

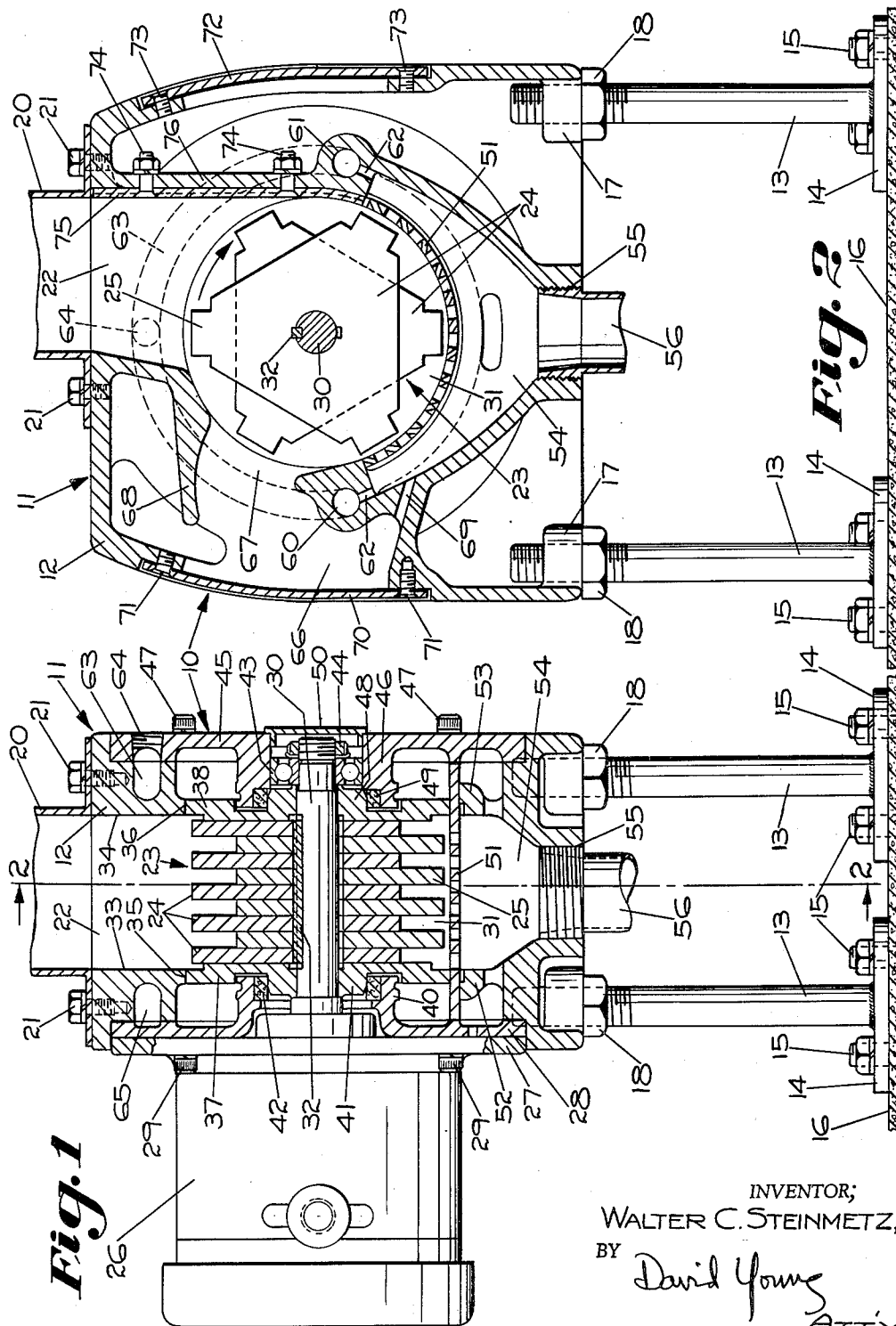
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MATERIALS REDUCING APPARATUS

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MATERIALS REDUCING APPARATUS

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This instant invention relates to an improved materials reducing apparatus, and more particularly to such an apparatus for the reduction and disposal of garbage, such as table and kitchen scraps, and the like.

It is a prime object of the instant invention to provide an improved materials reducing apparatus for the reduction and disposal of garbage, and like materials.

It is another object of the instant invention to provide an improved materials reducing apparatus of compact design for the reduction and disposal of garbage, and like materials, which is particularly adapted for installation in small kitchens to handle the garbage wastes produced therein.

It is a further object of the instant invention to provide an improved materials reducing apparatus, in which the materials are acted upon and reduced by a rotor comprising a plurality of rotor plates, each of which is formed with a substantially triangular configuration, and having an integral hammer at each apex.

It is also an object of the instant invention to provide an improved materials reducing apparatus having a rotor for reduction of the materials, with the rotor being mounted on the motor shaft of a motor that is secured to a cover for one side of the apparatus housing, to provide an assembly including the rotor and the motor that may be removed as such from the apparatus housing.

It is still another object of the instant invention to provide an improved materials reducing apparatus having a chamber for the reception of the reduced product, and including water injecting means directed into the chamber for washing the product out of the chamber.

It is yet another object of the instant invention to provide an improved materials reducing apparatus having a chamber for the reception of the reduced product and a wash water manifold integrally formed in the apparatus housing with nozzles directed into the chamber for injecting wash water therein for washing the product out of the chamber.

It is still a further object of the instant invention to provide an improved materials reducing apparatus in which the motor for driving the apparatus is mounted on a cover plate for one side of the apparatus housing, and said cover plate is interchangeable with a cover plate for the other side of the apparatus housing, to permit the motor to be mounted on either side of the materials reducing apparatus.

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 vertical sectional view of the materials reducing apparatus of the instant invention; and

FIG. 2 is a vertical sectional view of the materials reducing apparatus, taken on the line 2-2 in FIG. 1.

Referring to the drawings, there is illustrated therein a materials reducing apparatus 10, constructed in accordance with the instant invention and having a housing 11 which comprises a main housing casting 12. The materials reducing apparatus 10 is supported on four legs 13, disposed one at each corner of the main housing casting 12, and each may be formed of a pipe, or the like having a mounting flange 14 secured to the bottom of each leg 13, as by welding. The materials reducing apparatus 10 is preferably anchored to a suitable sup-

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porting base 16, by means of a plurality of bolts 15 set in the base 16 and passing through the flanges 14. The upper ends of the legs 13 are formed with threads, and are threaded into integral projections 17, one of which is provided at each corner of the main housing casting 12. Each of the projections 17 is formed with a threaded opening for the reception of the threaded end of a leg 13, to permit adjustment of the height of the materials reducing apparatus 10 and also to permit leveling thereof. Following adjustment of the legs 13 in the several projections 17, the legs 13 are secured in position by nuts 18 which are turned up to bear against the underside of the projections 17, thereby locking the legs 13 in position relatively to the main housing casting 12.

A suitable hopper 20 is secured to the top of the main housing casting 12 by a plurality of bolts 21. The hopper 20 may be incorporated in a table, and is of such size and height as to be easily accessible for the reception of the waste materials to be delivered to the materials reducing apparatus 10. Immediately below the hopper 20 there is provided a feed chamber 22 in the main housing casting 12, from which the materials are fed to a materials reducing rotor 23, to be acted upon and reduced by the latter in the materials reducing chamber 31. The materials reducing rotor 23 is formed of a plurality of like rotor plates 24, each of which has an equilateral triangular configuration, as seen in FIG. 2. At each apex of a rotor plate 24 there is formed a hammer 25, which is integral with the rotor plate 24. The rotor plates 24 may be formed from suitable plate material, which is sheared to the equilateral triangular configuration, and the hammers 25 may then be formed by a machining operation, followed by a suitable hardening process for strengthening the hammers 25. The several rotor plates 24 are assembled in abutting relationship, with the adjacent rotor plates being rotated through 180° relatively to each other, whereby the hammers 25 of adjacent rotor plates 24 are disposed in circumferentially staggered disposition.

The materials reducing rotor 23 is rotated by a suitable motor 26 which includes a motor mounting plate 27. The motor mounting plate 27 is placed against a side cover 28 for the main housing casting 12, and both the motor mounting plate 27 and the side cover 28 are secured to the main housing casting 12 by a plurality of bolts 29, whereby the motor 26 is mounted at one side of the housing 11.

The motor 26 has a motor shaft 30 which extends into the main housing casting 12, through the materials reducing chamber 31. The several rotor plates 24 are fixedly secured to the motor shaft 30 by a key 32, whereby the rotor 23 is rotated by the motor shaft 30.

The main housing casting 12 includes opposite side walls 33, 34, which define the lateral limits of the materials reducing chamber 31. A circular opening 35, 36 concentric with the rotor 23, is formed in the side walls 33, 34, respectively. At the opposite ends of the rotor 23 there are provided end discs 37, 38 which are disposed within the circular openings 35, 36, respectively. The end disc 37 is assembled on the end of the motor shaft 30 nearest the motor 26. The rotor plates 24 are then assembled on the motor shaft 30 in abutting relation to each other and to the end disc 37. The end disc 38 is assembled on the outer end of the motor shaft 30, abutting the last rotor plate 24. The rotor 23, including the end discs 37, 38, forms a single assembly with the side cover 28 and the motor 26, which assembly may be withdrawn from the main housing casting 12 as a single unit through the circular opening 35 of the side wall 33, and similarly, the assembly may be secured to the main housing casting 12 as a single unit.

The side cover 28 is formed with a hub 40 which extends over the hub 41 of the end disc 37. Suitable packing 42, or other sealing device, is placed between the hubs 40, 41 to seal this area and to prevent any moisture from reaching the motor bearings. At the other side of the rotor 23, a bearing 43 is fitted on the end of the motor shaft 30, abutting the end disc 38. The bearing 43 is held on the end of the motor shaft 30 by a nut 44 that is threaded on the shaft 30. A side cover 45 closes the side of the main housing casting 12 and is formed with a hub 46 within which the bearing 43 is received to rotatably support the outer end of the motor shaft 30 and the materials reducing rotor 23 on the side cover 45, the latter being secured to the main housing casting 12 by a plurality of bolts 47. The hub 46 of the side cover 45 extends inwardly over the hub 48 of the end disc 38, and suitable packing 49, or other suitable sealing device, is placed between the hubs 46, 48 to seal this area to prevent any moisture from reaching the bearing 43. A removable cap 50 inserted into the hub 46 of the side cover 45 and seals the outer end of the motor shaft 30 in the hub 46.

A perforated screen 51 is supported in the main housing casting 12 on arcuate seats 52, 53 formed at the opposite sides of the main housing casting 12. The screen 51 is disposed concentrically with the rotor 23 and is of such width as to extend between the side covers 28, 45, the latter abutting the side edges of the screen 51 and acting to retain the screen 51 in place on the seats 52, 53.

Below the perforated screen 51 there is formed a reduced product chamber 54 which has an inverted bell shape, as best seen in FIG. 2. The reduced materials are discharged from the materials reducing chamber 31 into the product chamber 54 through the perforated screen 51, the latter acting to control the size of the product. The bottom of the product chamber 54 has a threaded discharge opening 55, into which there may be threaded a suitable pipe 56 for leading the reduced product away from the materials reducing apparatus 10.

Within the main housing casting 12 there are formed integral water manifolds 60, 61 disposed at the opposite ends of the reduced product chamber 54, beyond the ends of the perforated screen 51. A plurality of water nozzles 62 are connected to each water manifold 60, 61 and directed downwardly therefrom into the reduced product chamber 54, along the walls thereof. Water is delivered to water manifolds 60, 61 by a water duct 63, which is also integrally formed in the main housing casting 12, at one side thereof, as best seen in FIG. 1. The water duct 63 extends in an arcuate path around the rotor 23 and is disposed concentrically therewith.

Opposite ends of the water duct 63 are connected to the water manifolds 60, 61 to deliver wash water to the latter. The water duct 63 is formed in part in the main housing casting 12 and in part in the side cover 45, the water duct 63 being open in the side of the main housing casting 12 and the side cover 45 serving to close the water duct 63. The side cover 45 includes a threaded opening 64 connected to the water duct 63, and permitting the connection of an external source of water to the threaded opening 64 for supplying water through the water duct 63 to the water manifolds 60, 61. The water discharges from the water manifolds 60, 61 through the water nozzles 62, and serves to wash the reduced product through the product chamber 54 and out through the pipe 56.

The side covers 28, 45 are interchangeable to permit either to be secured to either side of the main housing casting 12. Thus the motor 26 may be mounted on the main housing casting 12 at the right side thereof as viewed in FIG. 1, in which event the rotor 23 is placed in the materials reducing chamber 31 through the circular opening 36 in the side wall 34. At the left side of the main housing casting 12, as viewed in FIG. 1, there is formed an alternate water duct 65 which may be utilized for supplying water to the water manifolds 60, 61 when the side

cover 45 is secured to the left side of the main housing casting 12.

At the rear of the materials reducing apparatus 10 there is formed a metal trap 66 for the reception of metal articles, and the like, which may inadvertently be fed into the materials reducing apparatus 10. Above the opening 67, which leads to the metal trap 66, there is a deflector plate 68 integrally formed in the main housing casting 12, against which the metal articles are impelled by the rotor 23, and the deflector plate 68 serves to deflect the metal articles into the metal trap 66. At the bottom of the metal trap 66 there are a plurality of drainage openings 69 integrally formed in the main housing casting 12, to permit any water that may splash into the metal trap 66 to drain from the metal trap 66. A cover plate 70 is secured to the rear of the main housing casting 12 by a plurality of bolts 71 and may be removed to provide access to the metal trap 66, for removing accumulated material therefrom.

At the front of the main housing casting 12 there is provided a cover plate 72, which is secured to the main housing casting 12 by a plurality of bolts 73 to permit removal of the cover plate 72 and providing access to the bolts 74, which secure a breaker plate 75 in place in the main housing casting 12 on the upright integral wall 76 thereof.

The materials reducing apparatus, which is described herein, is particularly suited to the reduction of garbage, such as the remains of meals and kitchen remains, which are delivered to the materials reducing apparatus through the hopper at the top thereof, simply by dumping this material into the hopper. The waste materials may be washed down through the hopper by water provided through any suitable pipe connection. The materials are delivered into the feed chamber of the apparatus, whence they are fed to the materials reducing chamber, in which they are acted upon by the rotor, which reduces the materials and discharges the reduced product through the perforated screen to the product chamber. The products which may have a tendency to cling to the surfaces of the product chamber, are washed through the latter by water supplied to the product chamber from water manifolds disposed at opposite ends of the product chamber. The materials reducing apparatus constructed in accordance with the instant invention provides a particularly compact and efficient apparatus, which is adaptable to use in kitchens, restaurants, and like small installations, for the reduction and disposal of garbage wastes.

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 applicant therefore wishes not to be restricted to the precise construction herein disclosed.

Having thus described and shown an embodiment of the invention, what it is desired to secure by Letters Patent of the United States is:

1. Materials reducing apparatus comprising a housing formed with a materials reducing chamber, a materials reducing rotor disposed within the materials reducing chamber, bearing means rotatably mounting the materials reducing rotor in the housing, a materials feed chamber connected to the materials reducing chamber for feed of materials to the materials reducing rotor to be acted upon and reduced by said rotor, said materials reducing rotor comprising a plurality of materials reducing hammers for reducing materials, a reduced product chamber below the materials reducing chamber to receive the reduced product, a screen disposed between the materials reducing chamber and the reduced product chamber to control the size of the reduced product discharged to the reduced product chamber, a wash water manifold at each end of the reduced product chamber integrally formed in the housing, a plurality of water nozzles connected to each water manifold and directed into the reduced product

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chamber for injecting water therein to wash the product out of the reduced product chamber, a water duct formed in an outer side of the housing and having its opposite ends each connected to a water manifold for supplying water to the water manifolds, said water duct being laterally open in the outer side of the housing, and a cover for the outer side of the housing closing the water duct in the outer side of the housing.

2. Materials reducing apparatus comprising a housing formed with a materials reducing chamber, a materials reducing rotor disposed within the materials reducing chamber, bearing means rotatably mounting the materials reducing rotor in the housing, a materials feed chamber connected to the materials reducing chamber for feed of materials to the materials reducing rotor to be acted upon and reduced by said rotor, said materials reducing rotor comprising a plurality of materials reducing hammers for reducing materials, a reduced product chamber below the materials reducing chamber to receive the reduced product, a screen disposed between the materials reducing chamber and the reduced product chamber to control the size of the reduced product discharged to the reduced product chamber, a wash water manifold at each end of

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the reduced product chamber integrally formed in the housing, a plurality of water nozzles connected to each water manifold and directed into the reduced product chamber for injecting water therein to wash the product out of the reduced product chamber, a water duct formed in the housing and having its opposite ends each connected to a water manifold for supplying water to the water manifolds, said water duct extending in an arcuate path at one side of the housing around the materials reducing rotor to connect to the water manifolds, and means for connecting a water source to the water duct.

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