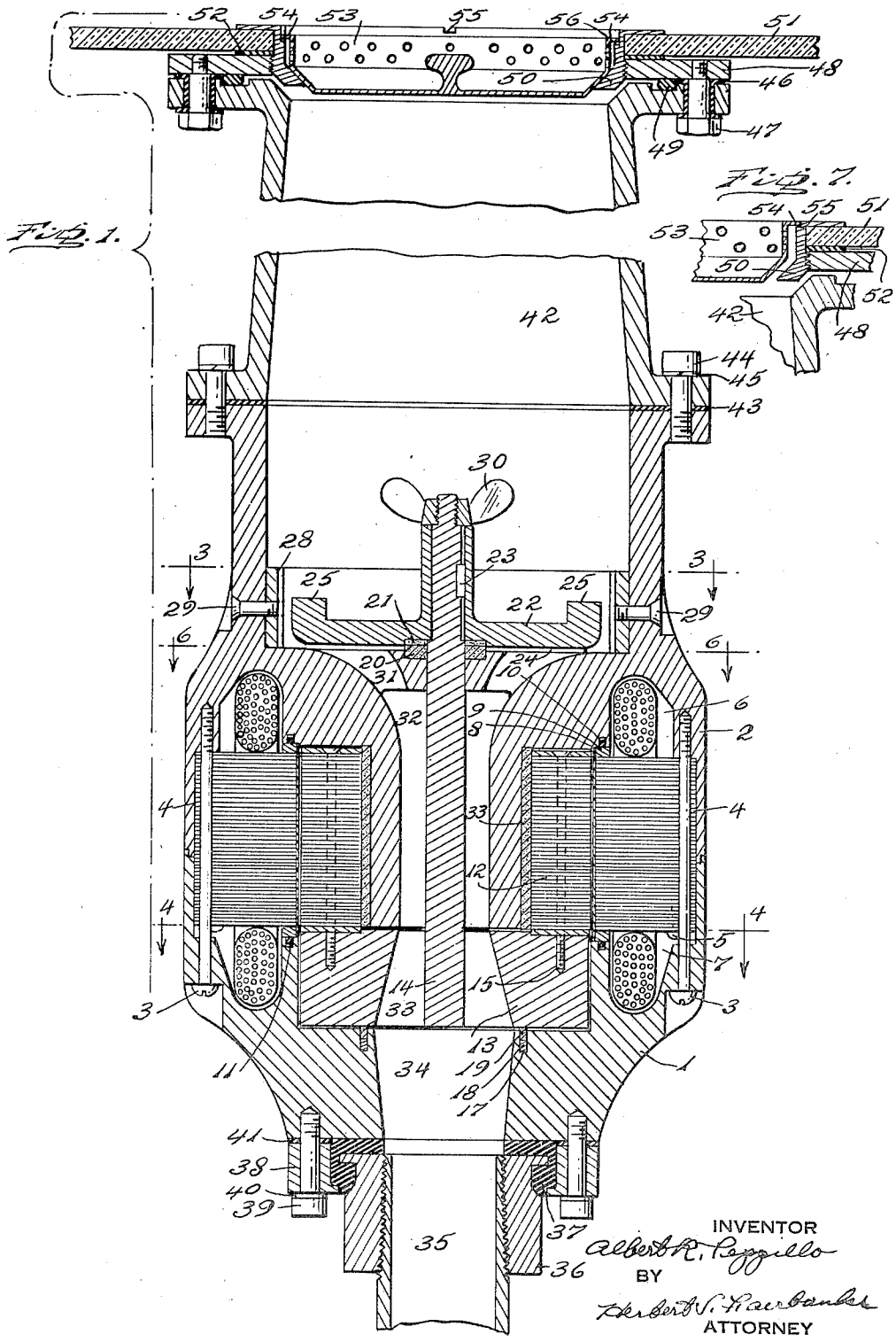
April 26, 1955 A. R. PEZZILLO 2,707,080

COMMINUTING UNITS

Filed Dec. 4, 1950 2 Sheets-Sheet 1



April 26, 1955 A. R. PEZZILLO 2,707,080

COMMINUTING UNITS

Filed Dec. 4, 1950 2 Sheets-Sheet 2

Fig. 2.

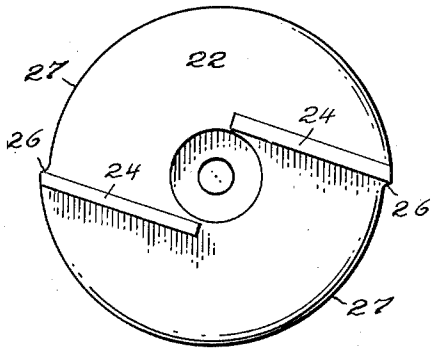


Fig. 5.

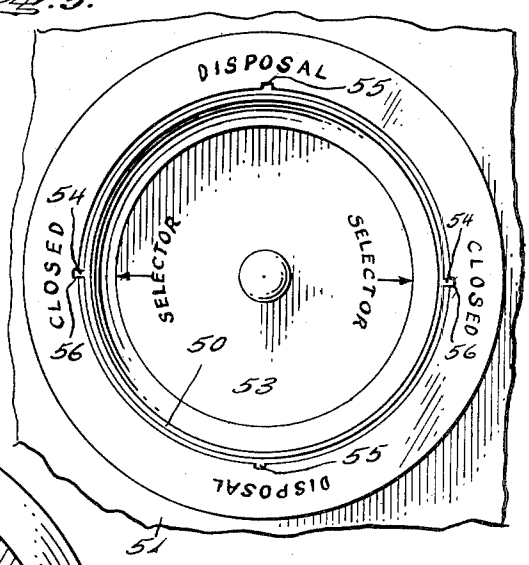


Fig. 3.

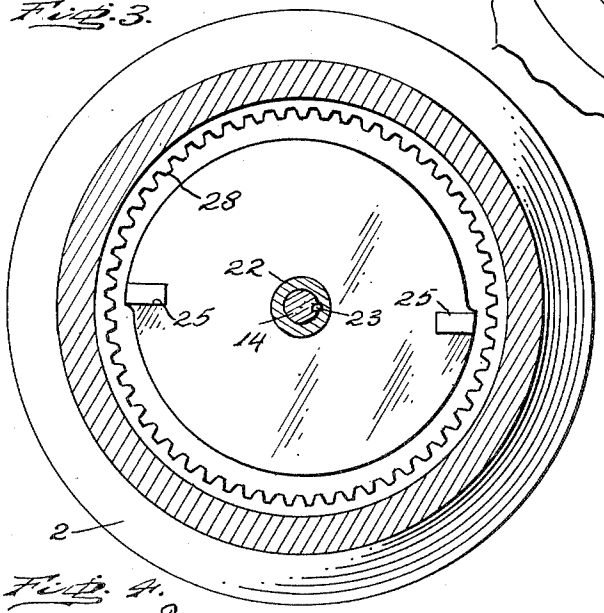


Fig. 6.

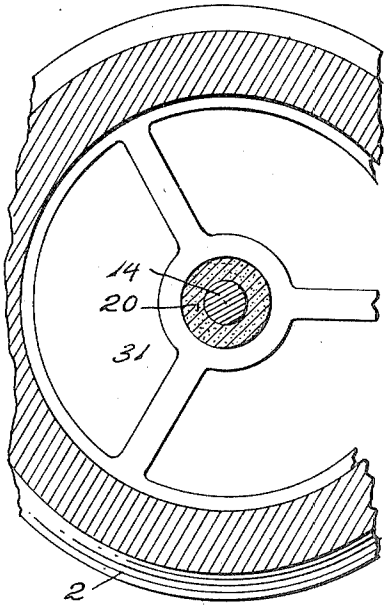
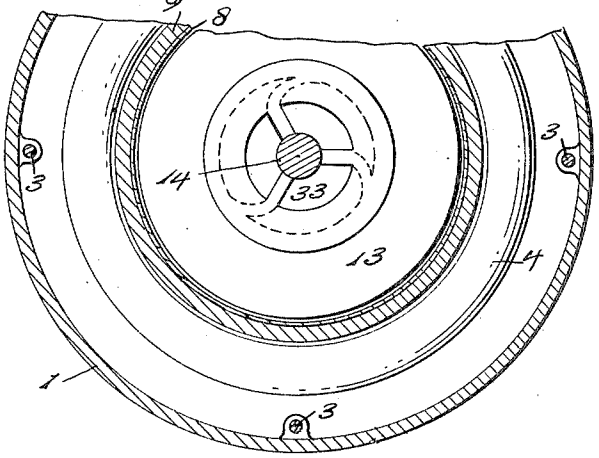


Fig. 4.



INVENTOR
Albert R. Pezzillo
BY
Herbert S. Fairbanks
ATTORNEY

United States Patent Office

2,707,080

Patented Apr. 26, 1955

2,707,080

COMMINUTING UNITS

Albert R. Pezzillo, Philadelphia, Pa.

Application December 4, 1950, Serial No. 199,114

3 Claims. (Cl. 241—257)

The object of this invention is to devise a novel construction and arrangement of a grinding unit which may have a straight line connection with a pipe line, and which although particularly adapted for use as a garbage disposal unit is not limited to such use and may be employed for the grinding of any desired material, or for shredding it to a desired degree of fineness.

A further object of the invention is to devise a novel self contained, motor driven grinding or shredding unit which can be packaged and shipped as a completely assembled unit for connection in a pipe line.

A further object of the invention is to devise a novel resilient mounting for the unit.

A further object is to devise novel grinding or shredding means and novel means for connecting it with the rotor of an electric motor.

A further object is to devise a novel construction and arrangement of a sectional housing.

Further objects are to facilitate the feed of material to the grinding or shredding mechanism and its feed therefrom to an outlet; to seal the air gap of the motor from the material passing through the unit; to provide novel connecting mechanism for the component parts, and novel means to prevent cavitation.

With the foregoing and other objects in view as will hereinafter clearly appear, my invention comprehends a novel grinding or shredding unit and novel means for resiliently connecting it in a pipe line.

It further comprehends a novel housing; a novel shaft and hub mounted in a novel manner; novel air gap sealing means; novel means for preventing cavitation; novel sink connections, and other novel features which will appear in the detailed description and appended claims.

For the purpose of illustrating the invention, I have shown in the accompanying drawings a preferred embodiment of it which, in practice, will give satisfactory and reliable results. It is, however, to be understood that the various instrumentalities of which the invention consists can be variously arranged and organized and the invention is not limited to the exact arrangement and organization of these instrumentalities except by the scope of the appended claims.

Figure 1 is a sectional elevation of a grinding or shredding unit, embodying my invention, illustrated as connected in a pipe line.

Figure 2 is a bottom plan view of the rotating cutter.

Figure 3 is a section on line 3—3 of Figure 1.

Figure 4 is a section on line 4—4 of Figure 1.

Figure 5 is a top plan view.

Figure 6 is a section on line 6—6 of Figure 1.

Figure 7 is a fragmentary view of the strainer and its adjuncts with the strainer in a different position from that seen in Figure 1.

Similar numerals of reference indicate corresponding parts.

Referring to the drawings:

The grinding or shredding unit has a sectional housing comprising a lower housing section **1** and an upper housing section **2** secured together by screws **3**. The upper housing section is chambered to receive a stator **4** of an electric motor, the stator being fixed in the upper housing section by screws **5**. The housing sections are recessed as at **6** and **7** to receive the windings of the stator. The stator is sealed from the fluid passing through the unit by a non-magnetic sleeve **8** fixed to it and to end rings **9** and sealed by annular gaskets **10** and **11** received in annular grooves in the housing sections.

A rotor **12** is surrounded by the stator and is connected to the hub **13** of a shaft **14** by screws **15**. The rotor carries a sleeve bearing **33** and is mounted on an annular, inner wall of the upper housing section and is in telescopic relationship therewith. It will thus be apparent that the upper housing section is chambered to receive the stator, and the lower housing section is chambered to receive the hub **13** of the shaft **14**.

The lower housing section has an annular groove **17** which contains a compression ring **18** and above it a bearing ring **19** on which the hub turns. An upper bearing ring **20** surrounds the shaft **14** and is carried by the upper housing section **2** and contacts a felt pad **21** on the bottom of a rotating cutter and feed member **22** fixed to the shaft **14** by a key **23**. The bottom face of the cutter **22** has diagonally disposed ribs **24** which have a wiping action on the juxtaposed wall of the upper housing section. The upper face of the rotating member **22** has diametrically disposed blades **25** located in proximity to shoulders **26** formed by eccentric outer faces **27** of the member **22**. This member **22** cooperates with a stationary cutter or shredder **28** having internal teeth and fixed to the upper housing section by screws **29**. These teeth may have any desired formation for cutting or shredding or grinding.

A thumb nut **30** on the shaft **144** prevents cavitation.

The upper housing section has a tripod arrangement with downwardly converging passages **31** leading to passages **32** terminating in diverging passage portions **33** in a lower tripod and discharging to an outlet **34** in the lower housing section.

A discharge pipe **35** has threaded to it a flanged coupling **36** provided with a molded gasket **37** which bears against the bottom of the lower housing section **1** and is secured in place by a clamping ring **38**, screws **39**, lock washers **40** and gaskets **41**.

The upper end of the upper housing section is connected in the pipe line by securing its upper flanged portion with the flanged lower portion of an intake pipe **42** by a gasket **43**, screws **44** and lock washers **45**.

If the unit is to be used for garbage disposal, the intake pipe **42** is connected with a sink as will now be explained. For such sink connection, the upper end of the intake pipe is flanged and provided with grommets **46** through which bolts **47** pass into engagement with a clamping ring **48**, an annular gasket **49** being between the clamping ring and the upper flange of the intake pipe. The clamping ring **48** is in threaded engagement with a strainer cup **50** received in an opening in a sink **51**. A packing ring **52** is between the sink and the clamping ring **48**. The strainer cup has a flange overhanging the sink and has indicated on the flange instructions for use and adjustment. A strainer serving as a selector has foraminated sides and a closed bottom is shown at **53** as seated in the strainer cup in a position to prevent passage of liquid through the strainer cup into the intake passage, the strainer having lips or tabs **54** received in recesses **56**. When the strainer is in its raised position and partially rotated the lips **54** are received in recesses **55** in the strainer cup and liquid can flow into the intake pipe **42** from the sink, see Figure 7.

The operation will now be apparent to those skilled in this art and is as follows:

Assuming for purpose of explanation that the unit is connected in a pipe line from a sink for garbage disposal and the parts are in the position seen in Figure 1, the strainer prevents passage of liquid from the sink to the intake pipe.

The material to be comminuted so that it will flow through the discharge pipe without clogging it is introduced into the intake pipe and the strainer adjusted to its raised position as in Figure 7. The water is turned on and the motor started in th econventional manner. The rotor fixed to the hub **13** causes the shaft **14** to revolve and thereby the feed member **22**. The revolution of this feed member and the centrifugal force on the liquid causes the liquid and the solid matter carried thereby to impinge against the teeth of the stationary cutter or grinder **28** and reduces the size of the solid material to a desired degree of fineness. The ground, shredded or comminuted material passes by gravity and the force of the flow

through passages **31**, **32** and **33** to the outlet **34** and therefrom to the discharge pipe **35**. The blades **25** on the feed member **22** increase the force with which the solid material strikes the teeth of the cutter **28**. The cutter teeth may have any desired depth, pitch or dimensions and may be pointed or blunt in accordance with the work which is to be accomplished and the character of the solid material in the liquid flowing through the unit. The ribs **24** tend to prevent the material being treated passing to the bearing **20** and to keep the tripod at the upper end of the upper housing section clear of solid material.

The unit in a completely assembled condition can be shipped to the place of installation, inserted laterally into registering position in a pipe line and fixed to the pipe line in a sealed condition.

The sink can be used in the normal manner when solid material carried by the water is not to be comminuted.

The bearing ring **19** seals the air gap from the material being treated.

It will now be apparent that I have provided a self contained motor and comminuting mechanism which can be shipped to the place of installation as a completely assembled unit.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent is:

1. In a comminuting unit, a housing having an upper section and having a lower section with recesses and annular grooves, a stator having its windings in said recesses, a non-magnetic sleeve having end rings, sealing gaskets in said grooves for the end rings and sleeve, a rotor within the stator having a sleeve bearing mounted in the upper section, a shaft having a hub carrying the rotor, a compression ring in the lower section, a bearing ring above the compression ring and on which the hub turns, an upper bearing ring in the upper section, and a

cutter and feed member fixed to the shaft and having a pad contacting the upper bearing ring.

2. The construction defined in claim 1, wherein said member has on its upper face diametrically opposed blades located in proximity to shoulders formed by eccentric outer faces of the member, and a stationary cutter fixed in the upper section and having internal teeth.

3. In a comminuting unit, a housing having an upper and a lower section, a stator in said sections, said upper section having an annular recess opening through its bottom, a rotor in said recess, a hub rotatably mounted in the lower section and fixed to the rotor, said sections and hub having a central longitudinal passage, a shaft fixed to the hub and extending upwardly in the passage and rotatably mounted in the upper section, a flat, eccentric feed disc at the upper end of the shaft and having blades on its upper face at its periphery, an internally toothed ring surrounding said feed disc and fixed to the upper section, and means to secure the sections together.

References Cited in the file of this patent

UNITED STATES PATENTS

1,670,714	Craig	May 22, 1928
1,687,886	Philipp	Oct. 16, 1928
1,733,683	Crowe	Oct. 29, 1929
1,750,573	Crowe	Mar. 11, 1930
2,038,852	Pasman	Apr. 28, 1936
2,133,756	Rodgers	Oct. 18, 1938
2,220,729	Powers	Nov. 5, 1940
2,225,171	Hammes	Dec. 17, 1940
2,278,566	Schaible	Apr. 7, 1942
2,322,058	Powers	June 15, 1943
2,484,459	Osborn	Oct. 11, 1949
2,495,983	Richards	Jan. 31, 1950
2,562,736	Powers	July 31, 1951