April 10, 1951 C. L. DEMING 2,548,203

GARBAGE DISPOSAL ARRANGEMENT WITH IMPROVED FLUE ASSEMBLY

Filed Feb. 16, 1948 2 Sheets-Sheet 1

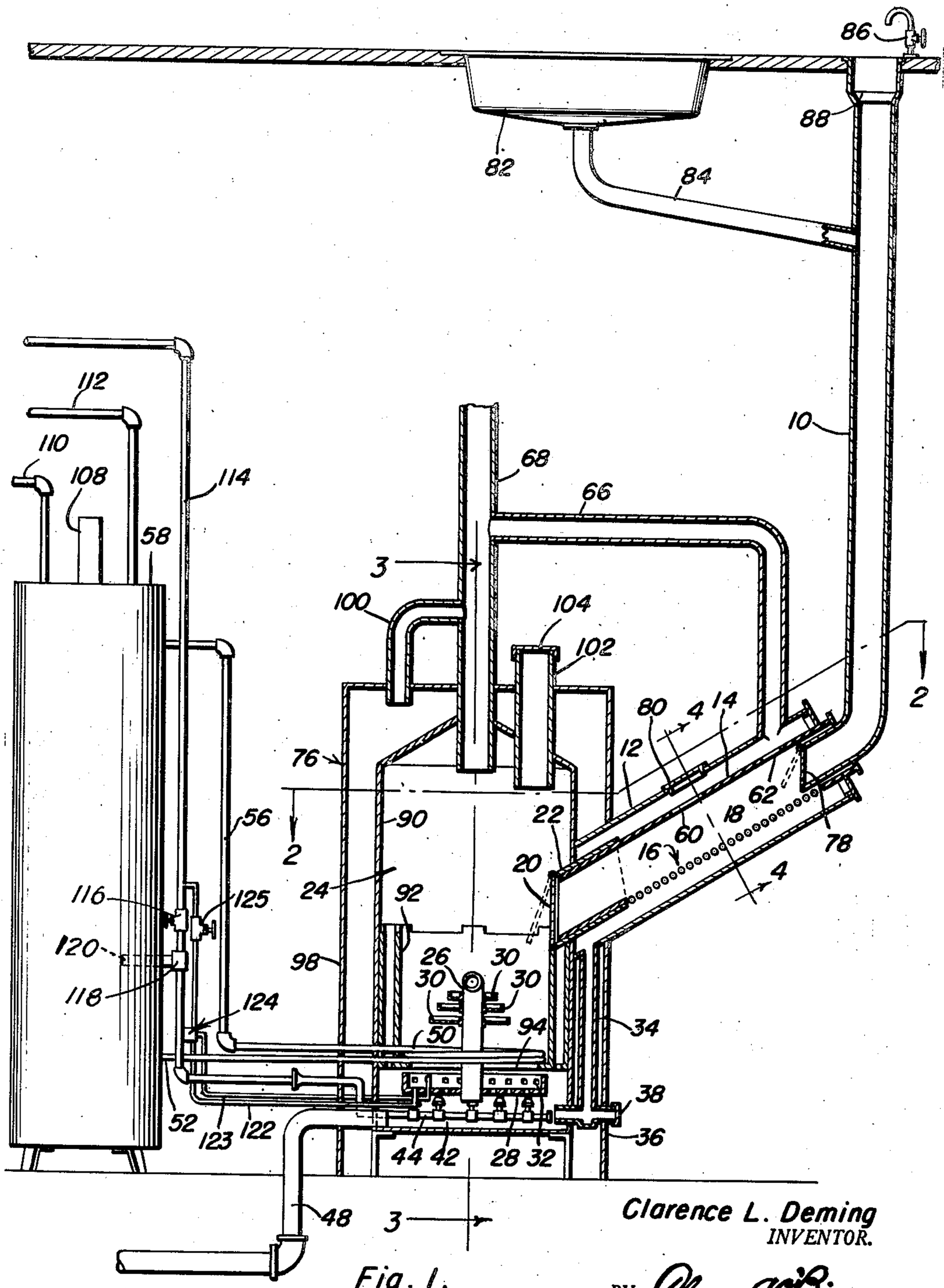

Fig. 1.

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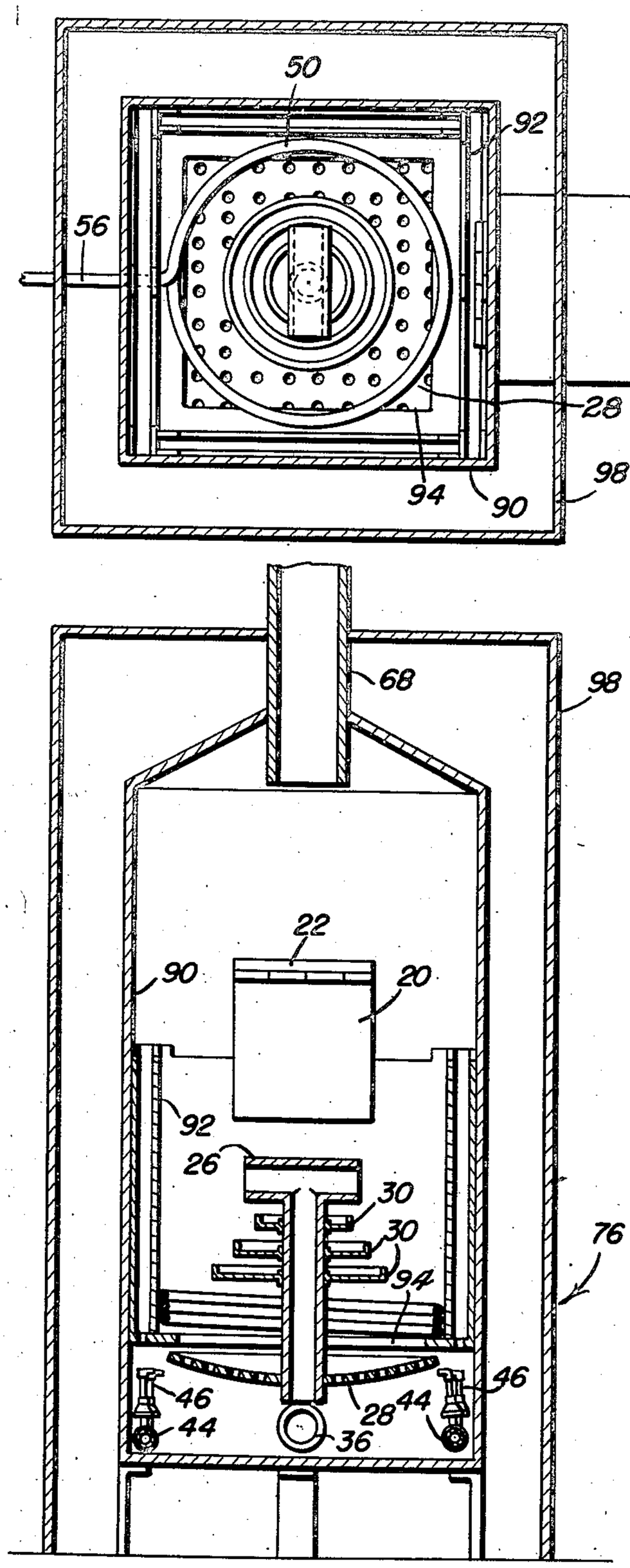
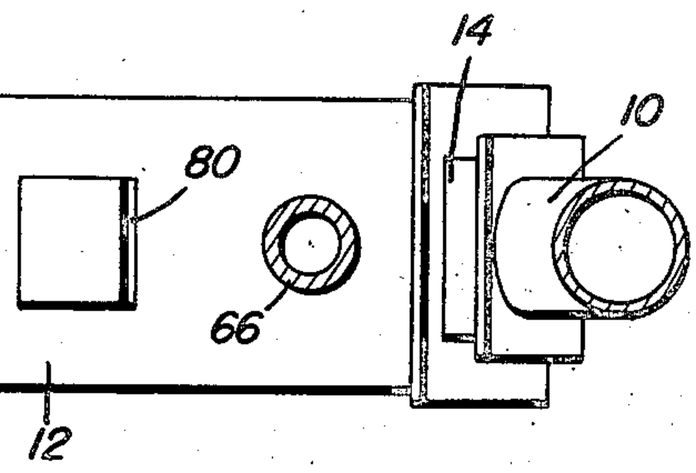


Fig. 3.

Fig. 2.



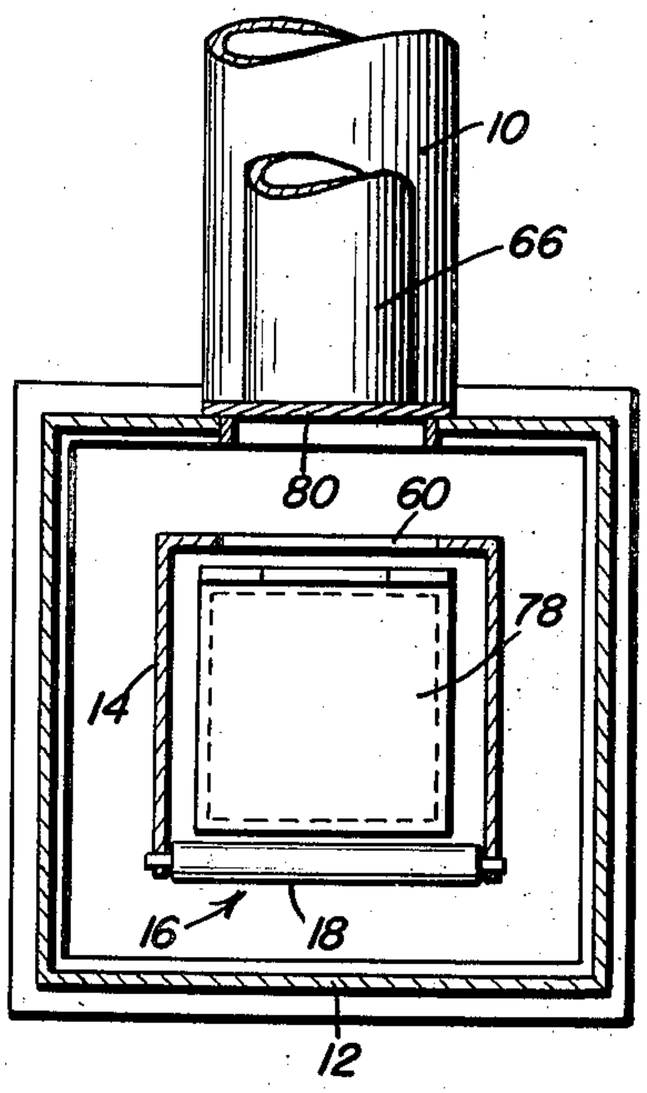


Fig. 4.

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UNITED STATES PATENT OFFICE

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GARBAGE DISPOSAL ARRANGEMENT WITH IMPROVED FLUE ASSEMBLY

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Application February 16, 1948, Serial No. 8,612

2 Claims. (Cl. 110—8)

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This invention appertains to a novel and useful process and apparatus for disposing of garbage.

An object of this invention is to conduct refuse and liquid to an oxidation zone, oxidize the refuse while in the said zone and separate the liquid from the refuse and exhaust the gases while oxidizing the refuse.

Another object of this invention is to conduct liquid and refuse to a separator, which extracts the liquid from the refuse, then to spread or separate the refuse prior to oxidation thereof, then mix the resulting ashes and previously separated liquid for subsequent disposal in a conventional sewer line.

Ancillary objects and features of novelty will become apparent to those skilled in the art, in following the description of the preferred form of the invention, illustrated in the accompanying drawings, wherein:

Figure 1 is a partially schematic and partially sectional view of the preferred form of the invention;

Figure 2 is a sectional view taken substantially on the line 2—2 of Figure 1 and in the direction of the arrows;

Figure 3 is a sectional view taken on the line 3—3 of Figure 1 and in the direction of the arrows, and;

Figure 4 is a sectional view taken on the line 4—4 of Figure 1.

This invention has been developed to provide a device for more efficaciously disposing of garbage or other refuse and simultaneously utilizing the heat of combustion in the disposal process for warming or heating liquid in a storage tank for various and sundry uses.

The preferred process for performing the heating of water and disposing of refuse is as follows:

Various types of refuse and liquid are conducted through a tube 10, then they enter a housing 14 having a sleeve 12 therearound. The said housing 14 is supplied with a roller-type separator 16 consisting of a plurality of spaced rollers 18 journalled in the said housing 14. By this means the refuse and liquid is separated, the liquid falling from the housing 14 through the space between the rollers 18. The refuse is of course conducted over the rollers due to the force or pull of gravity.

A gate valve 20 is attached to a suitable collar 22, which is in turn secured to the said housing 14. The refuse travels across the separator 16 and through the gate valve 20, the refuse urging the valve to the open position to permit the

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entry of the refuse into a fire box generally indicated at 24.

The refuse impinges upon a substantially T-shaped fitting 26 which extends through a grate 28. The said T fitting 26 has a plurality of arms or fingers 30 extending therefrom which are in reality baffles for spreading the refuse.

The said grate 28 is of a special configuration, as is readily apparent from correlation of Figures 1 and 3. The said grate has a substantially arcuate bottom with side walls 32 at the end thereof.

The liquid which has been deposited in the said sleeve 12 is conducted due to gravity through a conduit 34 which connects with a T fitting 36. The said T fitting has a closure 38 at one end thereof for use in cleansing purposes and the opposite end thereof is open and in communication with an ash pit 42. The said ash pit is at the bottom of the fire box 24 and is of course, beneath the said grate 28.

A gas manifold 44 extends through the said ash pit 42 and has a plurality of jets 46 extending therefrom. Any number of manifolds 44 may be supplied (see Figure 3) and of course, any suitable number of gas jets 46 may be utilized in association therewith. Due to the configuration of the said grate 28, the flame from the jets 46 may be directed so as to impinge upon a relatively large area thereof for large or high efficiency in heating and burning.

Of course, means for supplying gas to the manifold 44 is supplied however, the particular means is immaterial to the process. By the gas burning devices described herein, the refuse is burned and the ashes settle or fall through the ash pit 42. However, while the ashes are in the ash pit they come in direct communication with the water or other liquid issuing from the T fitting 36. A conventional sewage line 48 also extends within the ash pit 42 in order to receive fluid and ashes for subsequent disposal. While the refuse is being oxidized in the oxidation zone or fire box 24, certain of the heat therein is obviously excess heat. Therefore, a coil 50 is supplied in the said fire box 24 or oxidation zone having an inlet line 52 and an outlet line 56 extending therefrom. The said inlet line terminates in the lower portion of a conventional storage tank 58 while the said outlet line terminates adjacent the upper portion of the said tank 58. Of course, as the liquid, preferably water is introduced into the coil 50 through the inlet line 52, it is heated and is constantly rising to the upper portion of the said tank 58.

A further consideration in the process is the

exhausting of noxious gases. To this end a plurality of apertures 60 and 62 respectively are supplied in the said housing 14 for communicating the said housing with the bore of the said sleeve 12. Gases from the refuse will extend through these apertures through a conduit or pipe 66 which in turn terminates in a main flue 68. The said main flue also is in communication with the fire box 24 or oxidation zone for conducting flue gases therefrom. The structure of the furnace generally indicated at 76 defines various elements such as the oxidation zone.

A flap valve 78 is pivotally secured to the terminal portion of the said conduit 10 which is normally closed by gravity for the obvious purposes of preventing gases from issuing through the said pipe or conduit 10 in the undesired direction. Further, a clean out plug 80 may be supplied in the said sleeve 12 for the obvious purpose of lending access to the interior of the sleeve and also the interior of the said housing 14.

The structural features of the invention as well as portions of the process or method will be set forth more in detail at this time. A conventional sink seen at 82 is illustrated as being conventionally mounted. The usual outlet pipe 84 is associated therewith and communicates with the said tube or conduit 10. This construction is optional, since it is obvious that the conventional drain pipe 84 may be connected or operatively associated with the usual drain in an existing structure. Further, for convenience a faucet 86 may be positioned adjacent the ingress portion of the said conduit 10 and also, a bell trap 88 may be supplied in the said conduit 10.

The said furnace indicated generally at 76 is preferably composed of an inner housing 90 made of any suitable material having a further substantially rectangular smaller housing 92 secured therein. A relatively large aperture 94 is provided in the base of the said housing 92 and the upper portion of said housing 92 is completely open. The said grate 28 is positioned immediately beneath the said aperture 94.

The exterior of the said furnace is preferably an additional case 98 of any suitable material which is spaced from the said housing 90, thus providing an insulating air space. Of course, suitable apertures are provided in the case 98 and the housing 90 in order to accommodate the sleeve 12 and the said housing 14. Further, the said pipe or conduit 34 is preferably positioned in the aforementioned air space, while the clean out plug 80 is positioned exteriorly of the outermost case 98.

In order to supply proper ventilation within the oxidation zone, the substantially T-shaped element 26 extends beneath the grate 28 and terminates above it.

It will be noted that the said air space has communicated therewith a substantially elbow shaped connector 100 which extends through the outer case 98 and is in direct communication with the main flue 68. Obviously, this elbow connection 100 is for the purpose of conducting undesired gases therefrom. There is also supplied a pipe 102 having a detachable cap 104 thereon which extends through the housing 90 and also through the outer case 98. This pipe 102 is adapted to receive certain types of refuse such as vacuum cleaner spillings and the like.

A vent stack 108 extends from the said water tank 58 for use in association with certain types of water storage systems. In the event that the installation of the present invention is a conversion job in an existing structure and an automatic heater is utilized in connection with this portion of the invention, the stack 108 may be capped because it is not necessary. Various pipes extend from the system, the said pipe 110 indicating the heated water outlet pipe, and the pipe 112 indicating the cold water inlet and the pipe 114 indicating the gas service or supply pipe. A conventional manually operated valve 116 may be supplied in the said pipe 114 and beyond the said valve 116 is a conventional adjustable thermostatically operative valve generally indicated at 118. Of course, the usual rod or thermostatic bar 120 extends therefrom and terminates in the tank 58.

When heated water is required in the tank 58, gas flows to the burners by the automatic operation of the thermostatically controlled valve 118. A pilot light is maintained in the heating zone or oxidation zone by means of a small conductor 122 which is connected with the safety valve generally indicated at 124 and which safety valve is in turn associated with the inlet gas line 114. Through this expedient the burners are ignited. The water in the tank 58 is heated to the required temperature through the utility of the coil 50 described above.

A thermostat rod 123 extends from the safety valve 124 and terminates in the oxidation zone adjacent the pilot light tube 122 terminal. This rod 123 actuates the valve 124 in a conventional manner and a manual valve 125 is associated with the safety valve 124 to serve its usual function.

The main gas burner is positioned as described and while the gas burner is in operation heating the water, the garbage or other refuse in the oxidation zone is dried out and burned to ashes. When the water reaches the required temperature, the gas is automatically turned off by the thermostatically controlled valve 118. Of course, during the time the gas is not delivered to the jet 46, the heat retained in the oxidation chamber continues to dry out the refuse in the oven or that refuse which may enter the oven during that period of time.

Of course, by setting the thermostat in the thermostatically controlled valve by the utility of the conventional means such as a handle, the entire unit may be thoroughly steamed and cleaned by opening the faucet 88 and permitting water to enter at the disposal inlet.

While there has been described and illustrated but the preferential forms of the invention, it is apparent that variations may be made without departing from the spirit thereof. Accordingly, limitation is sought only in accordance with the scope of the following claims.

Having described the invention, what is claimed as new is:

1. A garbage disposal unit which includes a furnace, said furnace having an inner housing and an outer housing with an air space between said housings, substantially aligned openings in said housings, means for conducting liquid and refuse into said housings including an outer tube fixed in communication with one of said openings and an innermost tube fixed in communication with the other of said openings, a valve at the end of said innermost tube and a separator for the liquid and refuse disposed in said innermost tube, a drain fixed to said outermost tube and disposed between said housings, and a burner in said inner housing for oxidizing the refuse received through said valve, and a flue fixed in communication with said inner housing and hav-

ing a pipe extending therefrom, said pipe terminating in said outer tube to conduct gases from said tubes when said burner is operative and when liquid is being separated from the refuse by the separator.

2. A garbage disposal unit which includes a furnace, said furnace having an inner housing and an outer housing with an air space between said housings, substantially aligned openings in said housings, means for conducting liquid and refuse into said housings including an outer tube fixed in communication with one of said openings and an innermost tube fixed in communication with the other of said openings, a valve at the end of said innermost tube and a separator for the liquid and refuse disposed in said innermost tube, a drain fixed to said outermost tube and disposed between said housings, and a burner in said inner housing for oxidizing the refuse received through said valve, a flue fixed in communication with said inner housing and having a pipe extending therefrom, said pipe terminating in said outer tube to conduct gases from said tubes when said burner is operative and when

liquid is being separated from the refuse by the separator, and a second pipe extending from said flue and terminating in the space between said inner housing and said outer housing whereby gases between said housings are exhausted through said flue.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
750,457	Haycock	Jan. 3, 1911
980,463	Welcome	Jan. 3, 1911
1,120,993	Almirall	Dec. 15, 1914
1,155,492	Krenz	Oct. 5, 1915
1,194,385	Hoover	Aug. 15, 1916
1,194,506	Kener	Aug. 15, 1916
1,337,668	Roberts	Apr. 20, 1920
1,643,206	Epstein	Sept. 20, 1927
1,809,501	Allen	June 9, 1931