April 29, 1958 S. A. SPRAGUE 2,832,546

FLUID-ACTUATED WASTE DISPOSAL UNIT

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Fig. 1.

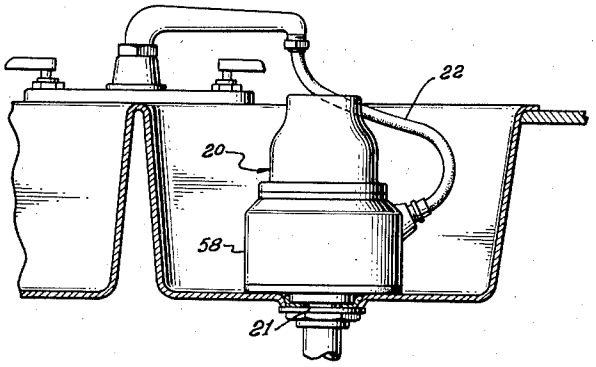


Fig. 2.

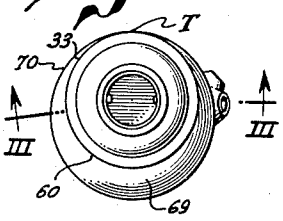


Fig. 8.

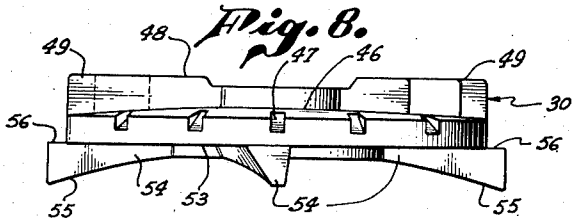


Fig. 11.

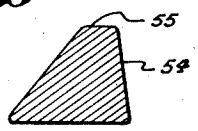


Fig. 9.

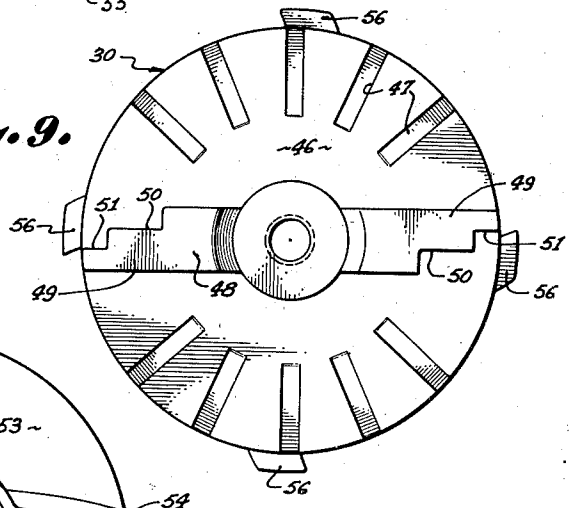
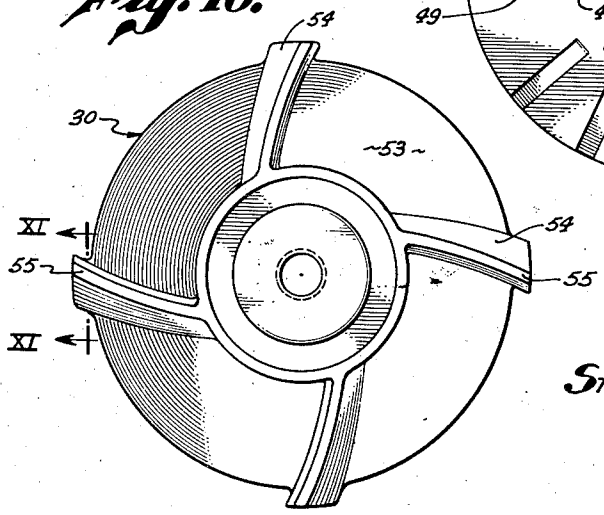


Fig. 10.



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Fig. 3.

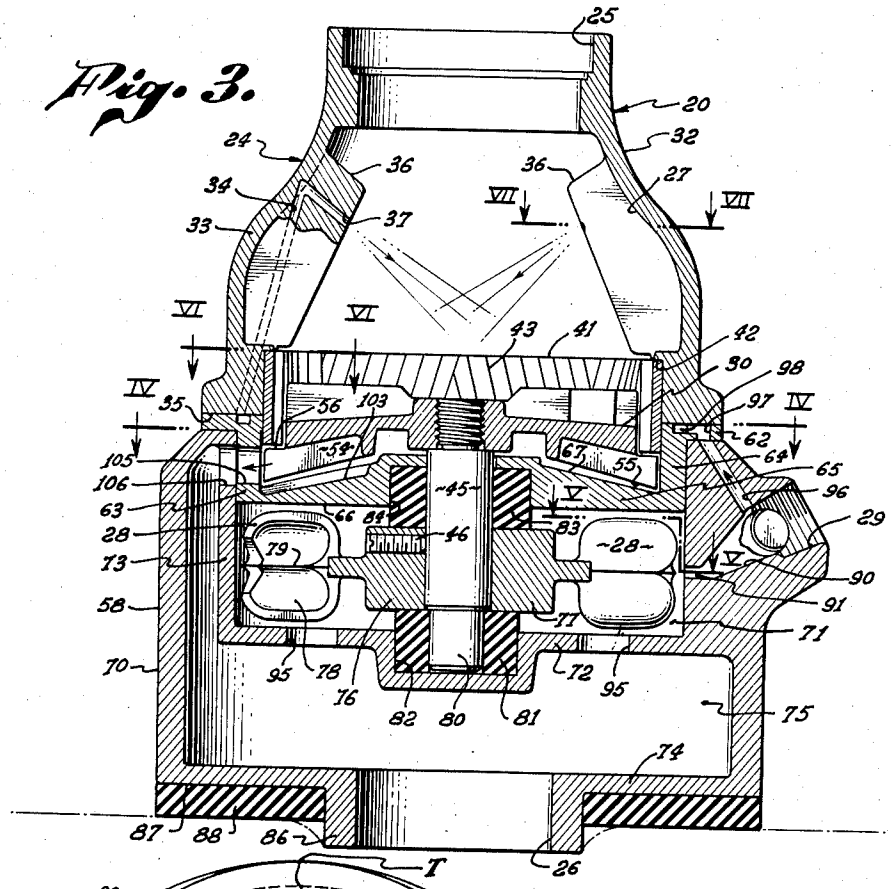
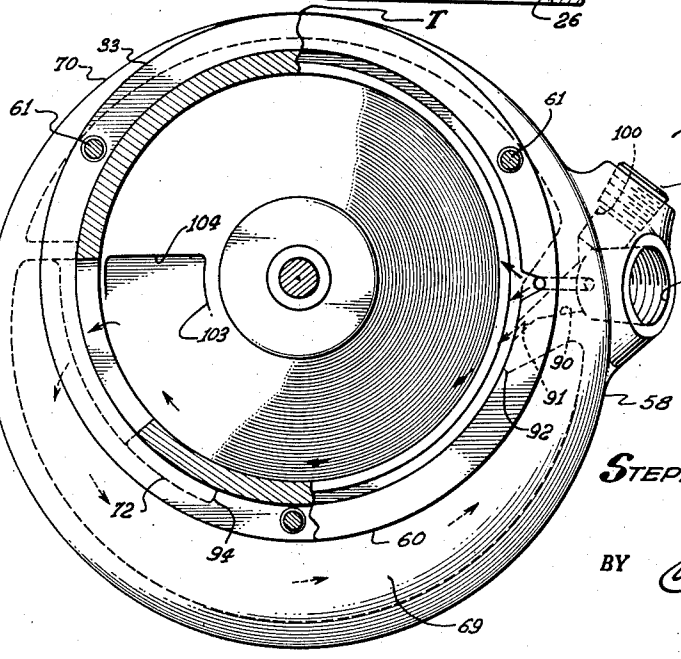


Fig. 4.



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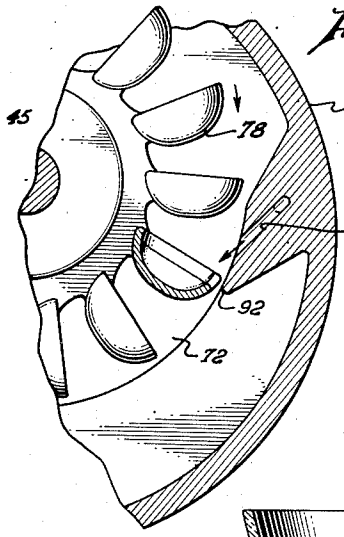
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FLUID-ACTUATED WASTE DISPOSAL UNIT

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Fig. 5.



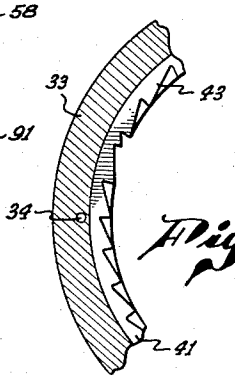


Fig. 6.

Fig. 7.

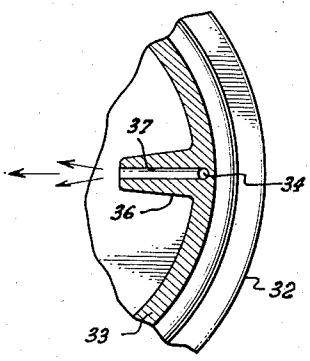
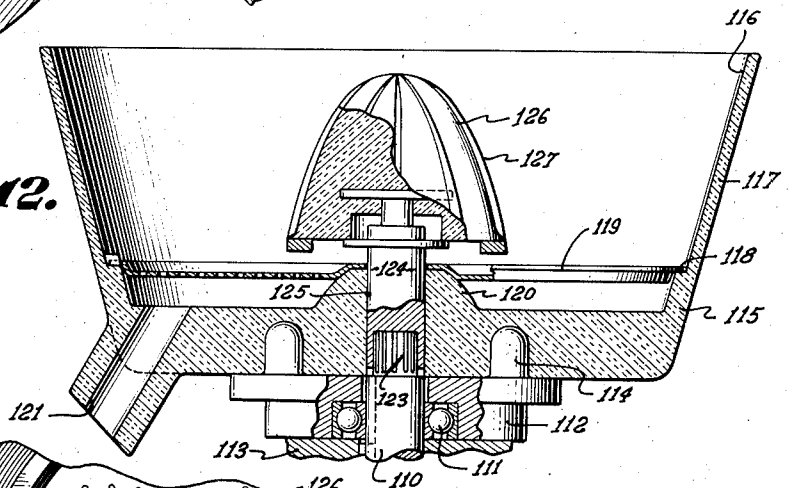


Fig. 12.



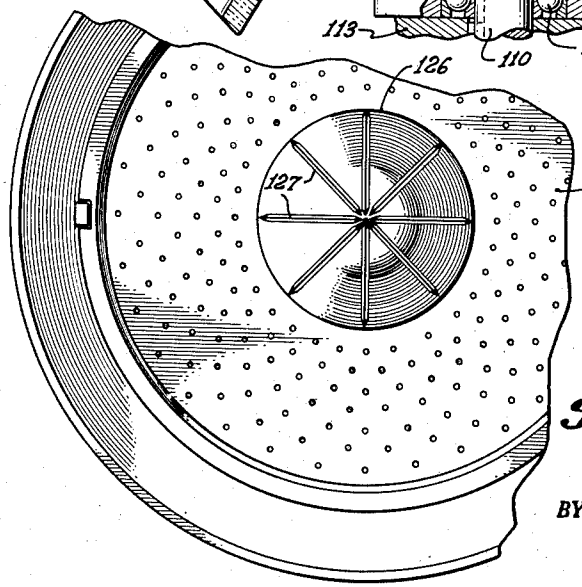


Fig. 13.

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United States Patent Office 2,832,546 Patented Apr. 29, 1958

2,832,546

FLUID-ACTUATED WASTE DISPOSAL UNIT

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Application October 14, 1953, Serial No. 385,971

3 Claims. (Cl. 241—46)

This invention relates to a fluid-operated grinding or waste disposal unit and more particularly to a portable garbage disposal unit adapted to be utilized with a drain system and plumbing fixtures normally found in homes and the like.

Prior waste disposal units for home installation have usually included a unit permanently fixed in the drain pipe of a kitchen sink. Such prior units included a power or drive means for the grinding mechanism which was driven by electrical means as an electrical motor. Obviously such a permanent installation in the waste drain pipe of a kitchen sink together with additional electrical wiring for the associated electrical motor required considerable labor and expense. Such installations were often difficult because of limited space beneath the kitchen sink, and modification of permanent structure was often necessary.

Permanently installed electrically operated disposal units utilized the drain opening of the sink as the waste inlet and normally garbage or waste material was fed through an unguarded drain opening to the disposal unit. In the event that an article of silverware or some other object became included with the waste material, or accidently fell into the opening, the article was either completely destroyed, or the damaged article was passed into the waste drain where it was either flushed away or formed an obstruction in the waste drain. At the same time the permanently installed disposal unit might suffer damage. To extract such articles immediately and before damage resulted the operator was required to introduce his fingers of his hand, or some other tool, into the drain opening or waste inlet. Such a procedure was extremely dangerous because of the grinding or shredding mechanism.

This invention contemplates a novel waste disposal operable by fluid under pressure and removably positioned over the drain opening of a sink. The unit is small, compact and requires for its operation only a simple hose connection between the unit and the faucet of the sink whereby fluid under pressure in the water line to the building is employed to operate the unit.

Obviously a portable, readily removably positioned waste disposal unit includes many advantages over an electrically operable permanently installed unit. The cost of installation is considerably less. Cleaning and repair of such a unit may be easily accomplished. The danger of accidently dropping valued articles into the unit is considerably lessened because such articles must first be lifted for introduction to the unit. The problems created by limited space beneath a kitchen sink are no longer present.

It is therefore the primary object of this invention to design and provide a waste disposal unit adapted to be actuated by fluid under pressure, such as water from a water supply line.

An object of this invention is to design and provide a portable waste disposal unit which may be employed

in a manner which does not require a permanent installation nor a change in the plumbing drain system of a kitchen.

Another object of this invention is to dseign and provide a portable, compact, readily movable waste disposal unit which employs fluid under pressure for its operation.

A further object of this invention is to design and provide a waste disposal unit wherein water under normal pressures from a kitchen faucet is employed to operate the waste disposal unit.

A still further object of this invention is to design and provide a waste disposal unit which embodies novel features of construction so that fluid used to operate the unit is also employed to flush waste material introduced into the unit and to carry such waste material in finely divided form through the unit to the waste drain pipe.

The invention contemplates a portable fluid-actuated waste disposal unit which may not only be employed for grinding waste material into finely divided form for flushing through a kitchen plumbing drain system but which may also utilize the power developed by said unit for other kitchen operations such as extracting juice from fruit, grinding meat, etc.

Generally speaking, this invention contemplates a portable readily handled waste disposal unit which may be placed within a kitchen sink over a standard drain opening therein and connected to a water faucet for using water therefrom for operation. The waste disposal unit is so constructed that the water from the faucet impinges as a jet stream against a turbine or vane means in a power or impeller chamber in the bottom portion of the unit so as to drive a pulverizing member mounted for rotation in a shredding chamber in an upper portion of the unit. The water under pressure introduced into the unit is conducted through passageway to the shredding chamber and forcibly ejected as a jet stream upon the waste material thereof in such a manner that waste material is flushed and fed into a position where the pulverizing member and a cooperable shredder member is capable of grinding the waste material into finely divided form. The waste material in finely divided comminuted form is readily flushed from the shredding chamber into a waste receiving chamber and then through a waste outlet provided in the bottom of the unit into the waste drain.

Other objects and advantages of this invention will be readily apparent from the following description of the drawings in which an exemplary embodiment of this unit is shown.

In the drawings:

Fig. 1 is a diagrammatic view of a waste disposal unit embodying this invention positioned in a kitchen sink and attached to a faucet for operation.

Fig. 2 is a small diagrammatic top view of the unit shown in Fig. 1.

Fig. 3 is a sectional view of the unit shown in Fig. 1 and taken in the angularly related vertical planes indicated by line III—III of Fig. 2.

Fig. 4 is a top view of the bottom body portion of the unit as viewed from the transverse plane indicated by line IV—IV of Fig. 3, the top body portion and pulverizer member being removed.

Fig. 5 is a sectional view of the bottom body portion of the housing taken in vertical planes indicated by line V—V of Fig. 3.

Fig. 6 is a fragmentary sectional view taken in the plane indicated by line VI—VI of Fig. 3.

Fig. 7 is a fragmentary sectional view taken in the plane indicated by line VII—VII of Fig. 3.

Fig. 8 is a side view of a pulverizer member used in said unit.

Fig. 9 is a top view of Fig. 8.

Fig. 10 is a bottom view of Fig. 8.

Fig. 11 is a fragmentary sectional view taken in the plane indicated by line XI—XI of Fig. 10.

Fig. 12 is a sectional view of an exemplary juice extractor adapted to be driven by the power means of said waste disposal unit.

Fig. 13 is a fragmentary, enlarged top view of Fig. 12.

Referring to Fig. 1 there is shown diagrammatically an installation of a garbage or waste disposal unit embodying this invention and generally indicated at **20**, in operative position in a kitchen sink. It will be noted that the unit is placed in the center of the sink directly over the waste or drain opening **21** thereof. A hose **22** connects the faucet of the sink with the unit in order to provide fluid under pressure for operating the unit, in this instance, water from the main water supply for the building.

The waste disposal unit **20** generally comprises a separable two-piece hollow body or housing **24** provided with a top waste inlet **25** and a bottom waste outlet **26**. The waste inlet **25** leads to an upper grinding or shredding chamber **27** wherein waste material is ground into finely divided form. Below the shredding chamber is provided a turbine or vane means **28** which is actuated by fluid introduced to the lower portion of the housing through a fluid or water inlet port **29** for rotating the vane means which drives a pulverizing member **30** in the shredding chamber. Passageways leading from the inlet port **29** provide forcible jet flow of fluid to drive the vane means and to flush waste material in the shredding chamber through the unit both during and after grinding.

The housing **24** includes a top generally frusto-conical integrally cast hollow body portion **32** having its smaller end forming a top neck section which defines the waste inlet **25**. The wall **33** of the frusto-conical portion includes a pair of longitudinally extending diametrically opposed ducts **34** having bottom openings in the annular bottom edge face **35** of the top portion. Spaced below the waste inlet **25** and extending radially inwardly and downwardly within the top portion are a pair of longitudinally extending flanges **36** provided with downwardly directed duct portions **37** communicating with ducts **34** for discharging water into the shredding chamber **27** as later described.

Means for finely dividing waste material fed to the disposal unit includes a shredding or grinding means comprising a ring-like internally toothed stationary shredder member **41** fitted within an annular recess formed in the internal bottom marginal face of the wall **33**, said recess defining an annular shoulder **42** against which the top edge of the shredder member may seat. The shredder member **41** includes a plurality of diagonally downwardly inclined internal teeth **43** adapted to cooperate with rotatable pulverizing member **30** for finely dividing or comminuting the waste material into minute particles which may be readily flushed into a waste drain system.

The pulverizing member **30** may be of disc-like form having an outer diameter slightly less than the inner toothed diameter of the shredder member **41**. The pulverizer member may be threadedly mounted on a driven shaft **45** coaxially mounted within the housing. The member **30** includes a convex circular top face **46** (Figs. **8 and 9**) in which may be formed a plurality of downwardly tapering radially outwardly directed grooves **47** in the outer circumferential portion thereof. The grooves **47** serve to urge waste material outwardly during rotation of the disc and to guide fluid ejected from the duct portions **37** to provide adequate flushing and lubrication of said material.

Extending diametrically across the top face of the pulverizer member **30** may be a blade element **48** having a central portion of uniform width and opposed end portions **49** reduced in stepped fashion along the leading vertical face with respect to rotation of member **30**.

In the example shown, two steps **50** and **51** are shown for each end portion. These steps **50** and **51** are faced in the direction of rotation of the pulverizer member **30** so as to further assist in the movement of waste material outwardly and against the teeth **43** of the shredder member during operation.

The bottom face **53** of the pulverizer member **30** may be substantially flat and lie in a plane at right angles to its axis of rotation. Downwardly depending from said bottom face may be a plurality of equiangularly spaced bottom curved scraper blades **54** integrally formed therewith. The bottom blades **54** may be formed of trapezoidal cross-section having a bottom narrow face. The depth of each blade **54** increases in the form of a smooth downwardly directed curved edge **55** as the blade extends radially outwardly. Each blade may extend beyond the outer circumference of the pulverizer member **30** to provide a cutting top edge **56** disposed beneath the bottom edge face of the shredder member **41** and cooperable therewith to further reduce the size of the shredded waste particle passed between circumferential edge of the pulverizer member and the teeth of the shredder member.

Means for connecting the top body portion **32** and an enlarged, generally cylindrical bottom body portion **58** in assembled relation with their axes in offset parallel relation may include a plurality of spaced aligned bores formed in an out-turned bottom margin on the top portion **32** and an aligned annular top margin **60** of the same diameter as and coaxial with the top body portion **32**. The bores may receive suitable securing means **61** such as screw bolt assemblies.

Seated on top margin **60** and between opposed end faces of the body portions **32** and **58** may be an annular flange **62** of a circular, generally shallow cup-shaped bearing member **63**. The flange **62** is ported to receive the securing means **61**.

The bearing member **63** includes a shallow cylindrical side wall **64** and a transverse bottom wall **65** having a flat bottom face **66**. The upper face **67** of the bottom wall **65** may be generally frusto-conical in form, sloping downwardly and outwardly from the center of the bearing member. The face **67** lies in close spaced relation to bottom edges **55** of the blades **54** of the pulverizer member **30**. The inner diameter of the side wall **64** is slightly greater than the outer diameter of the blades **54** so as to receive the blades **54** therein. The shredder ring **41** extends into the bearing member **63** so that bottom edges of the shredder member lie in close cutting relation to the top cutting edges **56** of the extended blades **54**.

The bottom body portion **58** comprises an outer cylindrical side wall **70** having its axis offset from the axis of the top body portion **32**. The side wall **70** and the wall **33** of the top body portion **32** may be approximately tangentially related at a common tangent point T. A top curved section **69** smoothly merges with the adjacent top annular margin **60** opposite to point T.

A power or impeller chamber **71** may be defined within the body portion **58** by a transverse circular partition wall **72**, the center of said partition wall **72** being aligned with the axis of the top body portion. A partially circular upstanding wall portion **73** generally opposite inlet **29** integrally merges with the partition wall **72**, and with the body portion **58** and lies in spaced relation to the adjacent inner surface of the outer wall **70**. The partition wall **72** and a bottom wall **74** integrally formed with side wall **70** define a waste-receiving chamber **75**. The bottom wall **74** is provided with the centrally disposed waste outlet **26**.

Means for rotating the pulverizer member **30** may comprise an impulse-type turbine or vane means generally indicated at **28**, such as a Pelton wheel. The vane means includes a central hub **77** upon which may be integrally cast in circumferential spaced outwardly directed relation, a plurality of vane elements or buckets **78**. Each vane bucket **78** is of the type used on a Pelton wheel and of

spoon shape including a central sharp ridge 79 dividing the bucket into two halves.

The hub 77 may be fixed to shaft 45 in any suitable manner as by a set screw 46. The shaft 45 is provided with a lower reduced diameter end portion 80 which may be journaled in a suitable annular antifriction member 81 carried and positioned in a bearing recess 82 provided by a downwardly offset central portion of partition wall 72. The upper portion of shaft 45 may be journaled in a suitable antifriction bearing member 83 carried and positioned in a bearing recess 84 provided in bearing member 65. The top portion of shaft 45 threadedly carries the pulverizer member 30 as previously described.

The waste outlet 26 leading from the waste-receiving chamber 75 is formed by an integrally cast, depending annular flange 86, the flange being adapted to be inserted within a drain opening as at 21 of a kitchen sink. An annularly, downwardly facing seat 87 encircling the flange may carry in suitable manner an annular resilient washer 88 of suitable synthetic or rubber composition material for resiliently supporting the unit on the bottom wall of a sink and for acting as a seal for said unit with respect to the drain opening of the sink.

Passageway means for conducting actuating fluid such as water from the kitchen tap to the vane means in the impeller chamber and through the disposal unit to the discharge waste outlet for driving the vane means and for flushing waste material will now be described. A single fluid inlet 29 is formed in the bottom body portion 58 at a thickened metal section disposed approximately 90° from the point of tangency T. The inlet 29 is downwardly directed at a suitable angle and may be internally threaded for connection to a suitable hose or rubber tube such as 22. The hose 22 may be connected to the discharge end of a faucet in any suitable manner as by a quick connecting coupling so that when the faucet is turned on the fluid therefrom will be conducted directly to the disposal unit.

The fluid inlet 29 leads to a converging tapered bore 90 which terminates in a orifice or port 91 which lies in the same planar zone as the divider 79 of the vane buckets 78. The orifice 91 is also directed at an angle to the circular path of the vane means as may best be seen in Fig. 5. A large opening 92 is provided within the bottom body portion 58 which is defined by edge 94 of curved wall section 72, the bottom partially circular edge of the partition wall 72 and at the top by the bearing member 63. This large opening 92 provides an outlet for water from the impeller chamber to the offset portion of the waste-receiving chamber 75 virtually directly opposite the point of tangency T. The purpose of this opening will be described later in connection with operation of the unit.

Openings 95 may be provided in partition wall 72 for reducing the amount of metal employed and to provide further communication between impeller chamber 71 and the waste-receiving chamber 75.

A second separate passageway means for fluid introduced to the garbage disposal unit through the inlet 29 may comprise an upwardly directed bore 96 leading from inlet 29 and terminating at the annular top edge face of the bottom body portion 58. Above inlet 29 the flange 62 of the bearing member 63 is provided with a port 97 which is aligned with bore 96 to communicate with an upwardly facing annular groove 98 formed in the top surface of flange 62. The groove 98 serves as a manifold for conducting fluid to ducts 34 so that part of the fluid entering the inlet port 29 is directed into shredding chamber and is ejected forcibly thereinto along downwardly radially inwardly directed paths. The fluid injected into the shredder chamber serves to facilitate movement and flow of waste material fed into the shredding chamber toward the shredder ring and pulverizer member.

A suitable cleanout port 100 may be provided in the thickened metal section adjacent to the fluid inlet 29 and a cleanout plug 101 may be threadedly inserted thereinto.

Exemplary operation of the waste disposal unit described above may comprise first placing of the unit 20 manually upon a sink with the discharge outlet 26 inserted into the drain opening of the sink, the unit being sealed and resiliently mounted around said opening by means of the annular resilient washer 88. The hose 22 may be connected to the water inlet 29, the other end of the hose being sleeved over the end of the faucet and connected thereto in any suitable well-known manner. Waste material may then be placed in the waste inlet 25 and into the shredding chamber 27.

When the water is turned on so that a selected fluid pressure and volume of water enters the water inlet 29 of the unit, water will flow through bore 90 and be forcibly ejected as a high velocity jet stream through the orifice 91 into the impeller chamber 71. Impingement of the jet stream of water against the vane buckets 78 will cause the vane means 28 to rotate, and thereby rotate the pulverizer member 30 in the shredder chamber 27 at high velocity and in cooperative relation to the shredder member 41. The water which enters the impeller chamber 71 for driving vane means 28 leaves the impeller chamber after impinging against the vane buckets through opening 92. In view of the jet action of the water upon the vane buckets and the pressures and volume of water employed, opening 92 is of relatively great size so that flooding of impeller chamber will be eliminated and the jetted water after having served its purpose will readily flow from the chamber. It should be noted that the larger portion of the waste-receiving chamber 75 is disposed adjacent to opening 92 so that the water which has impinged against the vane means is provided with a sufficiently large chamber for flow thereinto and then through the waste outlet 26 without creating backflow or back pressures.

Part of the water entering the inlet 29 flows upwardly through the second passageway means and is forcibly ejected out of the ducts 34 and 37 into the shredder chamber. Waste material carried in the shredding chamber is urged by these jet streams of water to flow to the outer circumference of the pulverizer member. The rotating pulverizer member also imparts centrifugal force to waste material resting thereon which tends to throw waste material outwardly and against the shredder ring. The effect of centrifugal force and the jet streams of water move the waste material between the teeth of the shredder member and circumferential edge face of the pulverizing member so that the waste material is effectively shredded and ground into relatively finely divided particles. These particles are urged downwardly between the shredder member and the opposed circumferential edge face of the pulverizer member and are further comminuted by the horizontal top cutting edges 56 of the lower blades 54 which cooperate with the bottom edge face of the shredder member. Finely divided waste material flows onto the top frusto-conical surface of bearing member 63 and is swept therearound by the blades 54.

At a point generally opposite the water inlet 29 the top surface 67 of the bearing member may be gouged or recessed at 103 to form a generally radially extending shoulder 104. Opposite recessed portion 103 are provided aligned discharge outlets 105 and 106 respectively formed in the side wall 64 of the bearing member and the partially cylindrical wall portion 73. Waste material accumulates against shoulder 104 and as the curved blades 54 sweep over the surface of the bearing member, waste material is swept outwardly through the discharge openings 105 and 106 into the waste-receiving chamber 75.

In the waste-receiving chamber 75 finely divided waste material is thoroughly mixed with fluid from the impeller chamber so that a thin readily flowable mass of waste material may be discharged through the discharge outlet 26.

The passageway means which conducts the flow of water from the fluid inlet **29** to the shredding chamber thus serves to flush the waste material in the shredding chamber. The opposed arrangement of downwardly directed streams of fluid ejected from the openings within the shredding chamber effectively lubricates a mass of waste material in the shredding chamber so as to facilitate movement of the waste material into and between the toothed shredder member and the pulverizer member. The radial partial grooves **47** formed in the top surface of the pulverizer member facilitate this movement by permitting fluid to flow beneath the mass of waste material and to effectively lubricate passage of said material between opposed faces of the teeth on the shredder member and the circumferential edge face of the pulverizer member. Thus means are provided whereby the waste material is subjected to fluid under pressure which is capable of moving and lubricating the waste material to facilitate the shredding of said material.

When all of the waste material introduced through the waste inlet **25** has been finely divided and flushed through the waste disposal unit it will be readily apparent that permitting the faucet to remain open a few moments longer will effectively flush and clean the interior of the waste disposal unit. Thus the unit is virtually self-cleaning.

It should also be noted that the waste disposal unit may be easily and readily disassembled for cleaning and servicing so that if the teeth on the shredder member should need sharpening the shredder member can be easily removed.

It should also be noted that the passageway means from the fluid inlet **29** to the shredding chamber is independent and separate from the passageway means from the shredding chamber to the waste outlet. Thus there is no danger of contaminating the fluid inlet line with waste material.

It should be also noted that a relatively wide annular seat is provided by annular face **87** on the bottom of the unit so that when the unit is positioned over a drain outlet it will be supported in a steady and stable manner. It may also be noted that by employing a circular manifold groove **95** and the diametrically opposed ducts in the upper portion of the housing virtually all vibration of the unit is eliminated and the unit is dynamically self-balanced.

In the Figs. 12 and 13 there is shown an attachment for the waste disposal unit described above which is adapted to extract juice from fruit such as oranges, the extractor being driven through a suitable power take-off means by the power means provided in the waste disposal unit.

The shaft **45** of the waste disposal unit may be provided with well-known means (not shown) for affording a quick coupling to a shaft extension **110** supported at its upper end by an antifriction bearing **111** carried in a mounting member **112**. The mounting member **112** may be secured against rotation by any suitable means and may be carried by an arm **113** extending across and engaging the top margin of the housing **24**.

The mounting member **112** may carry a pair of upstanding positoning studs **114** which are adapted to be received in the bottom wall of a juice-receiving bowl **115**. The juice-receiving bowl **115** may have an upwardly facing opening **116** defined by a frusto-conical wall **117**, the inner surface of said wall **117** having a bottom inwardly extending shoulder **118** which may support a perforated circular strainer **119**. The center portion of strainer **119** may be mounted on upwardly directed central boss **120** formed on the bottom wall of bowl **115**. A downwardly directed juice outlet **121** may be provided at one side of the bowl.

The upper end of shaft **110** may be splined as at **123** for connection to a shaft stub **124** which is rotatable wthin an axial opening **125** in the bottom wall of the bowl **115**. The stub **124** is arranged at its top end to carry a hemispherical juice-extracting member **126**, said member **126** being provided with spaced longitudinally extending ribs **127** to facilitate juice extraction.

In operation of the juice extractor attachment the disposal unit **20** may be positioned in a sink as described herein above. The juice-extracting bowl **115** together with the associated shafts **124** and **110** may be connected to the drive shaft **45**. Upon opening of the faucet of the sink the water will actuate the vane means of the unit causing the shafts to rotate and thereby rotating the hemispherical extractor member **126**. Half fruit may be pressed downwardly upon the extractor **126** and the juice derived therefrom will pass through the perforated strainer and out of the juice outlet **121** and into a suitable receptacle (not shown) provided therebelow.

While a juice extracting attachment is exemplarily illustrated for use with the above waste disposal unit, it is understood that various other attachments may be driven from the fluid-actuating means provided by such unit, and it is contemplated that the shaft **45** of said unit be arranged to quickly accommodate and receive various shaft attachments so that power take-off means may be made available above the waste disposal unit for various accessories and attachments.

It is understood that while a portable garbage disposal unit has been described, the unit of this invention may be permanently installed and operated beneath a sink by making necessary changes in the waste inlet and outlet openings. The fluid inlet may be connected to the water supply line in well-known manner.

It is understood that numerous and various modifications may be made in the construction of the waste disposal unit described above and which may come within the spirit of this invention and all such modification and changes coming within the scope of the appended claims are embraced thereby.

I claim:

1. In a hydraulically operated waste disposal unit, the combination of: a hollow housing having a waste inlet and a waste outlet; said hollow housing including coaxially arranged shredding and power chambers; an internally toothed shredder member fixed to said housing in said shredding chamber; a rotatable pulverizer member mounted within the shredding chamber in cooperable relation to said shredder member; a turbine means rotatably mounted in said power chamber and connected to said pulverizer member for rotation thereof; a single water inlet port in the housing; a first passageway leading from the inlet port to the shredding chamber for discharge of water in a downwardly directed stream upon the pulverizer member; a second passageway from the water inlet port to the power chamber and providing an orifice for jetting a stream of water against said turbine means for rotating said pulverizer member, a waste discharge chamber below the power chamber; a third passageway from the shredding chamber to the waste discharge chamber; an opening between said power chamber and said waste discharge chamber for flow of actuating water from said power chamber to said waste discharge chamber; said waste discharge chamber being connected to said waste outlet for discharge of shredded waste material and actuating water.

2. In combination with a waste disposal unit including a shredding chamber and a waste discharge chamber: a tranverse partition wall at one end of said shredding chamber, said partition wall including a convex face directed toward the shredding chamber and provided with a side wall having a lateral opening therein for communication between the shredding chamber and the waste discharge chamber; and a pulverizer member rotatably mounted within the shredding chamber adjacent the partition wall, said pulverizer member including a top face provided with radial grooves extending to the edge of said member, a plurality of depending scraper blades on the opposite face of the pulverizer member, said blades

extending beyond said member and including cutting edges, the bottom edges of said scraper blades being concave and corresponding to the convex face on the partition wall whereby comminuted waste material is swept by said blades to and out of said opening into the waste discharge chamber.

3. In a disposal unit as stated in claim 2 wherein the transverse partition wall includes a recess in the top face thereof adjacent to said opening to facilitate flow of waste discharge material through said opening.

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