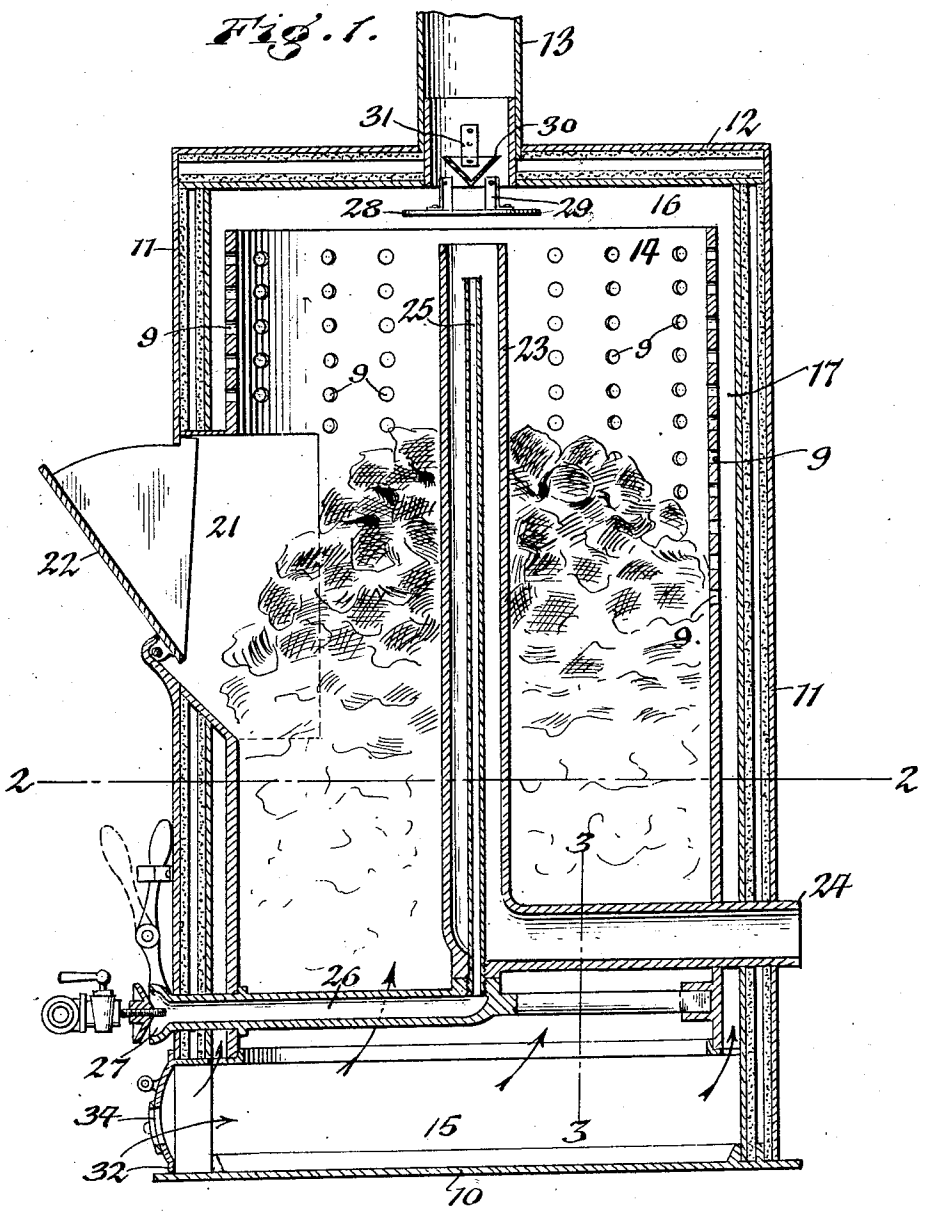
Dec. 20, 1927. 1,653,574

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INCINERATOR

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Fig. 1.



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Fig. 2.

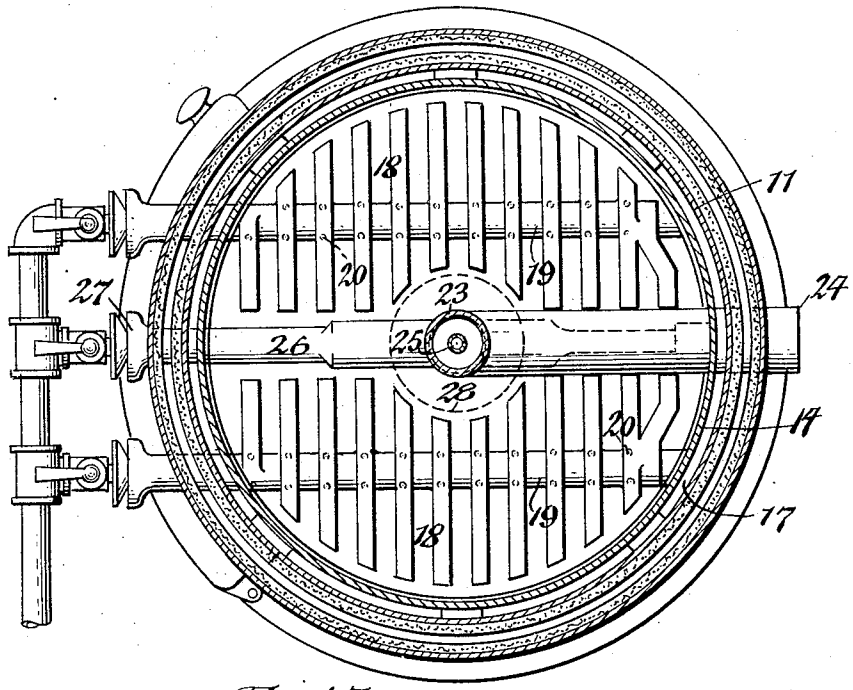
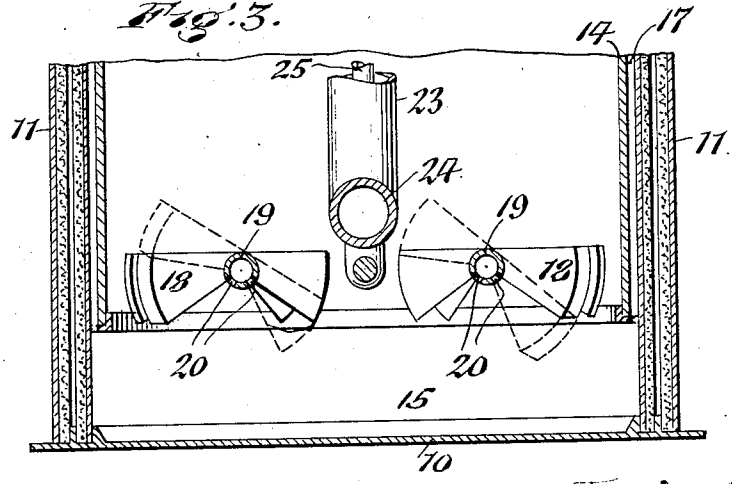


Fig. 3.



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UNITED STATES PATENT OFFICE.

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INCINERATOR.

Application filed November 20, 1925. Serial No. 70,381.

This invention relates to a refuse incinerator and has for its object the production of an apparatus for this purpose which enables household refuse and the like to be destroyed quickly, economically and without creating any odors which are perceptible either outside of the incinerator or on the exterior of the building in which the apparatus is installed.

In the accompanying drawings:

Figure 1 is a vertical section of an incinerator embodying my improvements.

Figure 2 is a horizontal section taken on the correspondingly numbered line in Fig. 1.

Figure 3 is a fragmentary vertical section taken on line 3—3 Fig. 1.

In the following description like reference characters indicate similar parts on the several figures of the drawings.

The enclosing casing of this incinerator comprises a bottom 10, an upright body or wall 11 preferably of cylindrical form rising from the bottom and a top 12 forming a closure for the upper end of the wall. The smoke is carried away from this casing to a chimney or elsewhere by a smoke pipe 13 which communicates with the central part of the space within the upper part of the casing and preferably extends upwardly from the top thereof.

Within this casing is arranged a refuse receptacle 14, preferably of cylindrical form, which terminates at its lower end above the bottom of the casing so as to form an ash pit 15 therebetween and terminates at its upper end below the top of the casing so as to form a combustion chamber 16 therebetween, and also separated at its side by an annular space 17 from the adjacent part of the body of the casing which forms a vertical passage extending from the ashpit to the combustion chamber.

This receptacle is provided with a plurality of perforations 9 which are distributed over this receptacle and cover the required area of the same from the upper edge thereof toward its lower edge.

At its lower end the refuse receptacle is provided with a grate which is preferably constructed in the form of two sections 18, 18 arranged parallel and each having a hollow shaft or pipe 19 which is journaled in suitable bearings and provided with outlet openings 20 whereby this shaft serves as a burner by means of which the gas introduced to the hollow shaft burns in flames at these outlet openings and heats the garbage and other refuse which is arranged above the burners in the receptacle.

In the upper part of the front side of the casing and receptacle a feed chute 21 extends through the same through which the refuse to be destroyed is introduced into the receptacle and which is normally closed by a door 22.

Air is conducted from the exterior of the incinerator to the space in the upper central part of the receptacle and casing above the normal height of the pile of refuse in the receptacle by an air supply pipe having an upper upright section 23 arranged centrally in the receptacle and having an outlet at its upper end which terminates above the normal level of the pile of refuse in the receptacle and preferably below the upper end of the same and above the top of the feed chute 21 and also having a lower horizontal section 24 which extends laterally from the lower end of the upper section and through the adjacent part of the receptacle and casing and having an air inlet at its outer end which opens into the atmosphere on the exterior of the casing.

Arranged centrally within the upper section of the air pipe is arranged an upright gas delivery pipe 25 forming part of an auxiliary burner which gas pipe terminates at its end within the air pipe section 23 and adjacent to the upper end of the same and has its lower end passing through and preferably secured to the lower part of this air pipe. Gas is supplied to this delivery pipe by a horizontal supply pipe 26 extending laterally from the lower end of the delivery pipe through the adjacent part of the receptacle and casing and provided on the exterior of the latter with a gas and air mixer 27 by means of which mixed gas and air is admitted to the supply pipe 26 which burns in a flame at the upper end of the delivery pipe 25.

Within the space in the upper part of the casing and between the upper end of the auxiliary air supply pipe and the lower end of the smoke pipe is a horizontal baffle or deflector 28 which is preferably of circular form, as shown by dotted lines in Fig. 2, and which projects laterally beyond these pipes in all directions so that the flame issuing from the upper end of the pipe 23 will be

deflected laterally therefrom in all directions.

This baffle may be supported in any suitable manner for example by means of hangers 29 secured to the lower end of the smoke pipe, as shown in Fig. 1. Within the smoke pipe and preferably adjacent to its lower inlet end is arranged a spreader 30 having preferably the form of a downwardly tapering cone so as to form an annular passage betweeen the periphery of the upper large part of this spreader and the adjacent part of the bore of the smoke pipe. This spreader may be held in place by means of one or more brackets or arms 31 secured to the smoke pipes as shown in Fig. 1.

In the operation of this incinerator the flames from the burner pipes 19 strike the underside of the garbage resting on the grate within the receptacle and cause the same to be heated which operates to dry the same and generate vapors which are driven off from the refuse. At the same time the air heated by the flames of the grate burners passes from the ashpit upwardly through the annular passage 17 between the receptacle and the casing to the combustion chamber at the upper end of the casing and receptacle while some of this heated air also passes from the passage 17 inwardly through the openings 9 to the side of the refuse in the receptacle and also into the space within this receptacle above the refuse therein, while drying of the refuse is promoted and any volatile gases contained therein are liberated and caused to separate and rise from the refuse, particularly in the case of kitchen garbage.

While flames are thus issuing from the grate burners, a flame burns at the upper end of the auxiliary burner pipe 25 which flame heats the air supplied by the auxiliary air supply conduit 23, 24. This central flame and heated auxiliary air upon issuing from the upper end of the delivery pipe 23 is deflected laterally in all directions by the baffle 28 so as to form a radiating stream of flame and heated air which spreads like a blanket over the top of the refuse in the receptacle. As a result the combustible gases rising from the refuse due to heating and drying of the same causes the gases to become mixed with the heated air issuing from the central pipe, the openings in the receptacle and the upper end of the side passage 17 and produce a mixture which is highly combustible and constantly ignited by the flame of the central burner pipe 25.

The heat resulting from this combustion in the combustion chamber above the pile of refuse in the receptacle aids materially in promoting drying of the refuse, such as wet or moist garbage, whereby the mass of refuse is gradually consumed, or destroyed from the top of the pile downwardly to the grate, and when this is completed the ashes or residue may be dumped from the grate into the ashpit and then removed from the latter through an ashpit door 32 which has the usual air inlet openings 34.

By thus applying a flame and auxiliary heated air to the top of the refuse in addition to applying heat to the bottom and sides of same practically every trace of odor bearing gas is burned immediately upon leaving the mass of refuse, thereby preventing the escape of any unconsumed odor bearing gases to the exterior of the apparatus or the building containing the same, and rendering the use of such incinerators wholly unobjectionable in residental sections of a community.

The flames resulting from the burning of such gases continue their function upon leaving the combustion chamber and passing around the edge of the deflector or baffle and over the latter and upwardly through the smoke pipe.

As the flames, gases and heated air pass upwardly through the smoke pipe the same are again spread by the spreader therein instead of being permitted to pass in the form of a core or solid stream through the central part of the smoke pipe, thereby further promoting intimate mixture of the heated air with the combustible elements in the gases derived from the garbage or other refuse, and enabling the same to be ignited by the flames and consumed so that no odors are perceptible on the exterior of the apparatus.

Moreover this apparatus permits of utilizing the heat units in the refuse to the maximum extent for destroying the same or rendering it innocuous, thereby effecting a considerable saving in cost of gaseous fuel for doing this work.

I claim as my invention:

1. A refuse incinerator comprising an outer enclosing casing, a smoke pipe communicating with the central part of the space within the upper end of said casing, a perforated refuse receptacle arranged within the enclosing casing and terminating at its lower and upper ends short of the lower and upper ends of said casing and separated at its side from the side of the casing by an intervening passage which communicates with the spaces in the lower and upper ends of the casing, an air pipe having an upper upright section which is arranged centrally within the refuse receptacle and has an outlet at its upper end which is arranged above the normal level of the pile of refuse in the receptacle and also having a lower horizontal section which extends laterally from the lower end of said upper section through said receptacle and casing and has an inlet opening to the external atmosphere, and an upright gas pipe arranged centrally within the upright section of said air pipe and extending through the lower

part thereof and having its upper outlet end terminating adjacent to the upper end of said air pipe.

2. A refuse incinerator comprising an outer enclosing casing, a smoke pipe communicating with the central part of the space within the upper end of said casing, a perforated refuse receptacle arranged within the enclosing casing and terminating at its lower and upper ends short of the lower and upper ends of said casing and separated at its side from the side of the casing by an intervening passage which communicates with the spaces in the lower and upper ends of the casing, an air pipe having an upper upright section which is arranged centrally within the refuse receptacle and has an outlet at its upper end which is arranged above the normal level of the pile of refuse in the receptacle and also having a lower horizontal section which extends laterally from the lower end of said upper section through said receptacle and casing and has an inlet opening to the external atmosphere, an upright gas pipe arranged centrally within the upright section for said air pipe and extending through the lower part thereof and having its upper outlet end terminating adjacent to the upper end of said air pipe and a horizontal baffle arranged within said casing between said air pipe and said smoke pipe.

3. A refuse incinerator comprising an outer enclosing casing, a smoke pipe communicating with the central part of the space within the upper end of said casing, a perforated refuse receptacle arranged within the enclosing casing and terminating at its lower and upper ends short of the lower and upper ends of said casing and separated at its side from the side of the casing by an intervening passage which communicates with the spaces in the lower and upper ends of the casing, an air pipe having an upper upright section which is arranged centrally within the refuse receptacle and has an outlet at its upper end which is arranged above the normal level of the pile of refuse in the receptacle and also having a lower horizontal section which extends laterally from the lower end of said upper section through said receptacle and casing and has an inlet opening to the external atmosphere, an upright gas pipe arranged centrally within the upright section of said air pipe and extending through the lower part thereof and having its upper outlet end terminating adjacent to the upper end of said air pipe, a horizontal baffle arranged within said casing between said air pipe and said smoke pipe and a grate arranged in the lower part of said receptacle and adapted to support the refuse therein.

4. A refuse incinerator comprising a receptacle adapted to receive the refuse to be destroyed, an air pipe having its outlet above the normal level of the pile of refuse in said receptacle, a gas burner having its outlet arranged within said air pipe adjacent to the outlet end thereof, a smoke pipe communicating with the upper end of said receptacle, a baffle interposed between said air pipe and smoke pipe and a spreader arranged within said smoke pipe.

5. A refuse incinerator comprising a receptacle adapted to receive the refuse to be destroyed, an air pipe having an outlet above the normal level of the pile of refuse in said receptacle, a gas burner having its outlet arranged within said air pipe adjacent to the outlet end thereof, a smoke pipe communicating with the upper end of said receptacle, and a baffle interposed between said air pipe and smoke pipe and projecting laterally beyond said air pipe and smoke pipe and a conical downwardly tapering spreader arranged within the smoke pipe and separated therefrom at its periphery by an annular passage.

EDWARD KENER, JR.