Dec. 13, 1955 F. H. MARTIN 2,726,609

GARBAGE INCINERATOR

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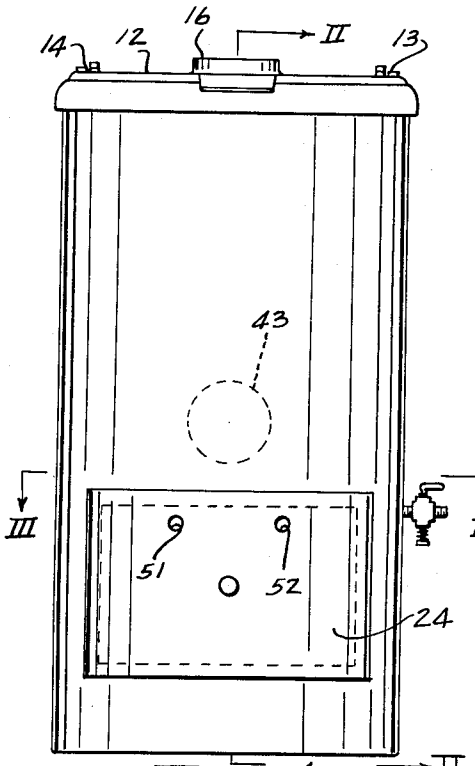


Fig. 1

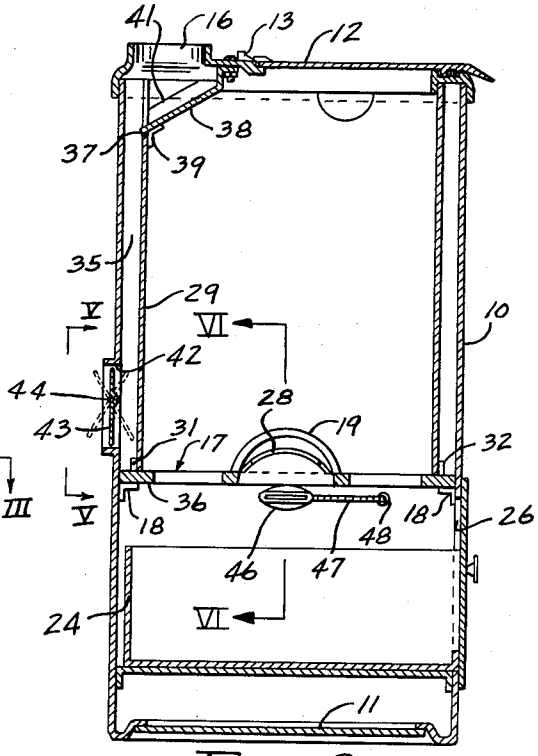


Fig. 2

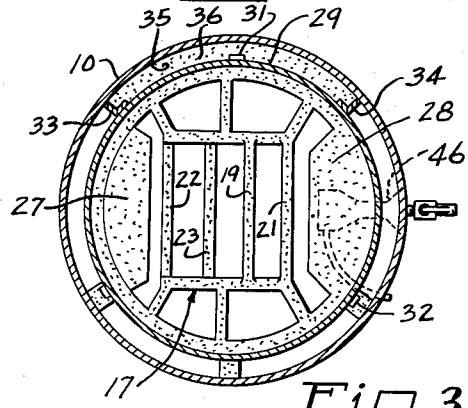


Fig. 3

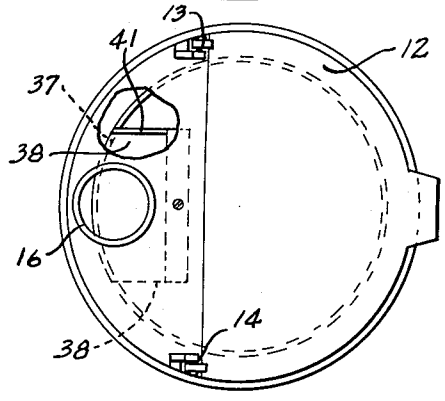


Fig. 4

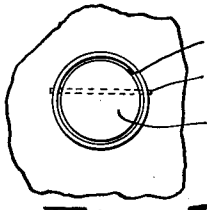


Fig. 5

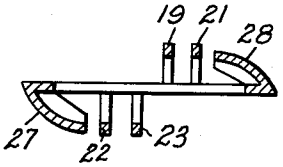


Fig. 6

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GARBAGE INCINERATOR

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9 Claims. (Cl. 110—8)

This invention relates to a garbage incinerator and has for an object the provision of apparatus of the character designated which shall be simple of design, easily constructed and assembled, and reliable in operation.

A more particular object of my invention is the provision of a garbage incinerator in which both excessive updraft and downdraft are obviated.

A still more specific object of my invention is to provide an incinerator which shall include an outer casing and an inner casing spaced therefrom, together with an auxiliary draft control passage between the casings together with means to divert downdraft through said passage and to counteract excessive updraft through said passage.

Still further object of my invention is to provide an incinerator including an outer casing, a grate, and an inner casing, in which improved means are provided for supporting the grate and the inner casing.

In the art to which my invention relates, difficulties have been encountered in controlling the draft of gas-fired garbage incinerators under the varying conditions encountered in their operation. When an excess of wet garbage is dumped into the incinerator, the burden of drying the moisture out of the garbage in order to burn it is placed upon the burner and combustion is low. In such cases, there is a very low updraft through the incinerator and occasionally, under such circumstances, a downdraft occurs which has at times extinguished the burner, allowing gas to accumulate, thus bringing about danger of an explosion. Under conditions where an excess of loose, dry trash is dumped into the incinerator, there is excessive combustion which brings about an excessive updraft creating a fire hazard. It is accordingly a prime purpose of my invention to provide an incinerator of the character designated in which downdrafts are diverted away from the burner and in which excessive updrafts are avoided.

In accordance with my invention I provide an incinerator embodying an outer casing, an inner casing mounted in spaced relation to the outer casing, with means forming a vertical passage between the inner casing and the outer casing extending downwardly beneath the smoke outlet. An opening is provided through the outer casing into the passage and a gravity damper is disposed in the opening. Means are provided in the upper part of the casing for diverting downdraft from the smoke outlet into the passage which causes the damper to open and dissipate the downdraft. Upon an excessive updraft, air is drawn in through the damper into the vertical passage and up through the smoke outlet, thus decreasing the updraft through the incinerator.

An incinerator embodying features of my invention is illustrated in the accompanying drawing forming a part of this application in which:

Fig. 1 is a front elevational view of the incinerator;

Fig. 2 is a vertical sectional view taken along the line II—II of Fig. 1;

Fig. 3 is a horizontal sectional view taken along the line III—III of Fig. 1;

Fig. 4 is a top plan view with parts broken away;

Fig. 5 is a detail elevational view looking in the direction of the arrows V—V of Fig. 2; and

Fig. 6 is a sectional view of the grate taken generally along the line VI—VI of Fig. 2, and drawn to a smaller scale.

Referring to the drawing for a better understanding of my invention, my improved incinerator embodies an outer cylindrical shell or casing **10** having a bottom **11** and a cover **12**. The forward portion of the cover **12** is hinged at **13** and **14** to the rear section whereby it may be opened to give access to the interior of the incinerator. The rear section of the cover **12** is provided with a smoke outlet **16** near the rear edge thereof.

In the lower portion of the incinerator is a grate **17** supported by lugs **18** from the outer casing **10**. The grate **17** embodies upwardly curved grate bar sections **19** and **21** and downwardly curved grate bar sections **22** and **23** whereby solid incombustible material may be poked through the grate into an ash drawer **24** which is slidable through an opening **26** in the front of the incinerator. The grate **17** is also provided with a downwardly sloping side section **27** and an upwardly sloping side section **28** which divert ashes into the ash drawer **24** and provide additional relatively wide spaces through which solid material may be discharged.

Mounted within the outer casing **10** in the upper portion of the incinerator is an inner casing **29** which is spaced from the outer casing **10**. The inner casing **29** rests on the grate **17** and is held in properly spaced relation with respect to the outer casing by means of lugs **31** and **32** which are formed on the grate and which engage the inner casing **29** as shown.

Secured to the inner casing **29** and extending downwardly between the inner casing and the outer casing **10** are a pair of angle bar members **33** and **34** which, in cooperation with the inner and outer casing, form a vertical passage **35** which extends downwardly beneath the smoke outlet **16**. The lower end of the passage **35** is closed by means of a segmental lug **36** on the grate **17** and upon which the inner casing rests. The inner casing **29** is cut away at the top as shown at **37** beneath the smoke outlet. A baffle member **38** is secured to the cover **12**, just forward of the smoke outlet **16** and extends downwardly and rearwardly with its rear edge resting on the edge of the cut-away portion **37**. Suitable lugs **39** secured along the lower edge of the baffle **38** bear against the inner side of the inner casing **29** to hold the baffle and the casing in proper relative positions. As shown in Fig. 4 of the drawing, the baffle **38** is somewhat wider than the smoke outlet **16** and is provided along its lateral edges with upturned sides **41**. It will be seen that the baffle **38** with its upturned sides functions to divert any downdraft coming down the smoke outlet **16** into the passage **35**.

An opening **42** through the outer casing **10** into the vertical passage **35** is provided. Disposed in the opening **42** is a gravity damper **43** comprising a circular disc fitting in the opening **42** and pivoted by means of a horizontal pin **44** which is disposed a short distance above the horizontal diameter of the disc, whereby it normally assumes a vertical position due to gravity. Should there be a downdraft in the passage **35**, the difference in the pressure in the passage **35** and the atmosphere surrounding the incinerator will cause the damper **43** to open. In case of an excessive updraft, the reduced pressure in the passage **35** below that of the surrounding atmosphere causes the damper **43** to open inwardly and admit air into the passage **35** whence it passes upwardly through the

smoke outlet 16, thus reducing the updraft through the incinerator.

Combustion of the material in the incinerator is provided by means of a gas burner 46 which extends through the outer casing 10 beneath the grate 17. A perforated igniting tube 47 is connected to the inner end of the burner and extends outwardly through an opening 48 in the casing 10. Air for combustion is admitted in a manner well known, through the burner and additional air enters through a suitable number of holes such as 51 and 52, provided through the front of the ash drawer.

From the foregoing description the operation of my improved incinerator will be readily understood. In normal operation, with an average mixture of damp and dry garbage, combustion will proceed evenly and without any violent fluctuations in the draft. Should an excess of wet garbage be placed in the incinerator, such that it must be dried before it can be ignited and burned, downdrafts are likely to occur, which, if not diverted, would extinguish the burner 46. In such cases, with my improved incinerator, the downdraft is diverted by means of the baffles 38 and upturned sides 41 into the vertical passage 35 where, due to the excess pressure in the passage 35, the gravity damper 43 is opened to relieve the pressure. In cases where an excess of dry trash or litter is placed in the incinerator, creating an undue amount of updraft, the pressure within the passage 35 is decreased and the decrease in pressure causes the outside atmospheric pressure to open the damper 43 inwardly and thus reduce the updraft.

Ashes from the burned garbage fall into the ash drawer 24. Large, incombustible articles, such as metal cans, bones and the like can be readily poked through the grate by reason of the upwardly curved and downwardly curved grate portions. It will thus be seen that I have devised an improved incinerator which is simple and sturdy of design, economical of manufacture, and one that is reliable in operation.

While I have shown and described the damper member 43 as being located at the lower end of the passage 35, it will be readily apparent that it may be located elsewhere so long as means are provided whereby both the updraft and the downdraft in the incinerator are caused to react in such a way as to create a pressure differential on opposite sides of the damper sufficient for it to open and compensate for the differences in draft. In the embodiment herein shown and described this is conveniently brought about by the location and relation of the smoke outlet 16, the baffle 38 and the passage 35. Accordingly, while I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited but is susceptible of various changes and modifications without departing from the spirit thereof, and I desire, therefore that only such limitations shall be placed thereupon as are specifically set forth in the appended claims.

What I claim is:

1. In a garbage incinerator including an outer casing, a cover for the outer casing having a smoke outlet in one side thereof and a grate in the lower part of the casing, in combination, an inner casing mounted on the grate in spaced relation to the outer casing with the smoke outlet disposed above the upper edge of the inner casing, said grate defining a bottom for said inner casing, there being an opening in the upper part of the inner casing below the smoke outlet and communicating the smoke outlet with the space within said inner casing, means defining a vertical passage between the inner casing and the outer casing extending downwardly beneath the smoke outlet, means defining an opening through the outer casing into the passage, a gravity damper in the opening disposed to open responsive to difference in pressure between that in the passage and that in the atmosphere outside the incinerator, and baffle means extending inwardly of the inner casing from the wall thereof and below the opening in the inner casing for diverting downdraft from the smoke outlet into the passage.

2. In a garbage incinerator including an outer casing, a cover for the outer casing having a smoke outlet in one side thereof and a grate in the lower part of the casing, in combination, an inner casing mounted on the grate in spaced relation to the outer casing with the smoke outlet disposed above the upper edge of the inner casing, said grate defining a bottom for said inner casing, there being an opening in the inner casing below the smoke outlet and communicating the smoke outlet with the space within said inner casing, means defining a vertical passage between the outer and the inner casing and extending downwardly from beneath the smoke outlet to the grate, means defining an opening through the outer casing into the passage, a gravity damper in the opening disposed to open responsive to a difference in pressure between that in the passage and that in the atmosphere outside the incinerator, and baffle means disposed beneath the smoke outlet and extending inwardly of the inner casing from the wall thereof and below the opening in the inner casing for diverting downdraft into the vertical passage.

3. In a garbage incinerator including an outer casing, a cover for the outer casing having a smoke outlet in one side thereof and a grate in the lower part of the casing, in combination, an inner casing mounted on the grate in spaced relation to the outer casing with the smoke outlet disposed above the upper edge of the inner casing, said grate forming a bottom for the inner casing, means defining a vertical passage between the outer and the inner casing and extending downwardly from beneath the smoke outlet to the grate, means defining an opening through the outer casing into the passage, a gravity damper in the opening disposed to open responsive to a difference in pressure between that in the passage and that in the atmosphere outside the incinerator, and a baffle member joined to the cover inwardly of the smoke outlet and extending downwardly and outwardly beneath the smoke outlet to engage the inner casing, the inner casing being cut away at the top below the smoke outlet and along its juncture with said baffle member to provide a passageway which communicates the smoke outlet with the space within the inner casing.

4. An incinerator as defined in claim 3 in which the baffle member engages over the upper edge of the cut away portion of the inner casing and in which lugs on the baffle member engage the inside of the inner casing, and in which the baffle member is provided with upturned lateral edges.

5. An incinerator as defined in claim 3 in which the vertical passage is formed by a pair of spaced vertical bars disposed between the outer casing and the inner casing, and in which the grate closes the lower end of the vertical passage and holds the inner casing against displacement, and in which the upper end of the inner casing is held against displacement by lugs on the baffle.

6. An incinerator as defined in claim 3 in which the baffle member is wider than the smoke outlet and is provided with upturned sides which permit the updraft in the incinerator to pass around the baffle to the smoke outlet but which divert the down draft into the vertical passage.

7. In an incinerator embodying a cylindrical outer casing, a cover for the outer casing, a smoke outlet in the cover at one side thereof and a grate in the lower part of the casing, an inner casing resting on the grate within the outer casing in spaced relation to the outer casing with the smoke outlet disposed above the upper edge of the inner casing, said grate forming a bottom for the inner casing, lugs on the grate holding the inner casing against displacement at the bottom, a baffle secured to the cover inwardly of the smoke outlet and extending downwardly and outwardly beneath the smoke outlet and engaging the inner casing, the said inner casing being

cut away below the smoke outlet along its line of engagement with the baffle to provide a passageway which communicates the smoke outlet with the space within the inner casing, lugs on the baffle bearing against the inner casing to hold it against displacement, bar members disposed between the inner casing and the outer casing laterally of the smoke outlet and forming with the casings a vertical pasage beneath the smoke outlet, a laterally extending portion on the grate closing off the vertical passage at the bottom, there being an opening formed through the outer casing into the vertical passage, and a damper in the opening operable responsive to a difference in pressure between that in the vertical passage and that in the atmosphere outside the incinerator.

8. An incinerator as defined in claim 7 in which the grate on one side is provided with upwardly bowed grate portions and on the other side with downwardly bowed grate portions whereby to provide a relatively wide lateral opening through the grate.

9. In a garbage incinerator including a casing having a grate in the lower portion thereof and a smoke outlet in the top at one side thereof, means compensating for

variations in draft in the incinerator comprising baffle means mounted inwardly of the wall of the casing with its outer end in spaced relation therefrom and extending upwardly and inwardly beneath the smoke outlet and disposed to intercept and retard both down draft and updraft in the incinerator, there being an opening in said casing between the baffle means and said grate, and a damper in said opening operable to open in both directions responsive to differences in pressure on opposite sides thereof brought about by said interception and retarding.

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