Aug. 26, 1947. O. J. FEIGHT 2,426,346

COMPARTMENTED SAFETY TYPE FEED UNIT FOR GRINDERS

Original Filed June 2, 1942 3 Sheets-Sheet 1

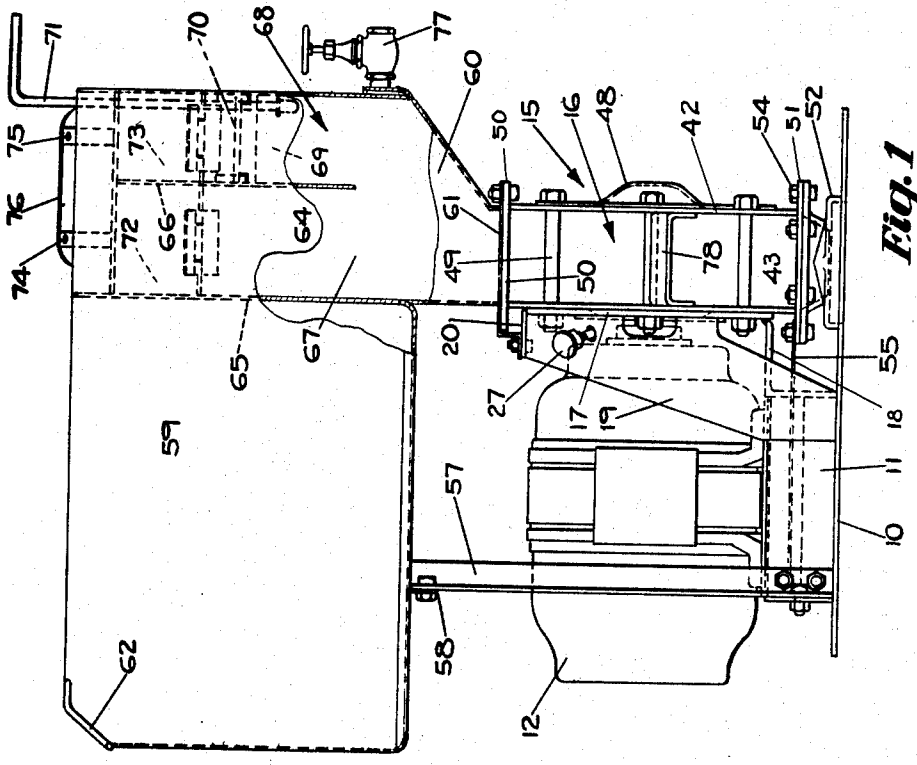


Fig. 1

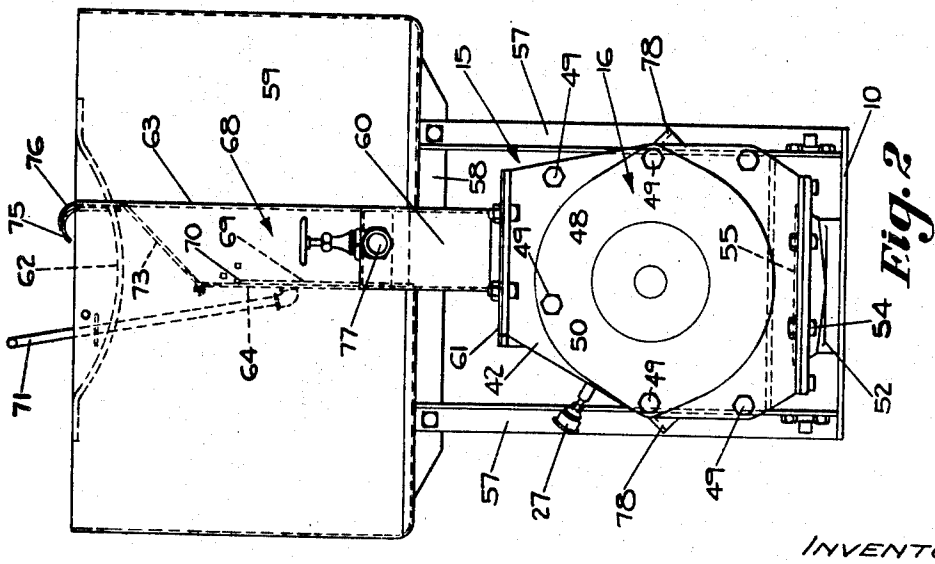


Fig. 2

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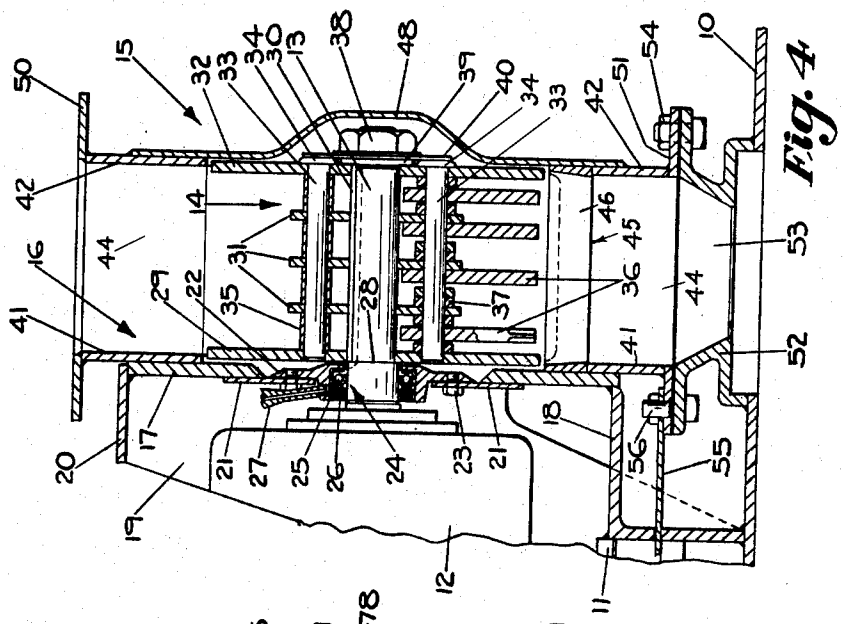


Fig. 4

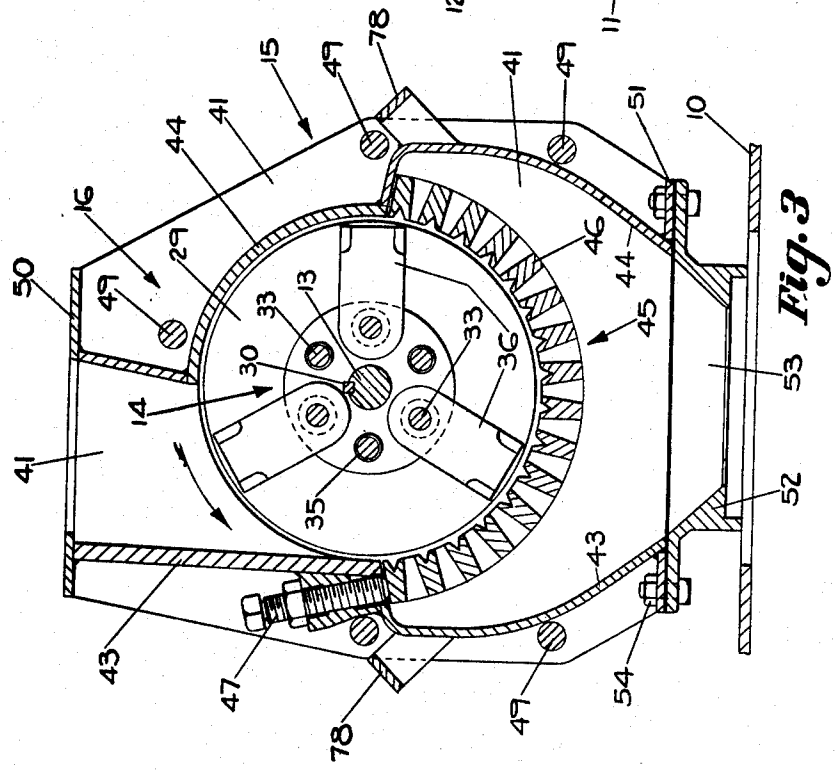


Fig. 3

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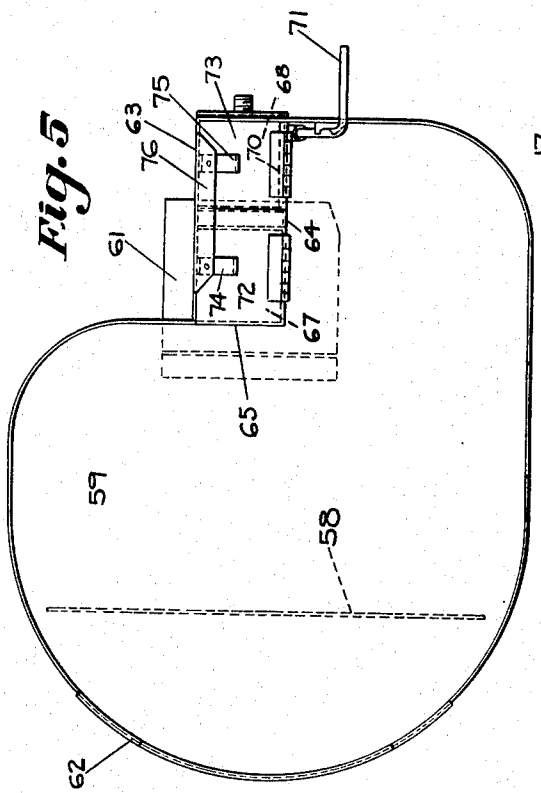


Fig. 5

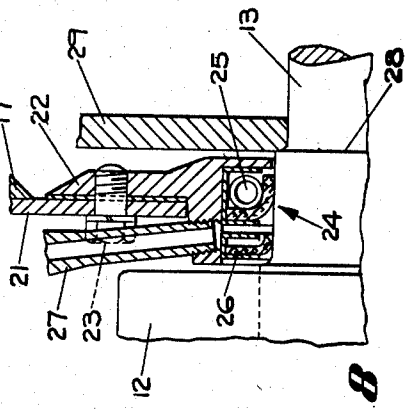


Fig. 8

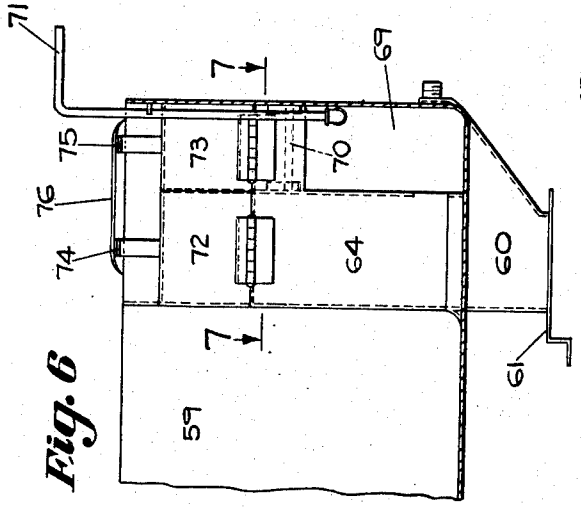


Fig. 6

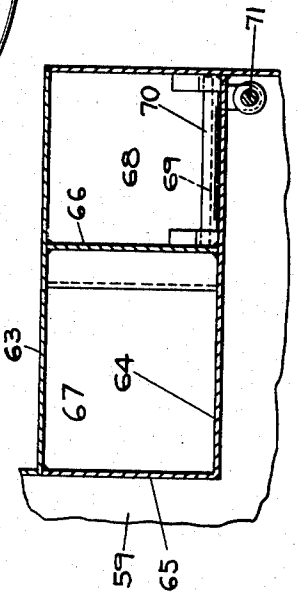


Fig. 7

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Patented Aug. 26, 1947

2,426,346

UNITED STATES PATENT OFFICE

2,426,346

COMPARTMENTED SAFETY TYPE FEED UNIT FOR GRINDERS

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Original application June 2, 1942, Serial No. 445,433. Divided and this application December 7, 1943, Serial No. 513,250

2 Claims. (Cl. 241—186)

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This invention relates to a grinder and more particularly to a garbage grinder.

An object of the invention is to provide a garbage grinder having an improved receptacle for receiving unground garbage which receptacle includes a plurality of interconnected compartments that are positioned above the bottom of the receptacle and one of which is offset laterally with respect to the outlet of the receptacle or the inlet of the grinder and into which unground garbage may be raked or shoved from the floor of the receptacle and mixed with water whereupon it follows a tortuous path to the grinder, a function of the chambers being to prevent an operator from getting his hand into the path of the grinding mechanism.

In carrying out the foregoing object it is another object of the invention to provide an improved garbage grinder in which the feed chambers and grinding mechanism may be cleaned after use with facility from the tops of the feed chambers.

Other objects of the invention will appear hereinafter, the novel features and combinations being set forth in the appended claims.

In the accompanying drawings,

Fig. 1 is a side elevational view of the grinder comprising my invention, parts thereof being broken away to show the internal structure of the feed compartments thereof.

Fig. 2 is an end view adjacent the grinder end of the device of Fig. 1;

Fig. 3 is an enlarged transverse sectional view through the grinder with the feed chute removed;

Fig. 4 is a sectional view through the axis of the rotor of the grinder;

Fig. 5 is a plan view of the garbage receptacle;

Fig. 6 is a vertical sectional view of one end of said garbage receptacle;

Fig. 7 is a sectional view taken on the line 7—7 of Fig. 6, looking in the direction of the arrows; and

Fig. 8 is an enlarged view of certain parts showing particularly the seal between the rotor and one wall of the grinder casing.

This application is filed as a division of my co-pending application, Serial No. 445,433, filed June 2, 1942, for an improvement in a grinder, now Patent No. 2,379,957, dated July 10, 1945.

The grinder of my invention is constructed particularly for the grinding of garbage and one of the particular uses to which it has been put is the grinding of garbage on war ships, though its use may obviously be extended to other fields, for

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example, it may be used on any kind of ship or in hotels or restaurants.

The grinder comprises a base 10, having as an integral part thereof a standard 11, upon which is mounted an electric motor 12. The motor 12 has the usual rotor including a shaft which is mounted upon bearings at opposite ends of the housing of motor 12, which shaft is provided with an extension 13, which extension constitutes the rotor shaft of a rotor 14 of grinding mechanism 15. The grinding mechanism 15 also includes a housing or casing 16. Said housing or casing 16 includes a side wall or plate 17 the bottom of which is welded to an angle member 18, which angle member 18 is a part of the standard 11 and extends transversely across the base 10, the bottom of said angle member 18 being welded to said base 10. Welded to the side plate 17 and forming a reinforcing support therefor is a bracket 19 having legs on opposite sides of one end of the motor 12, which legs extend downwardly adjacent the ends of the angle member 18 and are rigidly attached to said angle member 18 and to the base 10 as by welding. The top of the bracket 19 includes a transversely extending cross piece 20. It is thus seen that the side plate 17 is rigidly and permanently attached to the base 10 particularly by means of the bracket 19 and angle member 18. Said plate 17 is provided with a central hole which is closed in part by a disc 21 which in effect forms a part of the plate 17 as it is preferably rigidly attached thereto as by welding. The disc 21 is also provided with a central opening through which the shaft extension 13 extends.

It is extremely desirable to provide a liquid or water tight seal between the plate 17 or any extension thereof, or, in other words, between the wall of the housing or casing 16 adjacent the motor 12, and the shaft 13. To this end I provide a cupped bushing 22 having a flanged portion on the inside of the disc 21 which bushing 22 is removably attached to said disc 21 as by machine screws 23 extending through the disc 21 and threaded into the flange of the bushing 22. The bushing 22 has a central opening slightly larger than the adjacent portion of the shaft 13 thereby permitting said shaft 13 to extend freely therethrough. The cupped shaped portion of the bushing 22 is preferably provided with a seal 24 which may be formed of a U-shaped annulus in which is provided an annular ring of composition material, leather or the like, around which is a spring 25 which maintains a portion of the composition ring in wiping contact with the adjacent

portion of the shaft 13. This particular type of seal per se is well known in the art. In addition, the left hand portion of the cupped part of bushing 22 is also preferably provided with a seal 26 formed by a U-shaped annulus in which is mounted packing of leather or composition material in wiping contact with the shaft 13. This type of packing is also per se well known in the art. However, the provision of the water tight seal between the shaft 13 and the wall or plate 17 above described is believed to be new with me. To insure further effectiveness of the seal provided between the bushing 22 and the adjacent portion of the shaft 13, in which the bushing 22 may be considered as a part of the plate 17, I also provide a grease fitting 27 by which grease is supplied to the seal. This grease, of course, not only perfects the seal but also lubricates it to maintain minimum of friction between said seal and shaft 13.

Before describing the rest of the housing or casing 16 I shall now describe the structure of the rotor 14. The shaft 13 is provided with a shoulder 28 adjacent the bushing 22 against which shoulder 28 and upon which shaft 13 is pressed a rotor end disc 29, said disc 29 being held in place by a key 30. Also pressed upon the shaft 13 and held against rotation by the key 30 is a plurality of spaced discs 31. Adjacent the right hand end of the shaft 13 is a second end disc 32. Extending between two end discs 29 and 32 and through appropriate openings in the discs 31 and 32 and into the disc 29 is a plurality of pins 33. The pins 33 are provided with heads 34 which abut against the outside surface of the end disc 32. The opposite ends of the pins 33 extend into bores in the end disc 29 but preferably do not extend entirely through said end disc 29. Surrounding each of the pins 33 and between the discs 29, 31 and 32 is a plurality of sleeves 35 which are only provided on alternate pins 33. Said sleeves 35 act as spacers to maintain each of the discs 29, 31 and 32 in proper relation when the rotor 14 is clamped together as hereinafter described.

On the other alternate pins 33 from those carrying sleeves 35 I provide swing hammers 36 which are provided with sharp leading and trailing edges adjacent their outer ends whereby they may be reversed when their leading or working edges become dull. The swing hammers 36 are held in proper spaced relation between the discs 29, 31 and 32 by means of spacers 37 on the associated pins 33.

The free or outer end of the shaft 13 is threaded and receives a clamping nut 38 which cooperates with a disc spacer 39 adapted to clamp against the end disc 32 and also against a pin holding plate 40 which has a larger diameter than spacer 39 and extends over the heads 34 of the pins 33. When nut 38 is tightened, pressure will be applied to the end disc 32 and to the pins 33 and thereby clamp all of the parts of the rotor 14, except the swing hammers 36, rigidly together since the end disc 29 is held against the shoulder 28 on the shaft 13. It is thus to be seen that I have provided a simple rotor structure and one which may be readily assembled on the shaft extension 13. It is furthermore to be particularly noted that this rotor 14 of the grinding mechanism 15 is supported only by the bearings of the electric motor 12 and thus the grinder mechanism 15 per se does not have any bearings. This, of course, makes for overall reduction in the cost of the complete mechanism.

I shall now describe the remaining structure of the housing or casing 16. It may be stated that the remaining structure of the housing or casing in addition to that above described is substantially entirely removable as a unit and this removal can be effected with the rotor 14 completely assembled, thus providing ready access to the rotor 14 while it remains in its completely assembled position. This characteristic is also extremely desirable in connection with the original assembling of the rotor 14. Forming in effect a part of the aforedescribed wall or plate 17 in the completed housing or casing 16, though structurally removably attached thereto, I provide a housing end plate 41. Spaced from the end plate 41 is a second housing end plate 42. The end plates 41 and 42 are essentially of the same construction. Along the general central axis of the plates 41 and 42 they are provided with enlarged openings into which the end discs 29 and 32 of the rotor 14 extend, as clearly illustrated in Fig. 4 of the drawings. The rest of the housing 16 is formed by a pair of curved plates 43 and 44 which extend between the end plates 41 and 42 and form opposite sides or walls of said casing 16, said curved plates 43 and 44 being in fact built up of two or more plates which are preferably rigidly and permanently attached together as by welding, all as clearly illustrated in Fig. 3 of the drawings. It may be pointed out that the top portions of the two plates 43 and 44 form a maw or feed inlet leading to the cylindrical reducing chamber of the grinder in which the rotor 14 rotates and the top of the left hand plate portion 43 of this maw is preferably made of relatively heavy material as illustrated in Fig. 3 of the drawings, since it acts somewhat in the nature of a breaker plate and receives material which is thrown against it by the action of the rotor 14 when in operation. The bottom portion of the reducing chamber within the housing or casing 16 includes a screen 45 which is preferably formed by a plurality of transversely extending screen bars 46 which have end spacers attached, as by welding. The screen 45 is removably clamped in place on opposite ledges formed in end plates 41 and 42 by clamp screws 47.

The central opening in the end plate 42 is closed by removable plate 48 which has a central bulge adjacent the nut 38 to provide for free rotation thereof.

To clamp the parts of the casing 16 together and particularly to clamp them to the plate 17 which is above described as permanently attached to the base 10, I provide a plurality of bolts 49 which are provided with appropriate nuts and which extend through the end plates 41 and 42 and also through the end plate 17. Some of these bolts 49 also extend through the plate 48 and thus removably hold it in position. This is clearly illustrated in Fig. 2 of the drawings. It is evident that by removing those bolts 49 which extend through the plate 48 said plate 48 may be removed while the remainder of the housing 16 is maintained in position.

Adjacent the top of the maw or feed inlet, the housing 16 is provided with a generally circular top plate 50 which is welded to the end plates 41 and 42 and to the curved plates 43 and 44, thus permanently attaching them together. A similar plate 51 is likewise welded to the plates 41, 42, 43 and 44 adjacent the bottom of the housing 16 where the discharge opening for the reduced material which passes through the

screen 45 is provided. The plate 51 rests upon a bottom member 52 which is preferably welded to the base 10 and above an opening therein, said bottom member 52 being provided with a discharge opening 53 which constitutes an extension of the lower portion of the casing 16 and through which opening 53 reduced garbage is discharged. The plate 51 is preferably removably attached to a flange of the bottom member 52 by means of a plurality of nuts and bolts 54. It is evident that by removing the nuts and bolts 54 and the bolts 49 the entire housing 16 may be removed as a unit save only for the side wall 17 and parts rigidly connected thereto, as above described, and this removal may be effected with the rotor 14 intact simply by grasping handles 78 and sliding said casing 16 to the right, as seen in Figs. 1 and 4 of the drawings.

When this is done it is desirable to cover the opening 53 particularly if these grinders are employed on ships because tools or parts may fall through the opening 53 and be discharged into the water and thus lost. To this end I provide a plate 55 (see Figs. 1, 2 and 4) which is loosely held by one or more pins 56 adjacent one edge of the disc 51 and as the housing 16 is moved laterally, the plate 55 extends over the opening 53. If it is desired, the plate 55 may be removed from the attaching pin 56 and clamped to the flange of the bottom member 52 to close the opening. The plate 55 extends through a slot in the angle member 18, as clearly illustrated in Figs. 1 and 4 of the drawings, and is normally positioned under the motor 12 and inside the standard 11.

Attention is now directed to Figs. 1 and 2 of the drawings and to the construction of the garbage receptacle and the feed chutes or passageways by which the garbage is fed into the maw or throat of the grinder housing 16. Extending upwardly from the base 10 and rigidly attached to the standard 11 is a pair of legs 57 formed of angle members. Across the top of the legs 57 is a supporting bar 58. Mounted upon the legs 57 and the bar 58 is a receptacle in the form of a pan or tray 59 adapted to receive the garbage which is to be ground by the grinding mechanism 15. Additional support for the receptacle 59 is provided by a throat 60 which extends downwardly from the bottom of the pan or tray and which is provided with an integral attaching flange 61 which is bolted in part to the previously described plate 50 of housing 16 and in part to the crosspiece 20 of the bracket 19, as clearly illustrated in Fig. 1 of the drawings. The upper edge of the left hand portion of the receptacle 59, as viewed in Fig. 1 of the drawings, is provided with a curved reinforcing rod 62 which provides a supporting ledge to support containers, such as garbage cans, used to feed garbage to the receptacle 59. Adjacent the other end, the receptacle is made of reduced width by virtue of an inwardly positioned feed chute wall 63 (see Figs. 2 and 5) which is spaced inwardly from the right hand side wall of the receptacle 59, as viewed in Fig. 2 of the drawings, and in practice forms a continuation of said right hand side wall. In other words, the garbage within the receptacle 59 is moved along a path generally below the center line thereof and to a position adjacent the right hand end thereof, as viewed in Fig. 5 of the drawings, where it is delivered to a feed chute which I shall now describe.

Positioned to the left of the wall 63, (as viewed in Fig. 2) is a wall 64 which extends to a transversely extending wall 65. Parallel with the transversely extending wall 65 is a partition 66. Thus I provide two chutes or compartments 67 and 68 both of which are open at the bottom and lead to the aforedescribed throat 60. By reference to Fig. 1 of the drawings it will be seen that the partition 66 terminates above the bottom of the receptacle 59. The bottom portion of the wall 64 to the right of the partition 66, as viewed in Fig. 1, or in other words adjacent the compartment 68, is opened and is provided with a swinging gate 69 hinged at 70 to said wall 64, the gate 69 being positioned inside the wall 64 so the bottom thereof will swing inwardly under the control of the handle 71 which is rigidly attached to said gate 69 and when operated will swing it about the hinge 70 with the bottom thereof swinging inwardly to the chute or compartment 68. It is through this opening which is controlled by the gate 69 that the garbage is fed to the throat 60 and thus to the grinding mechanism 15. It is to be particularly noted that the feed inlet or receiving opening in the bottom of the chute or compartment 68 is not directly above the maw or throat of the grinding mechanism 15 but is spaced laterally therefrom and consequently if the operator uses his hands to force the garbage into the chute or compartment 68 it would not be possible for him to extend his hands down into the grinding mechanism 15 sufficiently to get them injured by the rotor 14 when it is in operation. This is a safety feature of considerable practical importance. The tops of the two chutes or compartments 67 and 68 have separate hinged sloping lids 72 and 73, respectively, and each of these lids 72 and 73 is provided with an operative handle, that for 72 being seen at 74 and that for 73 being seen at 75. The handles 74 and 75 preferably are provided with holes cooperating with a curved extension 76 formed on the wall 63 which provides for locking the lids 72 and 73 in closed position, as by a padlock. These lids 72 and 73 when unlocked may swing to opening position to permit the application of water to the chutes or compartments 67 and 68 to clean them out and also to clean out the entire interior of the housing or casing 16 as well as the throat 60 leading thereto. It is, of course, evident that the chute 67 when its lid 72 is open permits straight line and direct action into the interior of said casing or housing 16. Also leading to the compartment 68 is a water supply including a control valve 77 whereby a continuous supply of water may be delivered to the interior of the grinding mechanism 15 to assist in the grinding operation, the rate of flow being controlled by said valve 77.

In the operation of the device the garbage to be disposed of will be dumped into the receptacle 59 and pushed by a rake into the chute or compartment 68 while the gate 69 is swung inwardly. A continuous stream of water will flow under the control of valve 77 to said chute or compartment 68 and with the garbage through the throat 60 into the maw or throat of the grinding mechanism 15. The electric motor 12 will, of course, rotate the rotor 14 of the grinding mechanism 15 and will very effectively cooperate with the screen 45 to reduce the garbage to a very fine condition where it can be readily disposed of as, for example, by being delivered to sea water where it will sink without leaving trace of the ship. The grinding action will, of course, be carried on by the swing hammers 36 in cooper-

ation with the screen 45. After the grinder has been in use and it is desired to clean it out, the doors 72 and 73 will be swung open and the compartments 67 and 68 washed out along with the interior of the grinder housing 16 and the throat 60.

Obviously those skilled in the art may make various changes in the details and arrangement of parts without departing from the spirit and scope of the invention as defined by the claims hereto appended, and I wish therefore not to be restricted to the precise construction herein disclosed.

Having thus described and shown an embodiment of my invention, what I now desire to secure by Letters Patent of the United States is:

1. A garbage grinder comprising a housing having a feed inlet, grinding mechanism in said housing, a pan above said housing, a throat connecting said pan and feed inlet, said pan and throat being adapted for receiving and directing garbage to said grinder mechanism, said pan including upright walls forming a pair of adjacent open bottomed interconnected compartments extending upwardly from the bottom thereof and both communicating with said throat, one of said compartments being off-set laterally with respect to said housing grinder feed inlet and a vertical wall thereof forming a feed receiving opening extending upwardly from the bottom of said pan, a pivoted controllable closure means for said opening, and closure means for closing the tops of said compartments; whereby a person feeding garbage to said grinder through said upwardly extending feed receiving opening and said laterally off-set compartment cannot extend his hand through said throat into the path of said grinding mechanism and said last named closure means may be opened to facilitate cleaning of said chambers, throat and grinding mechanism.

2. A feed unit adapted for use with a reducing mechanism including a pan, a throat having an outlet and depending from said pan, upright walls associated with said pan forming adjacent open ended upwardly extending compartments interconnected adjacent their bottoms and above the bottom of said pan and communicating with said throat, one of said compartments being laterally off-set with respect to the outlet of said throat and having an upright wall thereof forming a feed opening extending upwardly from the bottom of said pan, a pivoted closure means for said opening, a handle for controlling said closure means, and operable closure means for closing the tops of said compartments whereby said last named closure means may be opened to facilitate cleaning of said chambers and throat through their upper ends.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,968,515	Coble et al.	July 31, 1934
2,105,759	Stevenson	Jan. 18, 1938
2,339,961	Stevenson	Jan. 25, 1944
1,965,033	Dillon	July 3, 1934
2,141,662	Ossing	Dec. 27, 1938
1,821,344	Kautzman	Sept. 1, 1931

FOREIGN PATENTS

Number	Country	Date
274,335	Great Britain	July 21, 1927
241,693	Germany	Dec. 11, 1911
421,884	Germany	Nov. 21, 1925