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K. F. TRIGGS

2,748,728

DOMESTIC INCINERATOR

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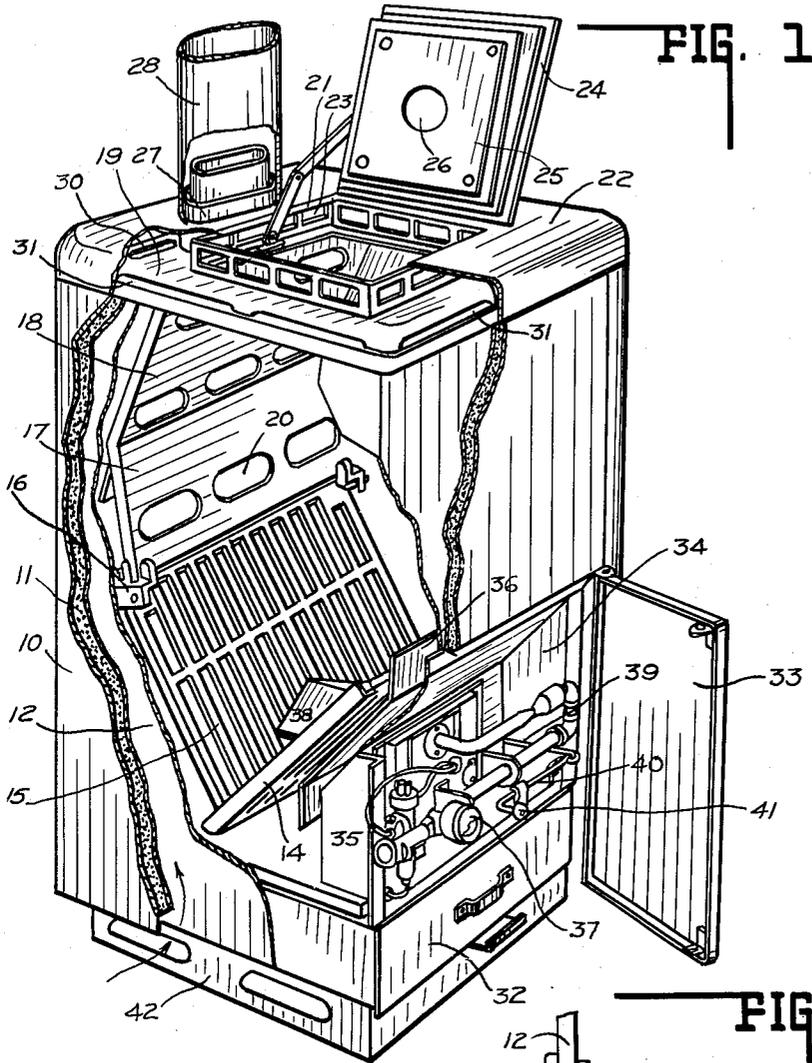


FIG. 1

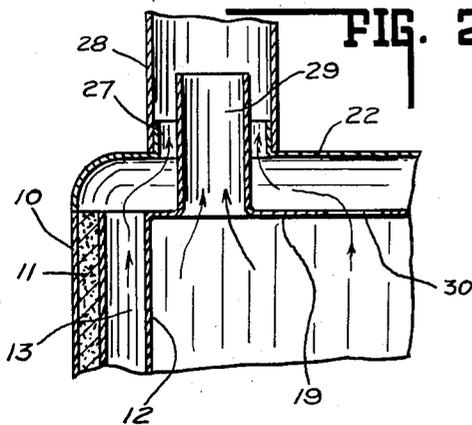


FIG. 2

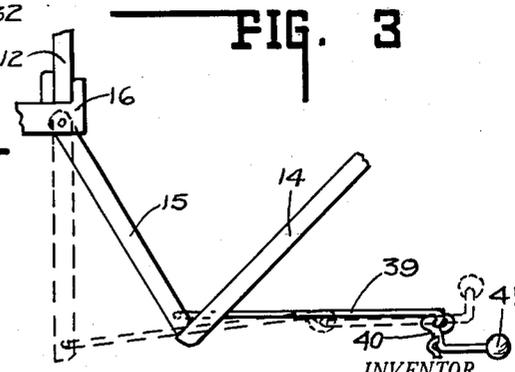


FIG. 3

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2,748,728

DOMESTIC INCINERATOR

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3 Claims. (Cl. 110-18)

This invention relates to a domestic incinerator of the general type having a down draft combustion of the character disclosed in Letters Patent No. 1,985,962, to K. F. Triggs, granted January 1, 1935, entitled "Incinerator," and particularly to a gas fired incinerator for burning combustible refuse of all kinds including garbage.

The principal feature of the invention resides in the structure of the incinerator which provides for the circulation of air serving both as a cooling and combustion medium wherein air is drawn upwardly between the outer insulated cabinet and the inner combustion chamber casing from the bottom of the cabinet over the top of the casing for down draft through the top closure lid, a portion thereof being directed upwardly through a flue venturi to induce a jet action at the flue intake.

Another feature of the invention resides in the internal grate and baffle structure cooperating with a down draft for retaining the refuse within the combustion chamber positioned for ready ignition while subjected to the combustion action of the down draft, and dumping of the ashes and non-combustible contents into an ash drawer by means of a manually controlled downwardly swinging hinged grate.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims:

Fig. 1 is a perspective view of the incinerator with portions broken away and the top closure in open position.

Fig. 2 is a central vertical section through the flue and the adjacent upper portion of the incinerator.

Fig. 3 is a diagrammatic illustration of the grates and manual control therefor showing them in burning position in full lines and dumping position in dotted lines.

In the drawings there is shown an incinerator having an outer casing 10 carrying insulation, as indicated at 11. Said outer casing surrounds and encloses a burner drum 12 and combustion chamber in spaced relation thereto to provide a surrounding air passage 13. The burner drum 12 encloses the combustion chamber in which is mounted a fixed grate 14 in association with a pivoted dump grate 15. Said dump grate is hinged at its upper edge to the brackets 16 secured to the side walls of the burner drum 12 substantially midway between the bottom and top thereof and adjacent the rear wall.

Extending upwardly from the hinged top edge of the dump grate there are angularly disposed baffle plates 17 and 18. The baffle plate 17 is slightly angled upwardly and rearwardly toward the back wall of the drum, while the baffle plate 18 angles slightly forwardly and upwardly, terminating at the top 19 of the drum. Each of said baffle plates is provided with a series of apertures 20 to permit passage of gases therethrough to the space provided rearwardly of the plates in communication with the flue.

The top plate 19 of the drum is provided with a charging opening through which refuse may be dumped into the incinerator to be received by the downwardly sloping grates 14 and 15. Said charging opening is surrounded

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by a flange or collar 21 which serves as a spacer and closure between the top plate 19 of the drum and the top plate 22 of the casing. Said flange or collar is provided with a series of apertures 23 to provide air passages there-through.

Pivotaly mounted upon the casing there is a filler lid 24 flanged to bear upon and seal the lid against the top plate 22 of the casing surrounding the dump opening when the lid is closed. Said lid is provided with a spaced inlet plate 25 to permit air passage between the lid proper and said plate through the apertures 23 in the collar 21. Said plate is provided with a central aperture 26 through which air passing through the apertures 23 may pass downwardly through the aperture 26 centrally of and into the combustion chamber within the drum 12 to provide a down draft.

The top plate 22 is provided with a chimney collar 27 for receiving a chimney 28 leading to a smoke stack in the usual manner. The top plate 19 of the drum is provided with a flue 29 of less diameter than the collar 27 and chimney positioned to extend upwardly through the collar and into the chimney so as to permit air to pass into the chimney and about the flue as shown by the arrows in Fig. 2. Adjacent the flue 29 the top plate of the drum is provided with air passage apertures 30 and similar air passage apertures 31 which are formed about the top plate 19 of the drum to permit the free passage of air from the surrounding air passages 13 into the space between the top plates of the drum and casing and through the apertures 23 and 26 for down draft purposes.

Below the sloping grates 14 and 15 there is an ash receptacle in the form of a sliding drawer 32 and hinged to the front panel of the casing there is a closure door 33 covering the ash drawer and the gas equipment 34. Said compartment is so associated with the casing and drum as to extend inwardly from the door opening and under the forward portion of the fixed grate 14. The compartment is enclosed by an inner casing 35 over which a protective apron 36 is mounted. Within the compartment there is a suitable gas control mechanism indicated generally at 37 which communicates with the gas burner extending through the grate 14 and under a protective hood 38 extending inwardly therefrom. Said burner, not shown, is positioned to direct the flame from the forward end of the hood 38 for igniting the refuse lodged between the grates 14, 15.

The hinged dump grate 15 has connected at its lower end a dump rod 39 provided with a toggle linkage 40 terminating in an operating handle 41. Through the movement of the handle (Fig. 3) from full line to dotted line position, the dump grate may be swung from refuse burning position to refuse dumping position, as shown in dotted lines.

The drum 12 is supported upon a base 42 inset to give toe space below the overhanging lower end of the casing 10. Thus, the air passage space 13 between the casing and the drum is open to the atmosphere about the lower end thereof, with the exception of the front panel. This permits the free passage of air upwardly and about the drum, which serves to cool the casing and preheat the air entering the combustion chamber. Thus, air is drawn upwardly by the combustion through the space 13 and into the upper space through the apertures 30 and 31. A portion of the air entering the upper space passes through the apertures 23 into the space provided by the inner plate 25 of the lid and thence downwardly through the aperture 26 into the combustion chamber for providing a down draft for burning of the refuse.

A portion of the divided air is drawn upwardly through the collar 27 surrounding the flue 29. This provides a jet action somewhat on the order of a venturi which induces an increased draft. At this point the air is mixed

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with the products of combustion from the burning charge of refuse which has entered the base of the flue 29. The introduction of such excess air at this point provides oxygen which, added to the hot gases, tends to completely incinerate the products of combustion, odors and smoke. This excess air also tends to cool the emitted gases passing upwardly through the flue and reduces the fire hazards of the incinerator at its point of connection with the chimney and on through the chimney.

By the above jet action, therefore, there is added to the general efficiency of a down draft incinerator, the cooling of the casing and the chimney, induced increase in the down draft and more efficient incineration of the products of combustion, including odors and smoke.

The invention claimed is:

1. An incinerator for burning refuse comprising a combustion chamber housed by an inner drum having a charging opening in the top thereof, a casing mounted about said drum in spaced relation thereto and having an air inlet adjacent the bottom thereof for providing an air draft from the lower end of said casing over the top of said drum and through said dump opening to provide a down draft for the refuse contained therein, a fixed grate secured within said drum extending downwardly from one wall toward the center of the combustion chamber, a second grate pivotally mounted adjacent the opposite wall of said drum to extend downwardly to meet said first-mentioned grate in V-shaped formation for receiving the refuse from said dump opening, an apertured baffle plate extending upwardly from one of said grates to the top of said drum in spaced relation to the adjacent wall thereof, and a flue extending upwardly from the top of said drum intermediate said baffle plate and the adjacent wall thereof.

2. An incinerator for burning refuse comprising a combustion chamber housed by an inner drum having a charging opening in the top thereof, a casing mounted about said drum in spaced relation thereto and having an air inlet adjacent the bottom thereof for providing an air draft passage from the lower end of said casing over the top of said drum and through said charging opening to provide a down draft for the refuse contained therein, a fixed grate secured within said drum to extend downwardly from one wall toward the center of the combustion chamber, a second grate pivotally mounted adjacent

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the opposite wall of said drum to extend downwardly to meet said first-mentioned grate in V-shaped formation for receiving the refuse from said dump opening, an apertured baffle plate extending upwardly from one of said grates to the top of said drum in spaced relation to the adjacent wall thereof, a flue extending upwardly from the top of said drum intermediate said baffle plate and the adjacent wall thereof, and a chimney mounted about said flue communicating with the passage between said drum and said casing and with said flue through which air is induced by a jet action of gases passing through said flue for increasing the incineration of refuse in said combustion chamber and consuming odors and smoke issuing therefrom.

3. An incinerator for burning refuse comprising a combustion chamber housed by an inner drum having a charging opening in the top thereof, a casing mounted about said drum in spaced relation thereto open to the atmosphere and said drum charging opening for providing a down draft therethrough, a fixed grate secured within said drum below said charging openings extending from one wall toward the center of the combustion chamber, a second grate mounted adjacent the opposite wall of said drum and extending to meet said first-mentioned grate for receiving and supporting the refuse from said dump opening, means for dumping one of said grates, an apertured baffle plate extending upwardly from one of said grates toward the top of said drum in spaced relation to the adjacent wall thereof, and a flue extending upwardly from the top of said drum intermediate said baffle plate and the adjacent wall thereof.

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