Nov. 26, 1963 L. P. COLE 3,111,684

WASTE INCINERATOR

Filed Nov. 5, 1962 2 Sheets-Sheet 1

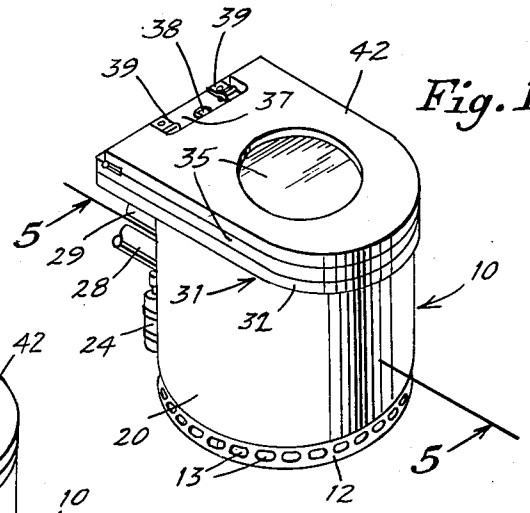


Fig. 1

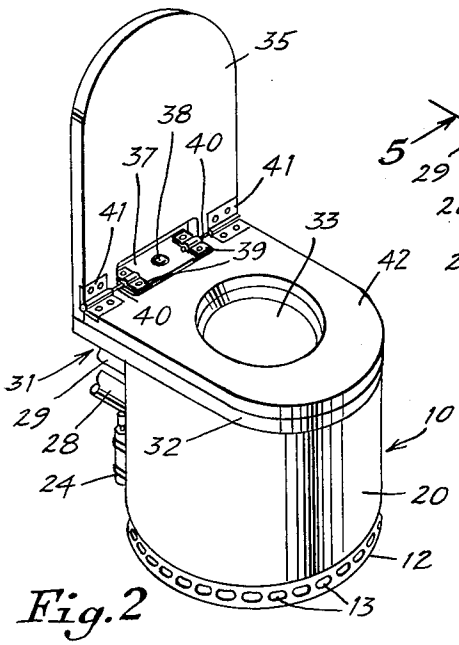


Fig. 2

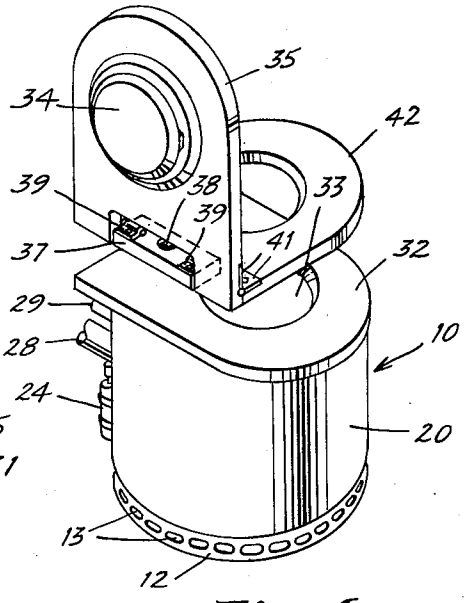


Fig. 4

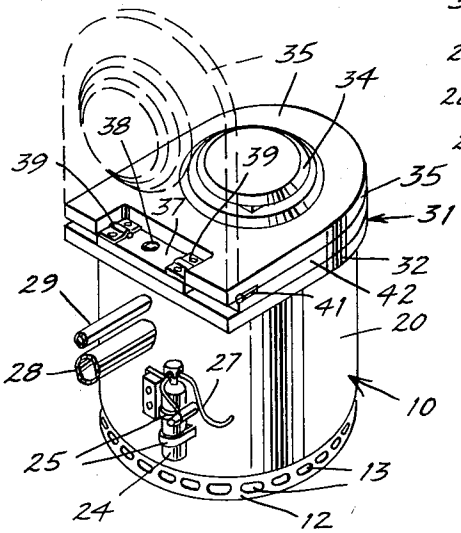


Fig. 3

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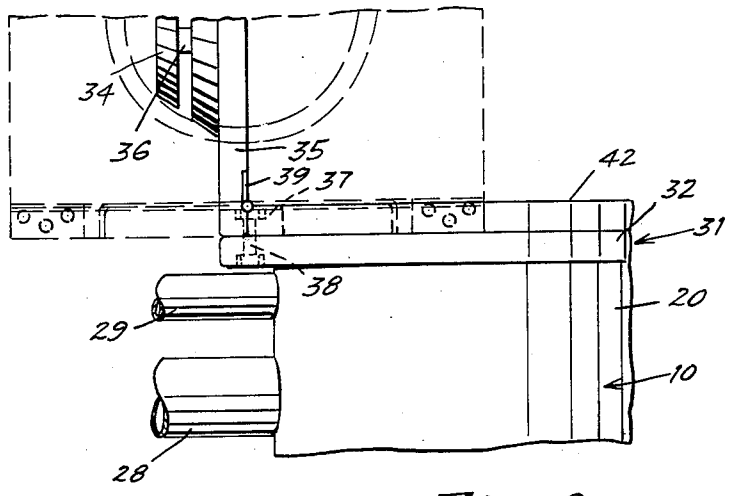


Fig. 6

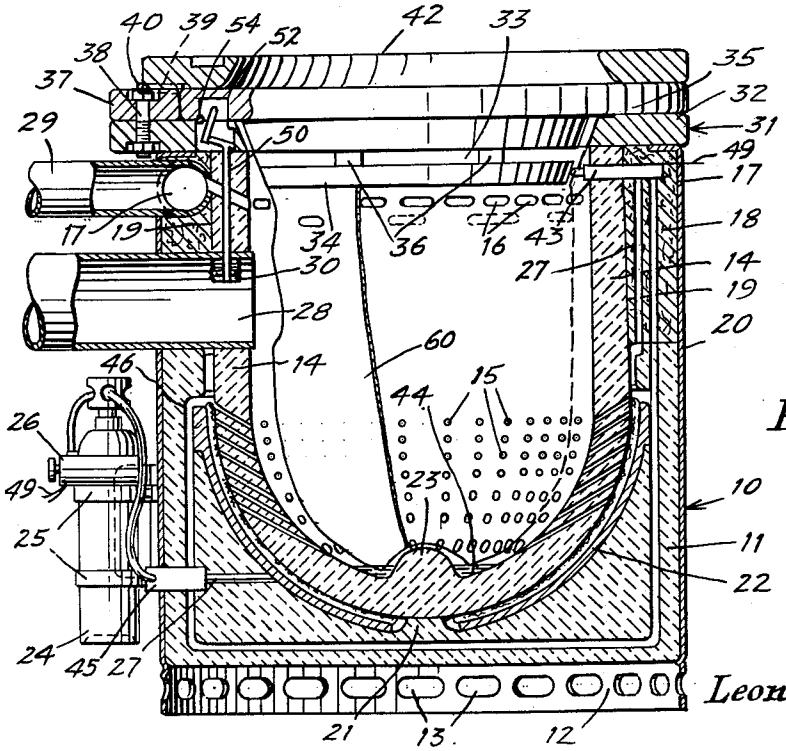


Fig. 5

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3,111,684

WASTE INCINERATOR

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8 Claims. (Cl. 4—131)

This is a continuation-in-part of my co-pending application S.N. 160,724, titled "Portable Water Closet," filed December 20, 1961, and now abandoned.

This invention relates to waste incinerators in general, and more particularly to a device of disposing of human waste by means of incineration.

The disposal of human waste has long been a problem for transportation vehicles such as trains, aircraft, mobile homes, camp trailers and the like. Most efforts which have been directed towards either a portable chemical unit or some means to provide a reserve supply of water and have the unit operate as a conventional water closet. Units which require water tanks limit the usefulness of the device by reason of space limitations for the reserve water tank and chemical disposal units are usually ineffective or else dangerous because of the necessary chemical strength.

It is an object of this invention to provide a waste incinerator which utilizes the quick acting cleansing power of heat as the disposal agent.

Another object of this invention is to provide a human waste receptacle which is portable in the sense of being capable of use with transportation vehicles or the like.

Another object of this invention is to provide a waste disposal unit which is self-contained, compact and easy to clean and maintain. In this latter regard climatic conditions have no effect.

It is an object of this invention to provide a waste disposal unit receptive of human waste and wherein all refuse will be incinerated and thereby effectively disposed of.

Still another object of this invention is to provide a waste incinerator wherein a high intensity heat may be used as a means of waste disposal, and wherein adequate safety features are incorporated to insure safe use and operation of the device.

These and other objects and advantages to be gained in the practice of this invention will become more apparent upon a reading of the following specification having reference to a preferred embodiment of this invention as illustrated by the accompanying drawings wherein:

FIGURE 1 is a pictorial view of the waste incinerator of this invention showing the fire door closed and the unit ready for waste disposal operation.

FIGURE 2 is a pictorial view of the waste incinerator of this invention as adapted for human use and with the fire door oriented to provide a seat back.

FIGURE 3 is a rear-quarter pictorial view of the waste incinerator of this invention showing the dual purpose seat back and fire door part closing the unit in solid lines and as disposed upright in dotted outline.

FIGURE 4 is a pictorial view of the waste incinerator of this invention showing the fire door and seat unit swiveled in an intermediate 90° position.

FIGURE 5 is a cross-sectional view taken along the line 5—5 and as seen in the vertical plane thereof looking in the direction of the arrows.

FIGURE 6 is an enlarged fragmentary detail view of the fire door and seating unit shown as rotated 90° and in an open position in phantom outline.

As will be appreciated, similar reference characters refer to similar parts throughout the several views of the drawings.

Having reference now to the drawings in detail, and in particular to FIGURE 5, a form of portable waste incinerator 10 is shown to include a sheet metal shell 20 within which is provided a base member 11 retained in spaced relation from the bottom edge of the sheet metal housing and forming a hollow bottom 12. Holes 13 are provided through the bottom edge of the sheet metal housing for the admission of cooling air therethrough.

A waste receptive bowl 14 is provided within the shell 20 and is seated on the base member 11. A suitable insulation fill 18 is provided between the shell 20 and the outside upper surface 19 of the bowl 14.

The bowl 14 is of ceramic or other heat resistant material. It rests upon a pedestal 21 provided by the base 11 and in relative spaced relation to the inner surface of the base to provide a chamber area 22. A plurality of radially oriented and downwardly inclined openings 15 are formed through the bowl 14. As will be later appreciated, the openings 15 serve as burner orifices.

The bowl 14 also has a plurality of elongated openings 16 provided around its upper edge. These openings 16 are also inclined downwardly and are in peripherally spaced relation to each other. They extend through the wall of the bowl and are in communication with a circumferential manifold passage 17 provided through the insulation fill 18.

In passing, it will be noted that a hearth 23 is provided on the inner surface of the bowl 14 near the bottom and forms an annular trough 44 thereabout.

A cannister or bottle of combustible gas under compression is removably secured by a pair of space clamps 25 to the rear portion of the sheet metal shell 20. This source of combustible gas is provided with a time control unit 26 which operates for a given period of time when activated and then automatically shuts off. The combustible gas is fed through suitable passages or tubing 27 provided through the sheet metal shell 20 and base 11 to the chamber space 22.

A mixing valve 45 is provided between the connection of the combustible gas source 24 and the passageway tubing 27. This may be of any conventional type used to introduce a suitable mixture of air with a combustible gas for subsequent burning and is accordingly not shown or described in any detail.

As will be noted, the combustible mixture of gas and air flows through the tubing 27, through a starter control and shut-off unit 43 and through passage 27' to the chamber space 22. From here it is introduced through the burner orifice holes 15 into the bowl 14. Upon being ignited the combustible mixture will burn on the face of the bowl with the flame front directed downwardly to whatever refuse or waste is disposed on and about the hearth 23.

A suitable pilot passage tube 46 is connected to the mixer valve 45 and is disposed for communication with one of the burner orifice holes 15. This provides a pilot light for igniting the combustible mixture when it is introduced from the chamber space 22.

An exhaust conduit 28 is connected to the waste incinerator 10 and extends through the sheet metal housing 10, the insulated fill 18 and the bowl 14. A fresh air intake pipe 29 is also provided through the sheet metal housing 10 and the insulation fill 18. The fresh air intake connection 29 is in communication with the manifold conduit 17 which in turn affords a means for circulating air through the openings 16 and into the bowl 14. The by-products of burning waste in the bowl 14 are carried off by the circulating air through the exhaust 28.

Referring now to FIGURES 1–4 and 6 it will be noted that a permanent top panel 32 is provided over the assembly thus far described and an opening 33 is formed therethrough. A seat and fire door closure assembly 31 is mounted on the top panel 32 by means of a swivel block connection 37.

The seat and fire door closure assembly 31 includes a seat part 42 having the conventional seat opening provided therethrough and a solid fireproof door member 35 which has a heat resistant fire reflection shield 34 secured thereto by spaced supports 36. The fire shield is disposed on the fire door 35 to be received through the opening 33 in the top closure panel 32 of the waste incinerator.

The swivel block connection 37 includes a vertically disposed pivot axis pin 38 and horizontally disposed pivot axis pins 40 extending within hinges 41 which secure the fire door 35 and seat member 42 together. In this manner the fire door 35 and seat 42 may be separated as shown in the different forms of the drawings and/or both may be raised together, turned 180° about the swivel axis 38 and positioned with the fire door 35 in the lower disposed position and with the reflection shield 34 extending through the opening 33 and in the position shown by FIGURE 5.

It will be noted that the reflection shield 34 when disposed within the open end of the bowl 14 engages the starter control or shut-off valve 43. This valve is of the type which, when activated, will permit the flow of combustible gas through the passageways 27 and 27', to the chamber space 22, and through the burner orifices 15 into the bowl 14 where the gas will be ignited by the pilot flame and produce a flame front in the bowl.

It will be appreciated that another form of starter control valve 43 might be employed and that such valve is shown schematically only to illustrate that a form of shut-off valve might be disposed in the supply line for the combustible mixture. It should also be obvious that the valve may include electrical leads 49 connected to the timer valve 26 for actuation thereof.

A further detail shown by FIGURE 5 is the door lock control 30. This is preferably a bi-metal unit disposed in the exhaust conduit 28 and adapted to actuate a rod 50 operative to some hook means such as 52 to engage a catch 54 on the fire door and hold it locked in a retained position over the waste receptive bowl during the incineration process. Obviously, after the combustible gas supply is cut off by the timer valve 26, and the process of combustion ceases, the bi-metal composition of the lock member 30 will deactivate the lock and allow the fire door to be raised, rotated and the unit to be made ready for subsequent use.

When the fire door is raised, rotated and the seat 42 is positioned for subsequent use of the waste incinerator 10, it will be appreciated that the cut-off control 43 will block the flow of combustible gas between the passages 27 and 27'. This affords an added safety factor.

The waste incinerator thus far described will directly handle human waste or other by-products which may be dehydrated and burned. Following the burning of refuse in the bowl 14 it may be cleaned after long use with a wire brush and vacuum suction.

Alternatively, a throw away aluminum foil liner 60 such as is shown partially in phantom outline in FIGURE 5 may be provided within the bowl 14. The liner 60 is formed to be received in spaced relation to the inner walls of the bowl 14 and to have the flame front of the burner orifices 15 directed against the exterior surface thereof. All of the burning will take place within the liner which is formed with suitable openings for the introduction and exhaust of ventilating air as is shown. The aluminum foil liner may be used a number of times and then removed and thrown away. It also will be appreciated that the liner enables much more refuse to be received before the combustion process need be started. Also, a modest amount of rubbish or garbage may be burned within the waste incinerator as readily as may human waste.

Fresh air introduced through the holes 16 help the burning process within the closed bowl and also serve to cool the fire door 35. Such air in being exhausted through the outlet 28 also carries away foul and unpleasant odors.

It will be appreciated that while a preferred embodiment of this invention has been shown and described, numerous modifications and improvements are taught in the discussion which has preceded. Accordingly, such of these modifications and improvements as are within the spirit of the hereinafter appended claims, and are not specifically excluded by the language of such claims, are to be considered as part of this invention. The apparatus shown in the appended drawings is only illustrative and the invention is not to be limited to the specific embodiment shown.

I claim the following as my invention:

1. A waste incinerator, comprising:
   (*a*) a housing having a waste receptive bowl provided therein,
   (*b*) burner orifices provided through said bowl and inclined downwardly therein,
   (*c*) a source of combustible gas in communication with said orifices,
   (*d*) means for igniting said combustible gas in said bowl and providing a downwardly oriented flame front on the inner face thereof,
   (*e*) a fire door and seating closure engaged to said housing and receptive over said bowl,
   (*f*) and means for circulating air through said bowl with said closure disposed thereover for maintaining incinerating combustion therein.

2. The waste incinerator of claim 1, including:
   (*g*) operative means disposed for actuation by said closure as disposed in fire door position over said bowl and for control of said source of combustible gas to said burner orifices.

3. The waste incinerator of claim 1 having said orifices disposed concentrically about said bowl and elevated above the normal level of waste disposal received therein.

4. The waste incinerator of claim 1 having said orifices directionally oriented for impingement on waste received in the bottom of said bowl.

5. A waste incinerator, comprising:
   (*a*) a housing having a fire protective fill,
   (*b*) a fire resistant bowl provided in said housing,
   (*c*) burner orifices provided through said bowl,
   (*d*) a source of combustible gas,
   (*e*) passage means provided through said housing between said source and said orifices,
   (*f*) air circulating means provided through said housing and bowl for sustaining combustion in said bowl and exhausting the by-products of combustible waste therefrom,
   (*g*) a seating unit including a fire door closure mounted on said housing and disposed to close said bowl,
   (*h*) and control means operatively disposed relative to said fire door closure for locking said closure in closed position in the course of combustion within said bowl.

6. The waste incinerator of claim 5 including a waste receptive removable metal foil liner received in said bowl in spaced and heat conducting relation to said burner orifices.

7. The waste incinerator of claim 5 including: a reversible seat and fire door assembly hinged together and including a swivel block connection with said housing.

8. A waste incinerator, comprising:
   (*a*) a cylindrical shell having a fire resistant base member received therein and disposed in closing spaced relation to the bottom edge of said shell,
   (*b*) a fire resistant bowl received in said shell and supported on said base member,
   (*c*) an insulation fill provided between said shell and said bowl,
   (*d*) a chamber area provided between said base member and said bowl,
   (*e*) burner orifices provided through said bowl and in communication with said chamber area,

(1) said orifices being circumferentially spaced around said bowl,

(2) and being directionally oriented towards the bottom of said bowl,

(*f*) a source of combustible gas provided externally of said shell,

(*g*) passage means provided through said shell and base member between said source of combustible gas and said chamber area,

(*h*) fresh air circulating and exhaust ventilating means provided through said shell and insulation fill and in communication with said bowl near the upper end thereof,

(*i*) a closure assembly mounted on said shell and providing an access seat and a fire door closure,

(1) a swivel block mounting attaching said closure assembly to said shell and affording optional selection of said seat and fire door closure,

(2) said fire door closure including a fire reflection shield extending down into said bowl when positioned thereover,

(*j*) burner pilot light passage means provided between said source of combustible gas and one of said burner orifices,

(*k*) gas supply control means operatively disposed for actuation relative to said fire door in its bowl closing position,

(*l*) and fire door retaining control means provided within said exhaust ventilating means and operatively engageable with said fire door in the course of incinerating combustion within said bowl.

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