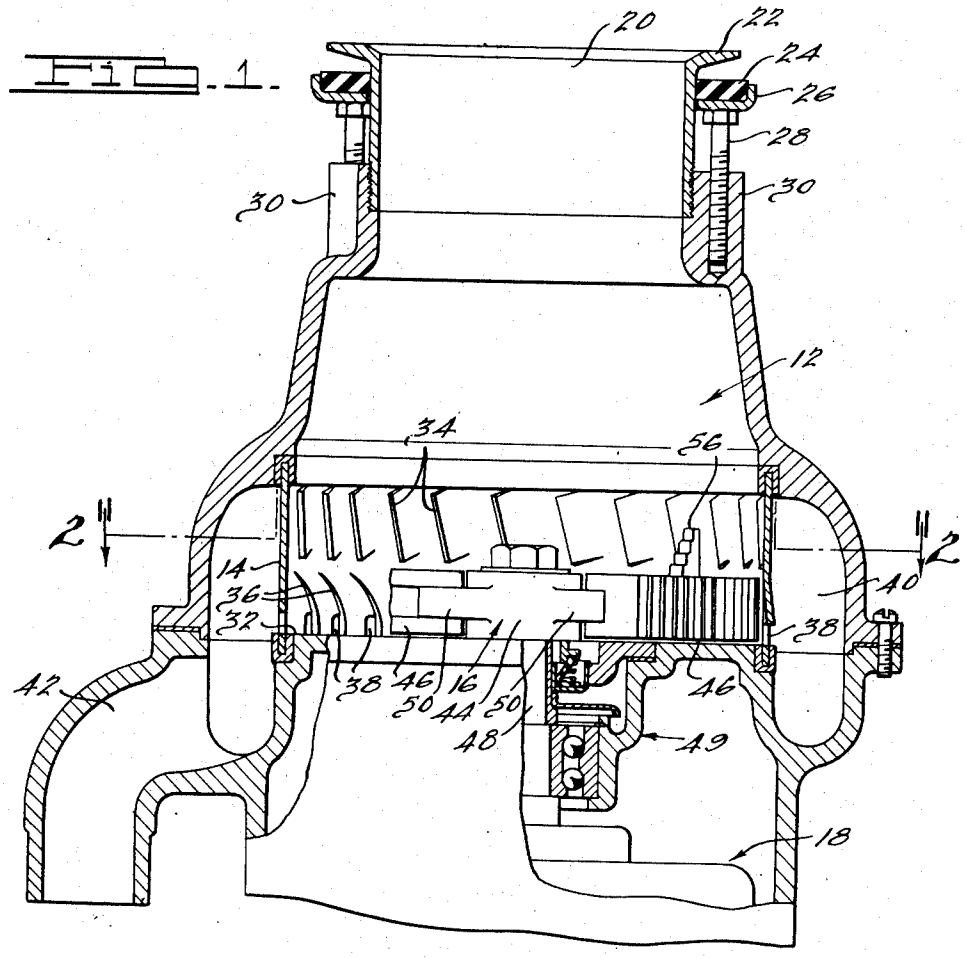
Oct. 27, 1953 J. R. BACKLUND ET AL 2,656,985

GARBAGE DISPOSAL APPARATUS

Filed March 5, 1951

2 Sheets-Sheet 1

Fig. 1.



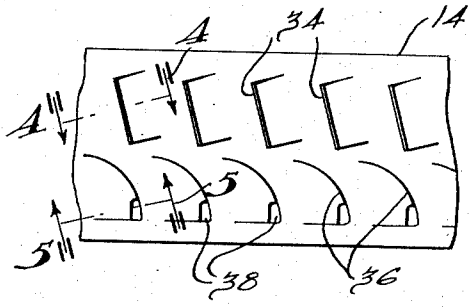


Fig. 3.

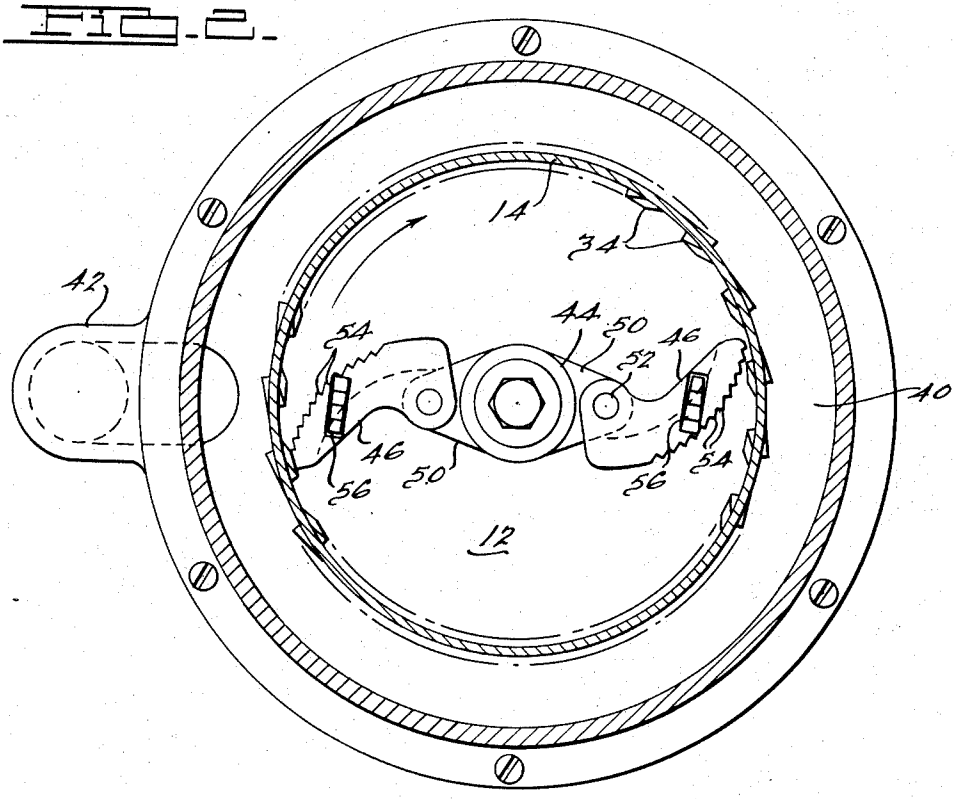
INVENTORS.
John R. Backlund,
Vernon E. Flanders.
BY
E. J. Ballaff
ATTORNEY.

Oct. 27, 1953 J. R. BACKLUND ET AL 2,656,985

GARBAGE DISPOSAL APPARATUS

Filed March 5, 1951 2 Sheets-Sheet 2

Fig. 2.



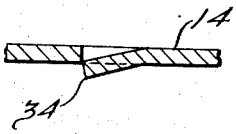


Fig. 4.

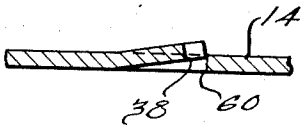


Fig. 5.

INVENTORS.
John R. Backlund,
Vernon E. Flanders.
BY
E. J. Ballouf
ATTORNEY.

Patented Oct. 27, 1953

2,656,985

UNITED STATES PATENT OFFICE

2,656,985

GARBAGE DISPOSAL APPARATUS

John R. Backlund and Vernon E. Flanders, Bloomington, Ill., assignors to Eureka Williams Corporation, Bloomington, Ill., a corporation of Michigan

Application March 5, 1951, Serial No. 213,928

4 Claims. (Cl. 241—88)

1

This invention relates to garbage disposal apparatus and has particular reference to a new and improved means for reducing material supplied thereto and discharging the same into a conventional drain.

The invention consists primarily in the provision of a new and improved shredder ring for a garbage grinder having integral cutting tooth surfaces formed thereon in such a way as to facilitate the reducing of the garbage into particles small enough to permit the same to be discharged through the outlets from the receiving chamber.

A principal object of the invention is to provide a new and improved garbage disposal apparatus.

A further object of the invention is to provide a garbage disposal apparatus having an improved garbage reducing means.

Another object of the invention is to provide an improved form of shredder ring for use in a garbage grinder.

A further object of the invention is to provide a shredder ring for a garbage grinder having a plurality of rows of cutting teeth formed thereon so as to facilitate reduction of the garbage.

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

In the drawings:

Fig. 1 is a fragmentary vertical sectional view through a garbage disposal apparatus embodying our invention;

Fig. 2 is a sectional view taken along lines 2—2 of Fig. 1;

Fig. 3 is a fragmentary developed view of the shredder ring embodying this invention;

Fig. 4 is a fragmentary sectional view taken along lines 4—4 of Fig. 3; and

Fig. 5 is a fragmentary sectional view taken along lines 5—5 of Fig. 3.

A garbage disposal apparatus of the type contemplated by this invention is particularly adapted for domestic use and is constructed and arranged to be secured to the discharge outlet of a sink. The apparatus consists of a vertically disposed chamber 12 having a shredder ring 14 arranged at the periphery of the bottom wall of the chamber 12, a power driven rotary means indicated generally at 16 for reducing material supplied to the chamber 12, and an electric motor 18 for driving the rotary means.

2

The chamber 12 is generally circular in cross section and may be of larger diameter at the bottom thereof than at the top so as to facilitate passage of material therethrough. A sleeve 20 is threaded into the upper end of the casting which defines the upper part of the chamber 12, and the lip of the sink which surrounds the opening therein is adapted to be confined between the under side of the flange 22 on the sleeve 20 and a resilient ring or gasket 24 arranged in an annular ring 26 which surrounds the sleeve 20. The gasket 24 may be tightened upwardly against the confined portion of the sink by means of bolts 28 which are threaded into circumferentially spaced bosses 30 provided on the casting defining the chamber 12.

A suitable closure (not shown) is adapted to be received within the sleeve 20 and manipulated for selectively permitting the flow of water only into the chamber 12, for permitting the flow of garbage and water into the chamber, or for completely closing the sink outlet. Suitable controls, also not shown, may be provided for controlling the operation of the garbage grinder mechanism and the flow of water into the chamber during operation thereof, and if desired such controls may be actuated by and operated in accordance with the position of the closure.

The shredder ring 14 is arranged at the periphery of the bottom wall 32 of the chamber and forms a continuation of the inner wall of the chamber defined by the upper casting. The shredder ring is provided with an upper row of cutting teeth 34 and a lower row of teeth 36. An annular trough 40 surrounds the shredder ring 14 and reduced material is projected through the openings 38 into the trough 40, from which it is carried through the discharge outlet 42 which may be connected to a conventional drain.

The power driven rotary means 16 comprises a central hub 44 having hammers 46 secured thereto and arranged to pivot about an axis parallel to the axis of rotation of the hub 44. The electric motor 18 has a shaft 48 provided with suitable bearing and sealing means indicated generally at 49 and secured to the hub 44 for rotating the same upon operation of the motor 18.

The hub 44 has two oppositely extending arms 50 and the hammers 46 are pivotally mounted to the arms 50 by means of pins 52. The forward or leading edges of the hammers 46 are provided with vertically extending cutting teeth or serrations 54, and the hammers are also provided with upstanding agitators 56 having notches or teeth thereon to aid in breaking up the material to be reduced.

As shown in Fig. 2, the direction of rotation of the rotary means and the hammers 46 is in a clockwise direction. The centrifugal force involved by the rotation of the rotary means forces the hammers into their extended position as shown in Fig. 2. The hammers are maintained in this extended position during operation of the grinder due to centrifugal force and against the forces opposing rotation of the garbage and water contained in the chamber 12. In the event that the hammers encounter large pieces of material which cannot be immediately ground into particles small enough to be discharge through the openings 38, the pivotal connection of the hammers will permit them to rotate about the pins 52 in a counterclockwise direction (Fig. 2).

The shredder ring 14, as shown more clearly in Fig. 3, comprises a pair of vertically spaced, circumferentially extending rows of cutting teeth. The teeth of the lower row are formed by deflecting portions of the shredder ring radially outwardly, and the edges 60 which are thus defined form the cutting teeth 36. The teeth 34 of the upper row of teeth are formed by deflecting portions of the shredder ring radially inwardly. The discharge openings 38 extend upwardly from the bottom wall 32 of the chamber 12 and are formed in the outwardly deflected portions of the shredder ring which define the lower row of teeth. The lower portions of the teeth 36 define one edge of the openings 38.

As shown in Figs. 1 and 3, the upper extremities of the teeth 36 are located substantially at the tops of the hammers 46 and are curved downwardly therefrom in the direction of rotation of the rotary means. During rotation the hammers 46 sweep past the cutting teeth 36, and due to the shape thereof reduced material is forced downwardly along the teeth and into the discharge openings 38. The teeth 34 of the upper row of teeth are disposed inwardly of the inner surface of the shredder ring and are inclined from the upper ends thereof downwardly in the direction of rotation of the hammers 46. Material to be reduced will be projected against the teeth 34 as well as against the teeth 36 by the hammers 46 and by the upstanding agitators 56. The teeth 34 aid in breaking up the material, and the material impelled thereagainst is forced downwardly along the teeth toward the teeth 36 and the hammers 46. The lower ends of the teeth 34 terminate just above the top of the hammers.

During operation of the grinder material in the chamber is impelled against the teeth 34 and the teeth 36. The material confined between the teeth 36 and the ends of the hammers 46 is reduced into particles of a size small enough to permit their discharge through the openings 38. The teeth 34 provide additional cutting tooth surfaces which aid in the preliminary reducing of the material, and due to the inward disposition and inclination thereof, the material during rotation of the hammers is forced downwardly along the teeth where such material is acted upon by the hammers and the teeth 36 so as to be further reduced and projected through the openings 38 into the discharge outlet 42.

During operation of the grinder water should be supplied to the hopper 12 so as to facilitate reduction of the material and discharge of the material through the outlets. The serrations 54 on the leading edges of the hammers aid in reducing the material and also aid in preventing movement of the material past the ends of the hammers during rotation thereof.

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 vertically disposed chamber adapted to receive material to be reduced, a cylindrical shredder ring arranged at the periphery of the bottom wall of said chamber and extending upwardly therefrom, said shredder ring having a plurality of vertically spaced, circumferentially extending rows of cutting teeth formed thereon and a plurality of radially extending openings therein extending around the bottom of said chamber and forming a discharge outlet for reduced material, power driven rotary means at the bottom of said chamber and adapted during rotation thereof to project material against said teeth and through said openings, said rotary means comprising a plurality of radially extending hammers arranged to sweep the bottom wall of said chamber, at least one of said hammers being provided with an upwardly projecting agitator adjacent the outer end thereof, the teeth of the lower of said rows of teeth being formed by radially outwardly deflected portions of said shredder ring with the upper extremities thereof terminating substantially at the top of said hammers, and the teeth of the other of said rows of teeth being formed by radially inwardly deflected portions of said shredder ring with the lower extremities thereof terminating above said hammers.

2. Garbage disposal apparatus comprising a vertically disposed chamber adapted to receive material to be reduced, a shredder ring arranged at the periphery of the bottom wall of said chamber and extending upwardly therefrom, said shredder ring having a plurality of vertically spaced, circumferentially extending rows of cutting teeth formed thereon and a plurality of radially extending openings therein extending around the bottom of said chamber and forming a discharge outlet for reduced material, power driven rotary means at the bottom of said chamber and adapted during rotation thereof to project material against said teeth and through said openings, said rotary means comprising a plurality of radially extending hammers arranged to sweep the bottom wall of said chamber, at least one of said hammers being provided with an upwardly projecting agitator adjacent the outer end thereof, the lower of said rows of teeth being formed by radially outwardly deflected portions of said shredder ring, the teeth of said lower row curving downwardly in the direction of rotation of said rotary means and having their upper extremities terminating substantially at the top of said hammers, and the teeth of the other of said rows of cutting teeth being disposed radially inwardly of said shredder ring with the lower extremities thereof terminating above and closely

adjacent the top of said hammers, said last-mentioned teeth being inclined downwardly in the direction of rotation of said rotary means whereby material impelled thereagainst by said hammers and said agitator moves downwardly along said teeth toward said lower row of teeth and said discharge openings.

3. Garbage disposal apparatus comprising a vertically disposed chamber adapted to receive material to be reduced, a cylindrical shredder ring arranged at the periphery of the bottom wall of said chamber and extending upwardly therefrom, said shredder ring having a plurality of circumferential rows of cutting teeth formed thereon and a plurality of radially extending openings therein extending around the bottom of said chamber and forming a discharge outlet for reduced material, power driven rotary means at the bottom of said chamber and adapted during rotation thereof to project material against said teeth and through said openings, said rotary means comprising a plurality of radially extending hammers arranged to sweep the bottom wall of said chamber, the teeth of the lower of said rows of teeth being defined by radially outwardly deflected portions of said shredder ring and extending from the upper extremities thereof downwardly and in the direction of rotation of said rotary means, said discharge openings having an edge thereof defined by portions of the teeth of said lower row, and the teeth of the other of said rows of cutting teeth being formed by inwardly deflected portions of said shredder ring, said inwardly disposed teeth having substantially the same vertical height as the teeth of said lower row and having their lower extremities terminating closely adjacent and above said hammers.

4. Garbage disposal apparatus comprising a vertically disposed chamber adapted to receive material to be reduced, a cylindrical shredder

ring arranged at the periphery of the bottom wall of said chamber and extending upwardly therefrom, said shredder ring having upper and lower circumferential rows of cutting teeth formed thereon and a plurality of radially extending openings therein adjacent the bottom wall of said chamber and forming a discharge outlet for reduced material, power driven rotary means at the bottom of said chamber and adapted during rotation thereof to project material against said teeth and through said openings, said rotary means comprising a plurality of radially extending hammers arranged to sweep the bottom wall of said chamber, the teeth of the lower of said rows of teeth being defined by radially outwardly deflected portions of said shredder ring and extending from the bottom wall of said chamber to the top of said hammers, the teeth of the upper row being formed by radially inwardly deflected portions of said shredder ring, and having their lower extremities terminating above and closely adjacent the top of said hammers, the teeth of each row being of substantially the same height and each of said rows having substantially the same number of teeth therein, all of said teeth extending from their upper extremities downwardly in the direction of rotation of said rotary means whereby material impelled thereagainst by said rotary means moves downwardly along said teeth toward said discharge openings.

JOHN R. BACKLUND.
VERNON E. FLANDERS.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
978,034	Kinsey	Dec. 6, 1910
2,421,014	Coss	May 27, 1947
2,482,124	Powers	Sept. 20, 1949
2,534,944	Bissey	Dec. 19, 1950
2,536,929	Hammell	Jan. 2, 1951