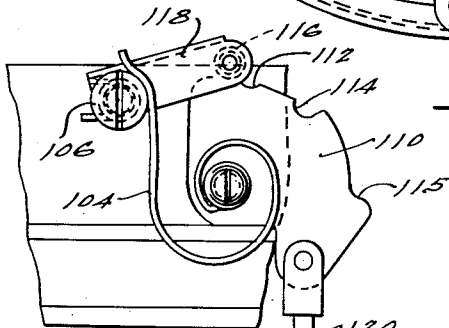


FIG. 3.

FIG. 4.

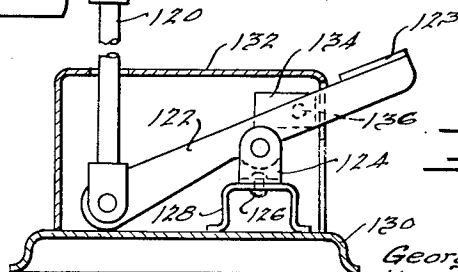
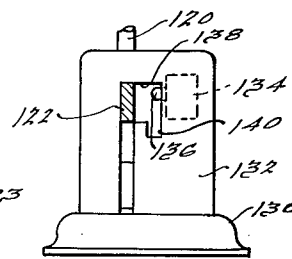


FIG. 5.

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GARBAGE GRINDER

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11 Claims. (Cl. 4-187)

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This invention relates to means adapted to be associated with the drain output of a sink for reducing garbage so that the same may be carried by water through a sewer system, such means being commonly referred to as garbage grinders.

Principal objects of the invention are to provide:

A new and improved construction for a garbage grinder;

A novel and simple closure for a garbage grinder;

A new and improved closure and motor switch control for a garbage grinder.

Other and further objects of the invention will be apparent from the following description and claims and will be understood by reference to the accompanying drawings, of which there are two sheets, which, by way of illustration, show a preferred embodiment and the principles thereof and what we now consider to be the best mode in which we have contemplated applying those principles. Other embodiments of the invention may be used and structural changes may be made as desired by those skilled in the art without departing from the present invention and the purview of the appended claims.

In the drawings

Fig. 1 is a fragmentary sectional view of a device embodying the invention;

Fig. 2 is a diagrammatic view of the motor circuit for the device;

Fig. 3 is a plan view of the device separated from the sink;

Fig. 4 is a fragmentary elevational view of the foot-operated motor and closure control; and

Fig. 5 is a front elevational view of the foot-operated portion of the device shown in Fig. 4.

In the embodiment of the invention selected for purposes of illustration, the garbage grinder comprises a generally cylindrical, vertically extending chamber 10 provided at its bottom periphery with axially extending cutting or shredding teeth 12 and a series of slots 14 forming a lateral discharge for the reduced material, a collecting trough 16 surrounding the cutting teeth 12, power driven rotary hammers or impellers 18 in the bottom of the chamber 10 for impelling material on the bottom wall 19 thereof against the teeth 12 and for expelling reduced material outwardly through the discharge outlet into the trough 16, and an electric motor 20 for driving the impellers.

The chamber 10 may be provided by a plurality of castings 22, 24 and 26 and a shredding ring 27 in which the teeth 12 are formed. The

motor 20 may be bolted to the cup-shaped lower casting member 26 and have its shaft 28 project upwardly through a suitable opening in the bottom wall of the chamber 10 at the center thereof. The bottom wall at the center thereof may be recessed so as to accommodate a running seal 32 for the shaft 28.

The upper casting member 22 of the chamber 10 is formed for attachment to a drain outlet of a sink 36. In this case the drain outlet may be formed by a neck 34 which seats within an opening in the bottom wall of the sink 36 and the neck 34 is externally threaded at the lower end thereof for threaded engagement with the threads formed in the upper part of the casting member 22.

The casting members 22 and 24 may be frusto-conical in shape so as to form a frusto-conical chamber 10. The meeting edges of the casting members 22 and 24 are separated by gasket members 40, the outer edges of which are lapped over outwardly projecting exterior flanges 42 on the casting members 22 and 24, and an annular contractible channel-shaped clamping ring 44 extend around the chamber 10 and encloses the flanges 42 as covered by the edges of the gaskets 40 so as to clamp the casting members 22 and 24 together and to form a seal therefor.

The casting member 24 and the parts associated therewith may be assembled to the casting member 22 after the latter has been assembled to the drain outlet 34 of the sink. One end of the clamping ring 44 has a bolt 46 secured thereto which extends through an eye 48 carried on the other end of the clamping ring and a nut 50 threaded on the bolt 46 and tightened thereon functions to tighten the clamping ring 44 and the flanges 42 and to secure the casting member 24 and the parts associated therewith in depending relationship to the casting member 22.

The sides of the clamping ring 44 project outwardly relative to each other so that as the ring is tightened, the casting members 22 and 24 will be drawn together so as to clamp the gaskets 40 securely between the flanges in order to establish a watertight sealed joint between the members 22 and 24.

The lower end of the casting 24 projects outwardly from the main cylindrical portion thereof and is shaped to seat upon a complementary shaped part of the casting 26 and to cooperate therewith so as to form the trough 16. A series of bolts 52 cooperating with tapped and threaded holes in the flanges of the casting members 24 and 26 securely clamp the same together.

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Inwardly of the trough 16 the casting members 26 and 24 are formed with annular ledges which provide seats for the shredding ring 27, the upper and lower edges of which are arranged on such ledges so that when the casting parts 24 and 26 are assembled such shredding ring 27 will be secured in position.

The shredding ring may comprise a ring of tempered steel spring (but not brittle) which is formed to provide a series of vertically extending teeth or cutters 12 which may slope from their base to the top in a direction opposite the direction of rotation of the impellers 18, and also to provide the slots 14 which define the outlet from the chamber 10.

The shaft 28 projects upwardly above the bottom wall 19 of the chamber 10 and has affixed thereto a hub 70 having two oppositely arranged radially extending arms 72. The inner ends of each of the hammers 18 are bifurcated so as to straddle an arm 72, and pins 74 extending through aligned holes in the hammers 18 and the arms 72 provide a pivotal connection therebetween so that the hammers 18 are free to swing in a plane normal to the axis of rotation of the hub 70 and the hammers 18.

Centrifugal force will tend to keep the hammers in their extended position during operation of the motor whereupon the hammers will function to propel material against the teeth 12 and to propel reduced material through the slots 14, the size of the opening 14 limiting the discharge of material from the chamber 10 until the particles thereof are of such size that they may be propelled through the openings 14.

The construction and operation of the reducing means of which the hammers 18 and teeth 12 form a part is more fully described and claimed in our prior co-pending application Serial No. 564,118, filed November 16, 1944, now Patent No. 2,421,014, of which the present application is a continuation-in-part.

The trough 16 terminates in a coupling member 84 which is adapted to be connected to the sewer system of the building.

The inlet defined by the neck 34 is adapted to be closed by a valve member or closure 90 which has a universal mounting 92 on an arm 94 fixed to a pivot shaft 96. The arm 94 is spaced from the closure 90 so that the same may rock thereon. A bump 97 and a pair of arms 98 limit the rocking movement of the closure 90 relative to the arm 94. With this arrangement the closure member 90 is adapted to seat against a seal 100 carried by the neck 34 and forming a seal therewith so as to close the opening defined by the neck 34 when the parts are arranged as illustrated in Fig. 1. Downward movement of closure 90 permits water and/or garbage to pass through the neck 34 into the chamber 10.

The shaft 96 is pivoted in suitable journals 102 formed integral with the casting member 22 and a coil spring 104 having the inner end thereof connected to the shaft 96 and its outer end anchored by a pin 106 is arranged to act on the shaft 96 so as to bias the closure 90 to its closed position, that is, the position in which it is illustrated in Fig. 1.

The shaft 96 has a cam or lever 110 fixed thereto for rotation therewith, and this cam is provided with notches 112 and 114 and a lug forming a stop 115. A roller 116 carried by an arm 118 pivoted on the pin 106 is adapted to cooperate with the notches 112 and 114 so as to hold the cam 110 and the shaft 96 and the closure 90 in

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either of its two positions. When the roller 116 is arranged in the notch 112, which will occur when the cam 110 is turned slightly in a counterclockwise direction from that illustrated in Fig. 4, the closure 90 will be slightly open, that is, spaced from the gasket 100 so as to permit the passage of water through the neck 34 into the chamber 10.

When the roller 116 is seated in the notch 114, which occurs when the cam 110 is rotated further in a counterclockwise direction, the closure 90 will be correspondingly moved away from the seat 100 so as to provide an unobstructed passageway for the passage of material into the chamber 10 through the neck 34.

When the closure 90 is in either of its two positions just mentioned, it may be returned to its closed position by pressing downwardly on the closure 90 sufficiently so as to move the roller 116 out of the notch 112 or 114 with which it is engaged and then by suddenly releasing the closure the same will move to its closed position. The stop 115 limits the opening movement of the closure 90.

A link 120 is pivoted to the cam 110 and connected to a foot-operated lever 122 arranged on the floor adjacent the sink so that by stepping on the foot pedal end 123 of the lever, the closure may be opened or further opened. Also by pressing on the pedal when the roller 116 is in either of the notches 112 or 114 and then releasing the pedal suddenly the closure will also move to its closed position. This thus provides for foot-operated or hand-operated control of positioning of the closure 90.

The arm 118 is spring biased in a clockwise direction and the roller 116 carried thereby, together with the notches 112 and 114, form detent means which are selectively operable for holding the closure 90 in either of two positions: namely, one in which the closure is slightly open so as to permit the flow of water into the chamber 10; and the other in which the closure 90 is depressed sufficiently so as to permit the passage of garbage into the chamber 10 through the neck 34. The actual positioning of the closure 90 for either of the two positions will depend upon the positioning and spacing of the notches 112 and 114.

The lever 122 is pivotally mounted on a bracket 124 which is swiveled by means of a pin 126 on a bracket 128 mounted upon a base 130, the base being adapted to be arranged on the floor below the vertical axis of the pin 126. A casing 132 encloses the parts of the foot-operated control except the pedal 123, and has mounted thereon a switch 134 which is arranged opposite the support for the motor 20. The switch 134 may be of the single action type and include a button 136 positioned to be engaged by the side of the lever 122. Pressing of the button 136 is adapted to actuate the switch mechanism so as to close the switch. When the button 136 is released the switch 134 will open.

The button 136 is positioned to be engaged and depressed by lateral movement in one direction of the lever 122 permitted by moving the bracket 124 about its vertical pivot 126 when the side of the lever 122 opposite the switch 134 is pressed laterally toward the switch 134, and when the lever 122 is arranged in position with the closure 90 in its closed position or in the position determined by the notch 112. There is sufficient play in the connection between the lever 122 and the link 120 to permit a slight pivoting

of the lever 122 about the vertical axis defined by the pin 126. Thus the pedal 123 may be actuated to manipulate the closure 90 as well as the switch for the motor circuit.

The transverse portion of slot 138 in the casing 132 in which the lever 122 moves to close the switch 134 when lever 122 is positioned as shown in Figs. 4 and 5 is provided with a notch 140 for receiving the lever 122 so that the lever 122 may be locked in position to maintain the switch 134 closed.

It will be seen from the foregoing that the lever 122 is shown in its upmost position in which the closure 90 is in its closed position against the seat 100 and in which it is out of contact with the button 136, the depression of which by the lever is adapted to close the switch 134. From such position the lever 122 may be moved either downwardly or laterally within vertically or laterally extending portions of the slot 138.

If the lever 122 is moved downwardly during the first part of such movement, the closure 90 will be open slightly upon its seat 100 so as to permit the flow of water and other fluid material from the sink, and in such position if the lever is not further depressed, the roller 116 will become resiliently engaged within the notch 112 for maintaining the closure 90 in the aforesaid slightly open position. Thereafter the closure may be released for closing movement upon its seat 100 by slightly pressing upon and then releasing either the pedal 123 or the closure 90 as has been previously described.

If it is desired to permit the entrance of garbage from the sink into the container 10, then this may be done by depressing the lever 122 beyond the point at which the roller 116 engages the notch 112. Such further movement of the lever 122 will rotate the cam 110 until the roller 116 comes in contact with the notch 114 and the detent mechanism previously described will now retain the roller 116 in the notch 114, thus maintaining the closure 90 in a position in which the opening between the sink and the container 10 is entirely unobstructed by the closure 90. In such position the garbage from the sink can be transferred to the container 10 until the container 10 is filled to any desired extent.

Thereafter the closure 90 may be released as has been previously described by pressing and quickly releasing either the pedal 123 or the closure 90. In such event the lever 122 will again be returned to the position in which it is illustrated in Fig. 5.

In the event it is desired to operate the garbage grinding mechanism for the purpose of grinding the garbage so transferred to the container 10, it is necessary only to press laterally upon the pedal 123 in such manner as to rotate the lever upon its pin 126, and in such event the lever will be moved laterally within the transverse portion of the slot 138 into engagement with the button 136. When the button is depressed sufficiently to cause operation of the switch 134 for closing the circuit through the garbage grinding mechanism the lever 122 may be depressed vertically into the notch 140, in which event the roller 116 will again be engaged in the slot 112 and will be maintained in such slot by the aforesaid detent mechanism for continuing the operation of the garbage grinding mechanism after the pressure on the lever 122 is released.

When it is desired to discontinue the operation of the garbage grinding mechanism this may be done by pressing upon and then suddenly re-

leasing either the pedal 123 or the closure 90 which thereupon will release the lever 122 from the notch 140 to permit the lateral movement of the lever into the position in which it is shown by Fig. 5, in response to the outward or switch opening movement of the button 136 previously described.

While we have illustrated and described a preferred embodiment of our invention, it is understood that this is capable of modification and we therefore do not wish to be limited to the precise details set forth but desire to avail ourselves of such changes and alterations as fall within the purview of the following claims.

We claim:

1. Garbage disposal apparatus comprising a container having an inlet adapted to be connected to the drain outlet of a sink and a closure seat surrounding said inlet, a pivoted closure arranged to bear against said seat for closing said inlet, said closure being mounted in said container so as to swing inwardly into said container to open said inlet thereof, universally mounted means for moving said closure to open position upon movement of said means in one direction, and detent means cooperable with said pivoted closure for maintaining said closure in said open position.

2. Garbage disposal apparatus comprising a container having an inlet adapted to be connected to the drain outlet of a sink and a closure seat surrounding said inlet, a pivoted closure arranged to cooperate with said seat for closing said inlet, said closure being mounted in said container so as to swing inwardly into said container to open said inlet thereof, universally mounted means for moving said closure toward open position upon movement of said means in one direction, and detent means cooperable with said closure for maintaining said closure in a plurality of different open positions thereof.

3. Garbage disposal apparatus comprising a container having an inlet adapted to be connected to the drain outlet of a sink and a closure seat surrounding said inlet, a closure arranged to cooperate with said seat for closing said inlet and being movable to a position to open said inlet, universally mounted means for moving said closure to a plurality of open positions upon movement of said means in one direction, and detent means cooperable with said closure in said positions thereof for maintaining said closure in such positions.

4. Garbage disposal apparatus comprising a container having an inlet adapted to be connected to the drain outlet of a sink, a closure member operable for obstructing said inlet, foot operated means connected to said closure member for moving the same to a non-obstructing position relative to said inlet, electric motor driven means in said container operable for reducing material therein, said motor being arranged in a circuit which includes a switch, said switch being constructed and arranged to be closed by a different movement of said foot operated means.

5. Garbage disposal apparatus comprising a container having an inlet adapted to be connected to the drain outlet of a sink, a closure member operable for obstructing said inlet and being movable to a non-obstructing position relative to said inlet, and foot operated pedal connected to said closure member for moving the same to a non-obstructing position relative to said inlet, electric motor driven means in said container operable for reducing material therein,

said motor being arranged in a circuit which includes a switch, said switch being constructed and arranged to be actuated to closed and open position by a different movement of said foot operated pedal when said closure is obstructing said inlet.

6. Garbage disposal apparatus comprising a container having an inlet adapted to be connected to the drain outlet of a sink, a closure member for closing said inlet, means for moving said closure toward and away from said inlet for closing and opening said inlet, said means including a lever, said lever being movable in one direction for opening and closing said inlet, garbage grinding mechanism associated with said container for reducing the material therein and switch means responsive to the movement of said lever in a different direction for operating said garbage grinding mechanism.

7. Garbage disposal apparatus comprising a container having an inlet adapted to be connected to the drain outlet of a sink, a closure member for closing said inlet, means for moving said closure member toward and away from said inlet for closing and opening said inlet, garbage grinding mechanism associated with said container for reducing material disposed in said container through said inlet, switch means for actuating said garbage grinder mechanism, said moving means including a single means for alternately operating said closure member and said switch means.

8. Garbage disposal apparatus comprising a container having an inlet adapted to be connected to the drain outlet of a sink, a closure member for closing said inlet, means for moving said closure member toward and away from said inlet for closing and opening said inlet, garbage grinding mechanism associated with said container for reducing material disposed in said container through said inlet, switch means for actuating said garbage grinder mechanism, said means for moving said closure member being operative to actuate said switch means, said moving means being mounted for movement into a plurality of different positions, and detent means for selectively retaining said moving means in a plurality of said positions.

9. Garbage disposal apparatus comprising a container having an inlet adapted to be connected to the drain outlet of a sink, a closure member for closing said inlet, said closure member being movable toward and away from said inlet for closing and opening said inlet, garbage grinding mechanism associated with said container for reducing material disposed in said container through said inlet, switch means for actuating said garbage grinder mechanism and a single means for operating said closure member and said switch means, said single means being mounted for parallel movements into a plurality of different positions and detent means for re-

siliently retaining said single means in some of said positions.

10. Garbage disposal apparatus comprising a container having an inlet adapted to be connected to the drain outlet of a sink, a closure member for closing said inlet, means for moving said closure member toward and away from said inlet for closing and opening said inlet, garbage grinding mechanism associated with said container for reducing material disposed in said container through said inlet, said moving means including a single means for operating said closure member and said garbage grinding mechanism, said single means being mounted for movement into a plurality of different positions, a switch associated with said single means in one of said positions for closing a circuit in said garbage grinding mechanism in response to the movement of said single means into said one position, and detent means associated with said single means for resiliently retaining said means in some of said positions.

11. Garbage disposal apparatus comprising a container having an inlet adapted to be connected to the drain outlet of a sink, a closure member for closing said inlet, means for moving said closure member toward and away from said inlet for closing and opening said inlet, garbage grinding mechanism associated with said container for reducing material disposed in said container through said inlet, said moving means including a single means for operating said closure member and said garbage grinding mechanism, said single means being mounted for movement into a plurality of different positions, a switch associated with said single means in one of said positions for closing a circuit in said garbage grinding mechanism in response to the movement of said single means into said one position, and detent means associated with said single means for resiliently retaining said single means in said one position.

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